

PERCEPTION AND DESIGN IN THE URBAN ENVIRONMENT:
TOWARDS AN ECOLOGICAL APPROACH

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TABLE OF CONTENTS

I	-	<u>TABLE OF FIGURES</u>	
II	-	<u>ACKNOWLEDGEMENTS</u>	
III	-	<u>ABSTRACT</u>	
0	-	<u>INTRODUCTION</u>	1
1	-	<u>ARCHITECTURE AND DUALISM</u>	6
		1.1 - RATIONALISM.....	9
		1.1.1 - Boullée & Ledoux.....	19
		1.1.2 - Urban Utopias.....	20
		1.1.3 - Summary.....	23
		1.1.4 - Modern Movement.....	25
		1.1.5 - Brasilia.....	27
		1.1.6 - Recent Rational Architecture.....	31
		1.2 - CONSTRUCTIVISM.....	35
		1.3 - CONCLUSION.....	42
2	-	<u>ARCHITECTURE, ECOLOGY, AND PHENOMENOLOGY</u>	45
		2.1 - PHENOMENOLOGY.....	46
		2.2 - APPROPRIATION.....	48

2.3	- ECOLOGICAL PSYCHOLOGY.....	42
2.3.1	- Changing Optic Array.....	54
2.3.2	- Environmental Description.....	57
2.3.3	- Changes in the Relation of Normality.....	65
2.3.4	- Variation of Angles.....	68
3	- <u>THE URBAN ENVIRONMENT</u>	71
3.1	- EXPLICIT PLANNED INTERVENTIONS.....	72
3.2	- NON-EXPLICIT PLANNED INTERVENTIONS.....	73
3.3	- NON-PLANNED INTERVENTIONS.....	76
3.3.1	- The Vernacular Fabric.....	78
3.3.2	- Squares.....	80
3.3.3	- Streets.....	81
3.3.4	- Articulations.....	82
3.4	- METHOD.....	83
4	- <u>SHANTYTOWNS</u>	86
4.1	- SHANTYTOWN: THE URBAN PHENOMENON.....	88
4.2	- CHARACTERISTICS OF SHATYTOWNS.....	89
4.2.2	- Limited Land.....	90
4.2.2	- Limited Material and Techniques.....	92
4.2.3	- Limited Time.....	94
4.3	- THE FORMATION OF URBAN SPACES.....	95
4.4	- THE GROWTH OF SHANTYTOWNS IN BRAZIL.....	97
4.5	- SQUATTING IN BRASILIA.....	101

4.6 - VILA PARANOA.....	103
4.6.1 - Inhabitants.....	104
4.6.2 - Urban Description.....	109
4.6.3 - Urban Analysis.....	112
4.7 - SUMMARY AND CONCLUSION.....	120
5 - <u>OURO PRETO</u>	123
5.1 - THE CONTEXT.....	124
5.1.1 - The Portuguese Heritage.....	124
5.1.2 - The Land of the True Cross.....	128
5.1.3 - The Gold Rush in Minas Gerais.....	135
5.1.4 - Topography.....	139
5.1.5 - Cultural Context.....	140
5.2 - URBAN FORM.....	144
5.2.1 - Urban Evolution.....	144
5.2.2 - Building Materials.....	148
5.3 - URBAN DESCRIPTION.....	150
5.4 - URBAN ANALYSIS.....	155
5.4.1 - Squares.....	158
5.4.2 - Streets.....	160
5.4.3 - Articulations.....	163
5.5 - OURO PRETO IN CONTRAST WITH OTHER COLONIAL SETTLEMENTS.....	166
5.6 - CONCLUDING NOTES.....	168

6	- <u>YORK</u>	170
	6.1 - HISTORICAL OVERVIEW.....	170
	6.1.1 - The Roman Legionary Fortress.....	171
	6.1.2 - The Anglian Period.....	176
	6.1.3 - The Viking Period.....	178
	6.1.4 - The Earls of Northumbria.....	181
	6.1.5 - The Norman Conquest/Medieval York...181	
	6.1.6 - Late 16th to 18th century York.....	186
	6.1.7 - 19th and 20th century York.....	189
	6.2 - SUMMARY AND COMMENTS.....	191
	6.3 - URBAN DESCRIPTION.....	195
	6.4 - URBAN ANALYSIS AND PROPOSALS.....	202
7	- <u>CONCLUSION</u>	221
	7.1 - IMMEDIATE INTERACTION.....	222
	7.2 - IMPORTANCE OF IMMEDIACY.....	225
	7.3 - SYMBOLIC MEANING.....	228
8	- <u>APPENDIX 1</u>	232
9	- <u>APPENDIX 2</u>	238
10	- <u>APPENDIX 3</u>	242
11	- <u>APPENDIX 4</u>	248
12	- <u>APPENDIX 5</u>	253

13 - APPENDIX 6.....266

14 - BIBLIOGRAPHY.....267

LIST OF ILLUSTRATIONS

figure	facing page
1.1 - Vitruvius' town plan ('Ten Books' 1511 edition).....8 Source: Rosenau, 1959.	
1.2 - Filarete's 'Sforzinda'.....8 Source: Rosenau, 1959.	
1.3 - Plan for an ideal city, c.a. 1500.....9 (attributed to Fra Giocondo) Source: Zucker, 1959.	
1.4 - Cataneo's visionary cities I.....10 Source: Cataneo, 1964.	
1.5 - Cataneo's visionary cities II.....10 Source: Cataneo, 1964.	
1.6 - Giovane's ideal city.....11 Source: Zucker, 1959.	
1.7 - Scamozzi's ideal city.....11 Source: Rosenau, 1959.	
1.8 - The principle of linear perspective.....12 Source: Pirenne, 1970.	
1.9 - Plan of Miletus & Olympus.....14 Source: Benevolo, 1980.	
1.10 - Indirect perception.....18 Source: Descartes, 1963.	
1.11 - Visionary projects of Ledoux and Boulee.....19 Sources: Christ, 1961, and Rosenau, 1953.	
1.12 - Egyptian hieroglyph for city.....25 Source: Benevolo, 1980.	
1.13 - Le Corbusier's 'Ville Radieuse'.....26 Source: Broadbent, 1990.	
1.14 - Brasilia (plan).....27 Source: CODEPLAN.	
1.15 - Brasilia (central area - view).....28 Source: author.	
1.16 - Brasilia (superquadras).....29 Source: CODEPLAN.	
1.17 - Brasilia (central area - plan).....30 Source: CODEPLAN.	
1.18 - Brasilia (pilotis).....31 Source: GDF, 1986.	
1.19 - R. Krier's typological description.....32 Source: Krier, 1979.	
1.20 - Leon Krier: some projects.....33 Source: Broadbent, 1990.	
1.21 - Aldo Rossi: some projects.....33 Source: Broadbent, 1990, etc..	
1.22 - Hillier's cells.....34 Source: Hillier, 1988.	
2.1 - Jangapura extension.....50 Source: AR, 1985.	
2.2 - Appropriation of urban spaces.....51 Source: author.	

2.3	- Textures.....	53
	Source: Brodatz, 1966.	
2.4	- Swimming kicks.....	55
	Source: McCabe, 1986.	
2.5	- Meanders patterns.....	56
	Source: McCabe, 1986.	
2.6	- Longitudinal and frontal surfaces.....	58
	Source: Gibson, 1950.	
2.7	- Gradient of Texture.....	58
	Source: Gibson, 1950.	
2.8	- Corner and edge.....	59
	Source: Gibson, 1950.	
2.9	- Aerial photograph of hills and valleys.....	59
	Source: Gibson, 1979.	
2.10	- Forum with the Temple of Jupiter (reconstruction).....	60
	Source: Zucker, 1966.	
2.11	- St. Sampson's Square (York).....	65
	Source: author.	
2.12	- Piazza del Campo (Sienna).....	65
	Source: Broadbent, 1990.	
2.13	- Amsterdam (pavement).....	66
	Source: author.	
2.14	- National Theatre (Brasilia).....	66
	Source: GDF, 1986.	
2.15	- The Shambles (York).....	66
	Source: author.	
2.16	- Pendentine domes.....	66
	Source: Richards, 1984.	
2.17	- Alvorada Palace.....	67
	Source: GDF, 1986.	
2.18	- Zulu village.....	67
	Source: Denyer, 1978.	
2.19	- Teotihuacan (pyramid).....	68
	Source: Meyer, 1973.	
2.20	- Brasilia Cathedral.....	68
	Source: GDF, 1986.	
2.21	- Brasilia Congress building.....	68
	Source: GDF, 1986.	
2.22	- Inclined surface.....	69
	Source: author.	
2.23	- Surfaces oriented to the same side.....	69
	Source: author.	
2.24	- Surfaces facing opposite directions.....	69
	Source: author.	
2.25	- Curved surfaces.....	69
	Source: author, & Zucker, 1959.	
2.26	- Crooked street (plan).....	70
	Source: author.	
2.27	- Rectilinear street.....	70
	Source: author.	
2.28	- Cross-section (representation).....	71
	Source: Richards, 1984.	

3.1	- Pathways of grass patches (Brasilia).....	76
	Source: Edicard (postcard).	
3.2	- Delos (harbour).....	77
	Source: Benevolo, 1980.	
3.3	- The convex layouts of squares.....	80
	Source: Sitte, 1965, & Zucker, 1959.	
3.4	- Planned Squares.....	81
	Source: Zucker, 1959.	
3.5	- 'Y' connection.....	82
	Source: author.	
3.6	- 'T' connection.....	82
	Source: author.	
3.7	- Inclined surface in a conection.....	83
	Source: author.	
4.1	- Brazil (and its states).....	90
	Source: Livermore, 1953.	
4.2	- Plan of a shantytown (Vila São Jorge).....	92
	Source: Urbel, 1988.	
4.3	- Building materials in shantytowns.....	93
	Source: AR, 1985.	
4.4	- Parachuttist plot.....	96
	Source: author	
4.5	- George (Lusaka).....	97
	Source: Schlyter, 1979.	
4.6	- Canudos.....	98
	Source: Ciencia Hoje, 1989.	
4.7	- Pilot Plan (Brasilia).....	101
	Source: CODEPLAN.	
4.8	- Superquadras (Brasilia).....	102
	Source: CODEPLAN.	
4.9	- Satellite cities.....	103
	Source: CODEPLAN.	
4.10	- Paranoa: planned/non-planned interface.....	104
	Source: author.	
4.11	- Paranoa: access road.....	104
	Source: author.	
4.12	- Paranoa: central area (market).....	105
	Source: author.	
4.13	- Paranoa: area adjacent to centre.....	105
	Source: author.	
4.14	- Paranoa: greenery within plots.....	105
	Source: author.	
4.15	- Paranoa: quasi peripheral area.....	106
	Source: author	
4.16	- Paranoa: peripheral area.....	106
	Source: author.	
4.17	- Paranoa: comercial use in the central area.....	107
	Source: Aciole.	
4.18	- Paranoa & Ouro Preto (plans).....	108
4.19	- Paranoa: school and medical centre.....	109
4.20	- Elements defining spaces.....	110
4.21	- Paranoa: fences (1976 map).....	111
4.22	- Paranoa: enclosed frontal spaces (1976).....	112
4.23	- Paranoa: 1978 map.....	113

4.24	- Paranoa: 1982 map.....	114
4.25	- Street 'A'.....	115
4.26	- Fragmentation of area 'B'.....	116
4.27	- Fragmentation of area 'C'.....	117
4.28	- Redefinition of spaces.....	118
4.29	- 'Y' connections I.....	119
4.30	- 'Y' connections II.....	120
4.31	- Secondary streets.....	121
4.32	- Narrowing of pathway.....	122
4.33	- Lack of integrity.....	122
4.34	- King's Square (plan).....	122
5.1	- 1783/5 map of Ouro Preto.....	123
5.2	- 1850 map of Ouro preto.....	123
5.3	- 1888 map of Ouro Preto.....	124
5.4	- 1949 map of Ouro Preto.....	125
5.5	- 1973 map of Ouro Preto.....	126
5.6	- Oporto (architectural typology).....	127
	Source: photograph by Margarida Barreira.	
5.7	- Ouro Preto (architectural typology).....	127
5.8	- Amerindian.....	128
	Source: Ciencia Hoje, 1989.	
5.9	- Brazil's capitancies.....	131
5.10	- Spanish colonial settlement.....	132
	Source: Benevolo, 1980.	
5.11	- Irregular topography.....	139
5.12	- Churches' vicinities.....	140
5.13	- Map of Portugal in the sixteenth century.....	141
	Source: Boxer, 1962.	
5.14	- Colonial Baroque art.....	143
	Source: author.	
5.15	- São Francisco de Assis Church.....	144
	Source: casa-jardim.	
5.16	- Pre-eminence of churches I.....	145
5.17	- Pre-eminence of churches II.....	146
5.18	- Mining camps.....	147
	Source: Vasconcelos, 1977.	
5.19	- Merging of mining camps.....	147
	Source: Vasconcelos, 1977.	
5.20	- Centripetal growth.....	147
	Source: Vasconcelos, 1977.	
5.21	- Taipa de sopapo.....	148
	Source: author.	
5.22	- Timber-frame structure.....	149
	Source: Vasconcelos, 1979	
5.23	- Pau-a-pique.....	149
	Source: Vasconcelos, 1979.	
5.24	- Galbo do Contrafeito.....	150
	Source: Vasconcelos, 1979.	
5.25	- São Francisco de Paula Church.....	151
	Source: author.	
5.26	- Tiled roofs (fragility).....	152
	Source: author.	
5.27	- Tiled roofs (hues).....	153
	Source: author.	
5.28	- White washes ageing.....	154

	Source: author.	
5.29	- Holy Mother of Merces Church.....	155
5.30	- Churches in relation to the urban fabric I.....	156
5.31	- Churches in relation to the urban fabric II.....	157
5.32	- Tiradentes Square.....	158
5.33	- 3 'squares': Alves Brito, João Castilho, & Sílvio Brito.....	159
5.34	- New Street.....	160
5.35	- Variation of surface layout.....	161
	Source: author.	
5.36	- Roof below level of street.....	161
	Source: author.	
5.37	- Facade colapsing.....	161
	Source: author.	
5.38	- Bridge.....	161
	Source: author.	
5.39	- Linear movement and surface layout.....	162
5.40	- Rua Aleijadinho.....	163
5.41	- Largo do Rosario (view).....	163
	Source: author.	
5.42	- Largo do Rosario (plan).....	163
5.43	- Conection Largo do Rosario/ Getulio Vargas.....	163
5.44	- Getulio Vargas.....	164
5.45	- Silvio Brandão Sq.(view).....	164
	Source: author.	
5.46	- Silvio Brandão Sq. (plan).....	164
5.47	- Alves Brito Square (plan).....	164
5.48	- Alves Brito (view) I.....	165
	Source: author.	
5.49	- Alves Brito (view) II.....	165
	Source: author.	
5.50	- Aleijadinho Street (plan).....	166
5.51	- Disalignments.....	166
5.52	- Bending of streets (conections).....	167
5.53	- Topographical constraints and the layout of conections.....	167
5.54	- São Bartolomeu.....	168
5.55	- Lavras Novas I.....	169
	Source: author.	
5.56	- Lavras Novas II.....	169
	Source: author.	
5.57	- Diamantina (churches) I.....	170
5.58	- Diamantina (churches) II.....	170
6.1	- York plan.....	171
6.2	- Roman fortress (situation).....	172
	Source: RCHM, 1988.	
6.3	- Roman fortress (layout).....	173
6.4	- Viking settlement.....	181
	Source: RHCM, 1988.	
6.5	- York Castle evolution.....	182
	Source: RHCM, 1973.	
6.6	- Pre-conquest churches (map).....	183
6.7	- Mendicant orders (location).....	184
6.8	- Periods of construction of York Minster.....	185
	Source: RHCM, 1985.	
6.9	- York Minster (plan).....	186
	Source: RHCM, 1985.	

6.10	- New Walk.....	187
	Source: Tillott, 1961.	
6.11	- Town houses.....	188
	Source: Tillott, 1961.	
6.12	- St. Leonard's Place.....	189
6.13	- Parliament Street.....	190
6.14	- Dumcombe place.....	191
	Source: author, & Tillott, 1961.	
6.15	- Clifford's Street.....	192
6.16	- Picadilly.....	193
6.17	- Stonebow.....	194
6.18	- Roman headquarters/Minster plan.....	195
	Source: RCHM, 1985.	
6.19	- Route followed for describing York.....	196
6.20	- Rougier Street.....	197
6.21	- River water front.....	197
	Source: author.	
6.22	- Space in front of York Minster.....	197
	Source: author.	
6.23	- Stonegate.....	197
	Source: author.	
6.24	- King's Square.....	198
	Source: author.	
6.25	- Lady Row.....	198
	Source: author.	
6.26	- Walmgate housing development.....	198
	Source: author.	
6.27	- Stonebow.....	198
	Source: author.	
6.28	- Pavement.....	199
	Source: Walton (1836 lithograph), author.	
6.29	- Parliament.....	199
	Source: author.	
6.30	- Micklegate.....	200
	Source: author.	
6.31	- Clifford's Tower.....	200
	Source: author.	
6.32	- Assembly Rooms.....	200
	Source: author.	
6.33	- Exhibition Square.....	200
	Source: author.	
6.34	- Bootham Bar.....	201
	Source: Palliser, 1979, & author.	
6.35	- Monkgate.....	202
	Source: author.	
6.36	- Peaseholm Green.....	202
	Source: author.	
6.37	- Walmgate Bar.....	203
6.38	- Skeldergate Bridge area.....	203
	Source: author.	
6.39	- Micklegate Bar (views).....	204
	Source: Tillott, 1961, author.	
6.40	- Micklegate (plan).....	205
6.41	- Network of pathways.....	206
6.42	- Connections.....	207
6.43	- St. Sampson's fragmentation.....	208

6.44	- Blake Street fragmentation.....	208
6.45	- 'Y' junctions.....	209
6.46	- Areas of intervention.....	210
6.47	- York 'Minsters'.....	211
	Source: RCHM, 1985.	
6.48	- Minster precinct.....	211
6.49	- Row of houses defining Minster precinct.....	212
6.50	- Minster/Petergate interface.....	213
6.51	- Minster/Petergate proposal.....	214
6.52	- Parliament Street.....	216
6.53	- Parliament Street proposal.....	217
6.54	- Exhibition Square.....	218
6.55	- Exhibition Square proposal.....	219
6.56	- St. Helen's Square.....	220
6.57	- St. Helen's Square (view).....	220
	Source: author.	

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ABSTRACT

The present dissertation looks at the relationship between person and urban environment, notably in view of gaining insights into *planned interventions* in urban spaces. The relationship in question is conceived as an immediate interface between humans and the world, as posited by *phenomenology* and *ecological psychology*. Such an interface appears in the continuous process of *non-planned* evolution presented by vernacular settlements and shantytowns. The latter type of urban environment is the first to be examined, with particular reference to the case of Vila Paranoa in Brasilia. This is followed by the analysis of two vernacular settlements, namely the colonial city of Ouro Preto in Brazil, and the city of York in England. A transcultural analysis is an important aspect of the present approach, as it aims at the study of a direct (i.e. non-mentally mediated) interaction between people and urban spaces.

INTRODUCTION

Authors in the past hundred years (from Camillo Sitte (late nineteenth century) to Rob Krier) have repeatedly criticised our inability to design cities that are suitable for people to live in, cities that not only satisfy the modernist functional requirements (when they do), but which are also attractive in what Sitte would call artistic terms. The fact is that we do not seem to be able to produce cities as our ancestors did - traditional cities like Sienna or Venice astonish us by their ability to consistently provide a successful relationship with people throughout their existence (their impact on us is such that they become international touristic attractions). We seem to have lost the ability to recreate urbanity. We seem to be missing out on the real *plight* of dwelling, which according to Heidegger consists in 'ever learn to dwell'.¹

The aim of this dissertation is precisely to contribute to retrieving such an ability to recreate urbanity, to manipulate the urban environment so as to provide a successful relationship with people that use it. That contribution limits itself to the issue of urban design; although it is acknowledged that design interventions

1. Heidegger, M., Poetry, Language, Thought, translation and introduction by A. Hofstadter (New York, etc.: Harper & Row, 1975), p.161.

take place in a social and economic context and cannot stop being affected by it. To be sure, the problems of our cities have their roots in such social and economic background. The consideration of how they affect the development of our cities, however, is a broad subject which deserves a PH.D. dissertation in its own right.

The line of inquiry I propose to follow instead looks at an understanding of the relationship between person and urban environment. By gaining insights into such a relationship, I believe, the designer may be in a better position to manipulate the urban environment. As the title suggests the present inquiry into such a relationship will involve looking at how people perceive their environment. This will lead me to refer to the writings of philosophers such as Merleau-Ponty - *Phenomenology of Perception* - and psychologists such as J.J. Gibson - *The Ecological Approach to Visual Perception*.

More will be said about phenomenology and ecology in Chapter Two. For the time being I would like to point out that both approaches share the view that people's relationship with the world is essentially an immediate affair. This is expressed in phenomenological writings such as those of Merleau-Ponty's when he says that 'before becoming an objective spectacle, quality is revealed by a type of behaviour which is directed towards it in its essence...'², or Heidegger who tells us that 'what we 'first' hear is never noises or complexes of sounds, but the creaking wagon, the motor-cycle... the column on the march, the north wind, the woodpecker tapping, the fire crackling'³. J.J. Gibson's

2. Merleau-Ponty, M., Phenomenology of Perception, translated by Colin Smith (London: Routledge & Kegan Paul, 1962, 1986), p. 211.

3. Heidegger, M., Being and Time, translated by J. Macquarrie & E. Robinson (Oxford: Basil Blackwell, 1962), p. 207.

theory of *direct perception* also emphasises the *immediacy* of people's interface with their environment.

Through the point of view of urban analysis and design, such an immediate notion will lead me to focus on people's patterns of movement in space and their relation to surface layouts. Such patterns of movement are said to be the contribution of a variety of individuals in time, and not the result of a mental exercise performed in the head of one person. This leads to the distinction between *planned* and *non-planned interventions*: the former being the result of a mental elaboration, and the latter reflecting a non-mentally mediated, i.e. immediate, interface between person and environment. Although this dissertation is concerned with urban design (i.e. planned interventions), I shall be drawing from non-planned interventions to gain some insight into the relationship between person and urban environment.

In order to do that I shall refer to a number of vernacular settlements. It is important to stress that the case studies presented here are treated as an extension of the theoretical framework developed in Chapter Two. The intention is not to come up with solutions to be implemented, but simply to illustrate the approach put forward here. Another important point is that these vernacular settlements have developed in widely different cultural backgrounds. Such a variety was thought to be of major importance for a number of reasons. First, it allows us to view recurrences of spatial layouts in different settlements not as the result of the adoption of similar world views or the employment of inherited urban types (which would be unlikely), but as the result of the way the human body expresses itself in space, the way it moves from one place to another given a number of environmental

constraints - i.e. the outcome of an immediate interaction between person and environment. The variety of cultural (and I should add economical contexts) also allows for the exploration of different aspects of such an immediate interaction. Hence, in the case of the shantytown of Vila Paranoa (the first case study presented here), I shall be looking at the formation of a network of pathways on the ground; and the evolution of such a network into urban spaces. In the case of the colonial settlement of Ouro Preto, the relation between movement of people and surface layout will be studied in terms of how it defines the hierarchy of routes, and how it is related to the definition of certain spatial locations (such as streets and squares). Also in the case of Ouro Preto, I will touch upon the issue of symbolic meaning and its relation to an immediate interaction between person and environment (an issue to which I will come back in the conclusion of this dissertation). Finally, in the case of York, I shall be looking at the evolution of the urban fabric, analysing some planned interventions that were effected throughout its nineteen centuries of existence, and putting forward a number of design proposals. York is a particularly interesting example in which to look at the impact of planned interventions on a vernacular fabric, given the frequent occurrences of such type of interventions throughout its history, notably in the nineteenth century.

Before presenting the theoretical foundations of the approach adopted here, I shall describe a traditional view of the problem of the relationship between person and environment, a view which contrasts with the one presented here inasmuch as it focuses on a mental world that exists in the heads of individuals. As I shall argue in Chapter One, such a traditional view has been extremely influential throughout

the history of architectural inquiry. No exhaustive review of the literature is presented here, the reason for commenting upon such a traditional view is simply to provide a background for this dissertation's approach.

ARCHITECTURE AND DUALISM

Authors such as E.A. Burtt (1924) have brought our attention to the particular assumptions that underlie the metaphysics of modern science. According to that author, such metaphysical assumptions presuppose the existence of a mathematical world that exists separately from the individual.

A dualism is thus created. Such a dualism takes its most vigorous and influential form in the philosophy of the French thinker and mathematician Rene Descartes (seventeenth century). For Descartes the mathematical world of primary qualities (*Res Extensa*), works as a perfect machine (set up by God). The thinking individual (*Res Cogitans*), which is the other polarity of such a dual, contributes with secondary qualities (such as pain, colour, etc.) in his relationship with the absolute mathematical world. These secondary qualities are imperfect and prone to distortion.

This dualism is carried through in the work of Newton, to whom Burtt attributes a foremost role in the consolidation of the metaphysical basis of modern physical science. Although Newton brings in a strong experimental component in his method, he still relies, by and large, on the idea of a perfect mathematical reality existing independently from humans. Such a conception is most pronounced in his treatment of space and time as absolute clock-like entities, that

stretch infinitely forwards and backwards, and to the past and future, respectively.

Burtt, in his *The Metaphysical Foundations of Modern Physical Science*¹, makes a number of important points about the limitations of such a dualistic conception of our relationship with the world. The same theme is further developed in works such as R. Rorty's *Philosophy and the Mirror of Nature*², or (with particular emphasis to psychology) in Gibson's *The Ecological Approach to Visual Perception*³ (which I shall explore in more detail in the next chapter). I will not here repeat these authors criticisms of dualism; instead, I propose to investigate how such a dualistic conception has affected the way authors of the past and present thought and think about the urban environment.

The study that follows is by no means a thorough account of the history of urban and architectural thinking. It is rather a brief overview which aims to provide a background for the presentation of the approach I adopt to the problem.

This historical overview starts in the fifteenth century with the work of Alberti, which strongly emphasises the perfect mathematical conception referred to a few lines ago. With Alberti we see one of the earliest applications of a rationalist approach to architecture - rationalist inasmuch as it relies on reason and 'a priori' mental

1. Burtt, E.A., The Metaphysical Foundations of Modern Physical Science (London and Henley: Routledge & Kegan Paul, 1980 - first published in 1924).

2. Rorty, R., Philosophy and the Mirror of Nature (Oxford: Basil Blackwell, 1980, 1989).

3. Gibson, J.J., The Ecological Approach to Visual Perception (Boston: Houghton Mifflin Company, 1979).

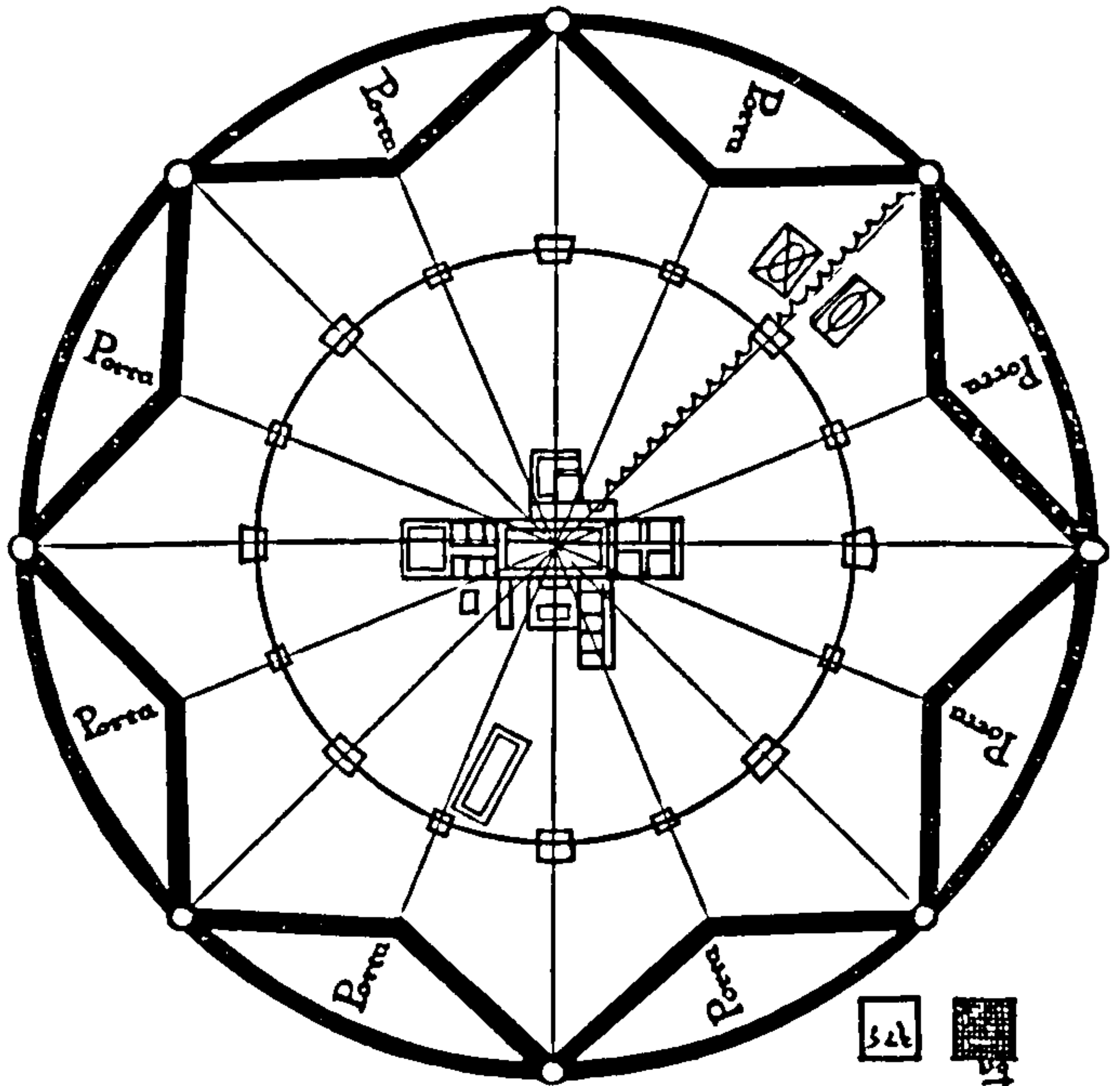
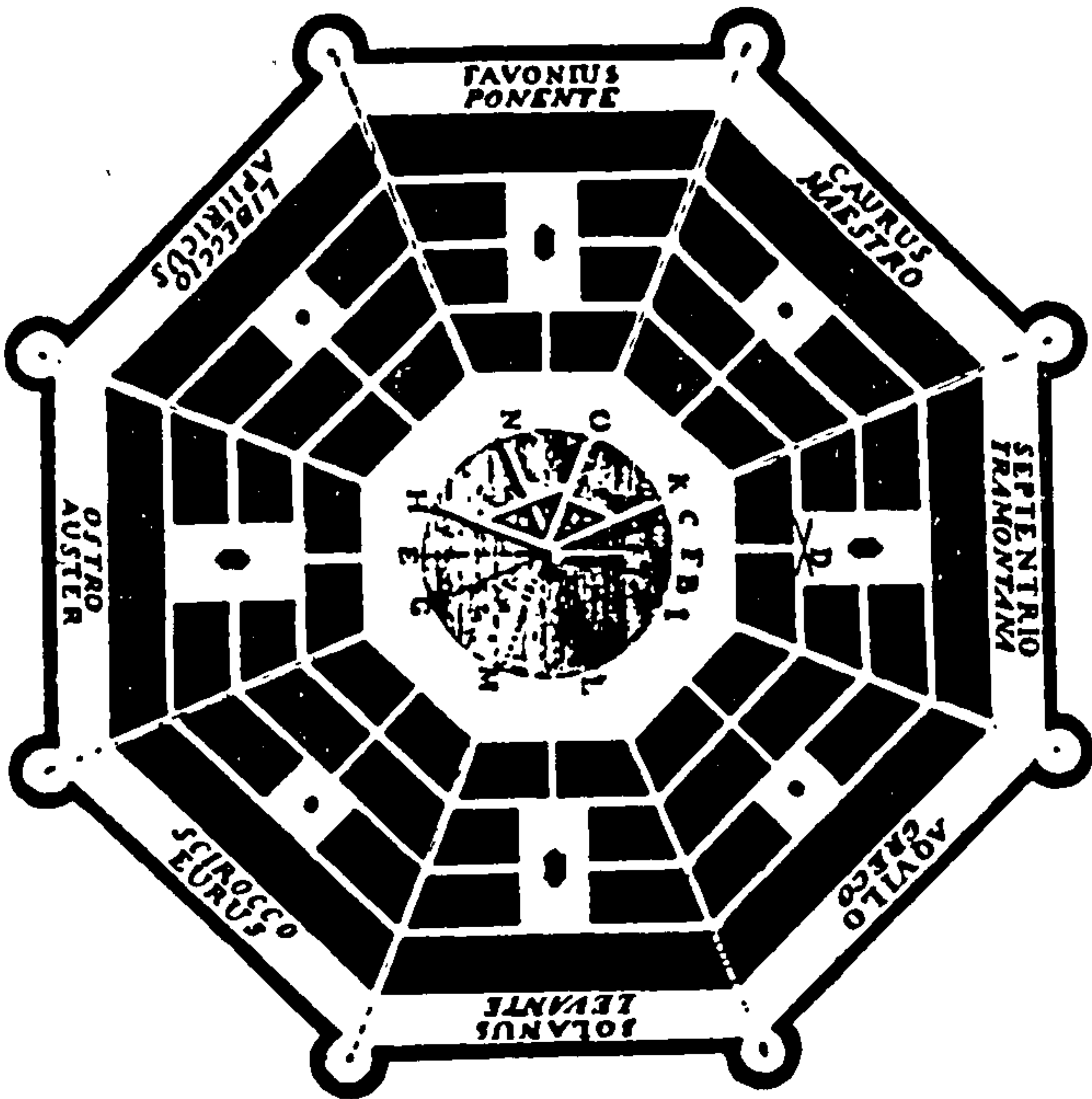
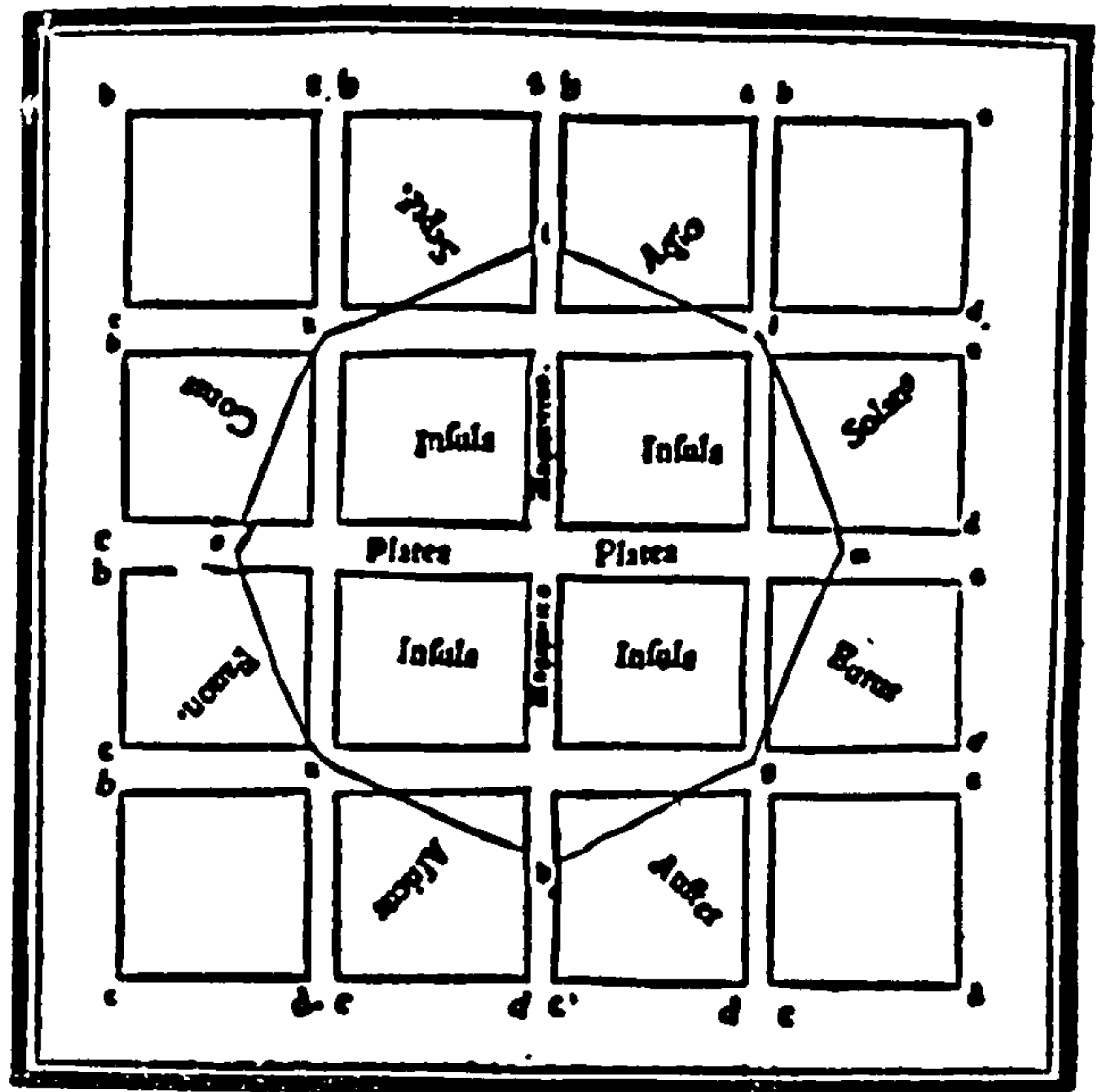
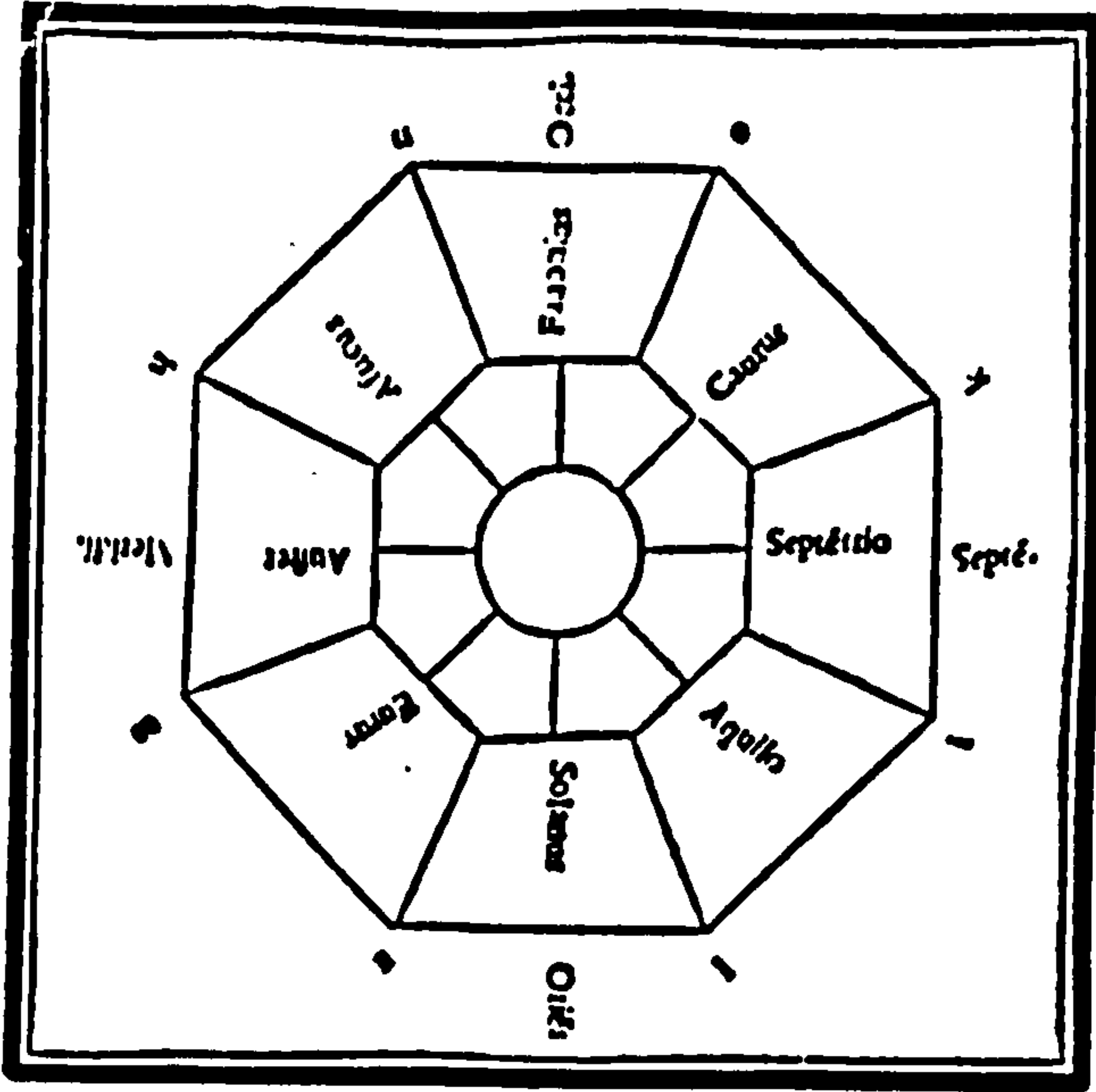


Fig.1.1 (a,b,c) - Vitruvius' town plan ('Ten Books' (a,b) 1511 edition/(c) Galiani). Source: Rosenau, 1959.

Fig.1.2 - Filarete's 'Sforzinda'. Source: Rosenau, 1959.

categorisations to account for our relationship with the environment. Such a rationalist approach, which I argue to be essentially dualistic, has survived right to this century, notably in the work of Modern architects. And rationalist architectural accounts are of particularly importance given their influential role in the production of, and reflection on, urban spaces.

Apart from rationalist architecture, there is another expression of dualism to be considered here. Such an expression, called constructivism, has made a strong appearance in recent (past thirty years) studies about the environment. Constructivism is mainly concerned with mental processes that are said to underlie individual's perception of the environment. Similarly to rationalism, as I shall argue, such an approach adopts a dualistic view inasmuch as mental processes are considered independently from environmental features.

This focus on dualistic approaches to the relationship between person and the urban environment, does not mean to overlook the fact that there have been a number of alternative views to the problem; views that have certainly added to our understanding of the urban environment (of authors such as J. Ruskin (1819-1900), P. Geddes (1854-1932), L. Mumford (1895-1990), C. Sitte (1843-1903), and more recently C. Alexander (1936-)). Although, I shall not explore these alternative views in detail in this chapter, references to them will be made throughout the dissertation, whenever they are believed to be relevant to the issues discussed. Besides that, a brief account of the aspects of the work of some of them is given in Appendix 1.

Let us now look in more detail at rationalist and constructivist approaches to the urban environment.

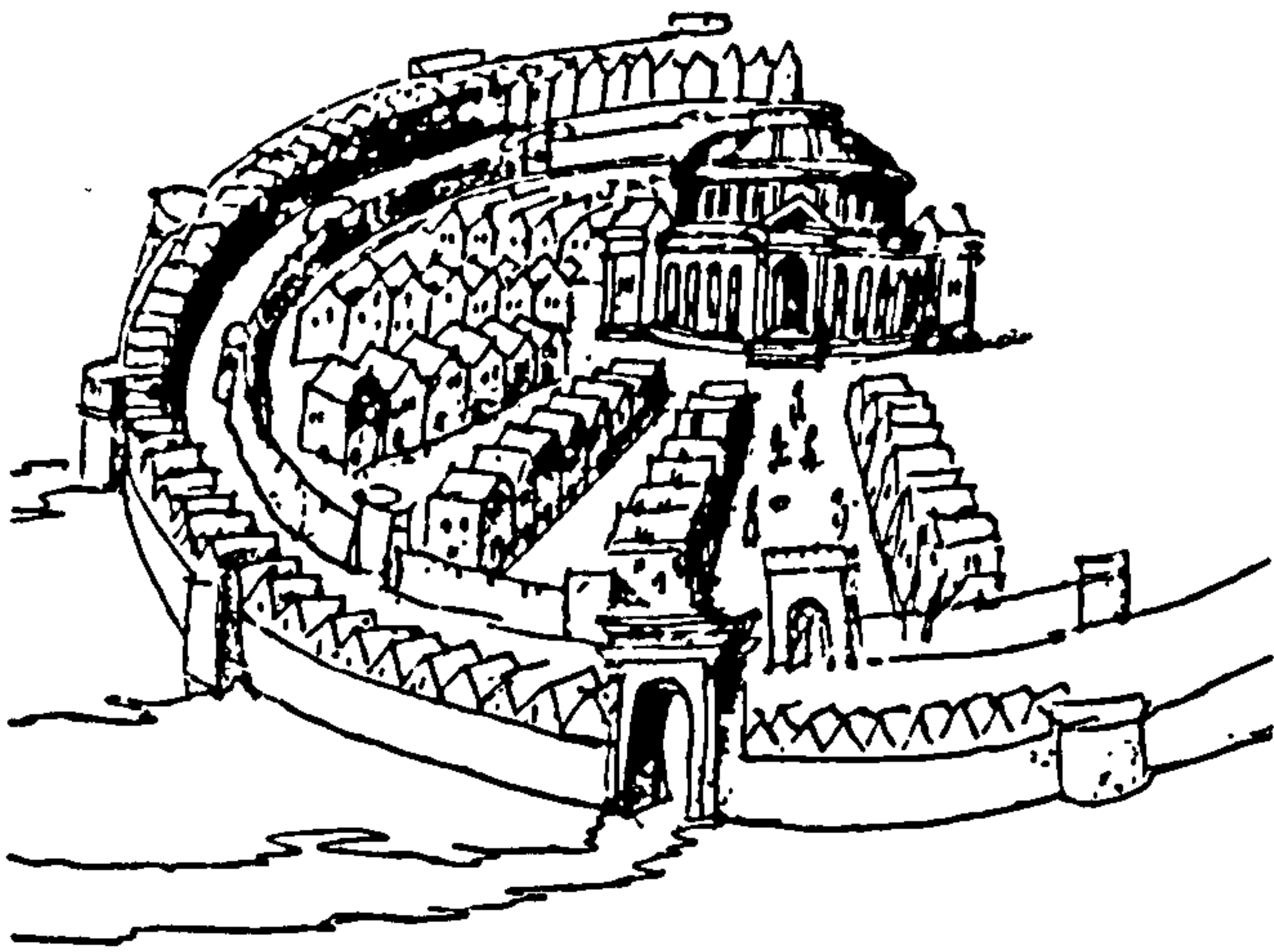


Fig.1.3 - Plan for an ideal city, c.a. 1500 (attributed to Fra Giocondo). Source: Zucker, 1959.

RATIONALISM

And this wall or division, I think, ought not to be drawn like a diameter clear through the area, but ought rather to be made to enclose one circle within another: for the richer sort, desiring a more open space and more room, will easily content to be shut out of the inner circle, and will be very willing to leave the middle of the town, to cooks, victuallers and other such trades...⁴

The recommendations for a city of a king or a tyrant are only an aspect of Alberti's efforts to accommodate the built environment to the necessities of its citizens and inhabitants; following this item Alberti describes the urban arrangements that would suit a republic, or lodgements for soldiers. The requirements for each of these contexts are different; nevertheless, there is a feature that persists throughout his *Ten Books* whenever reference is made to the city as a whole. Such a feature is expressed in the quotation above through the concentric circles that should organise the layout of the tyrant's dominion; namely, it is the convergent nature of the city. This emphasis on convergence underlies Alberti's recommendations for the placement of the 'principal temple', perhaps most conveniently, in the 'middle of the city'⁵; or his proposal of a centralised square with radiating streets⁶.

A vision of the city as a convergent entity is found repeatedly in the writings about the urban environment that followed Alberti's *Ten Books*, as we shall see shortly. It is also present in the classical

4.L.B. Alberti, Ten Books on Architecture, Translated into Italian by C Bartoli, and into English by J. Leoni, edited by J. Rykwert (London: Alec Tiranti, 1955, first published in 1755), Book V, Chapter I.

5.L.B. Alberti, Book V, Chapter VI

6.Zucker, P., Town and Square, from the Agora to the Village Green (New York and London: Columbia University Press, 1959), p. 101.

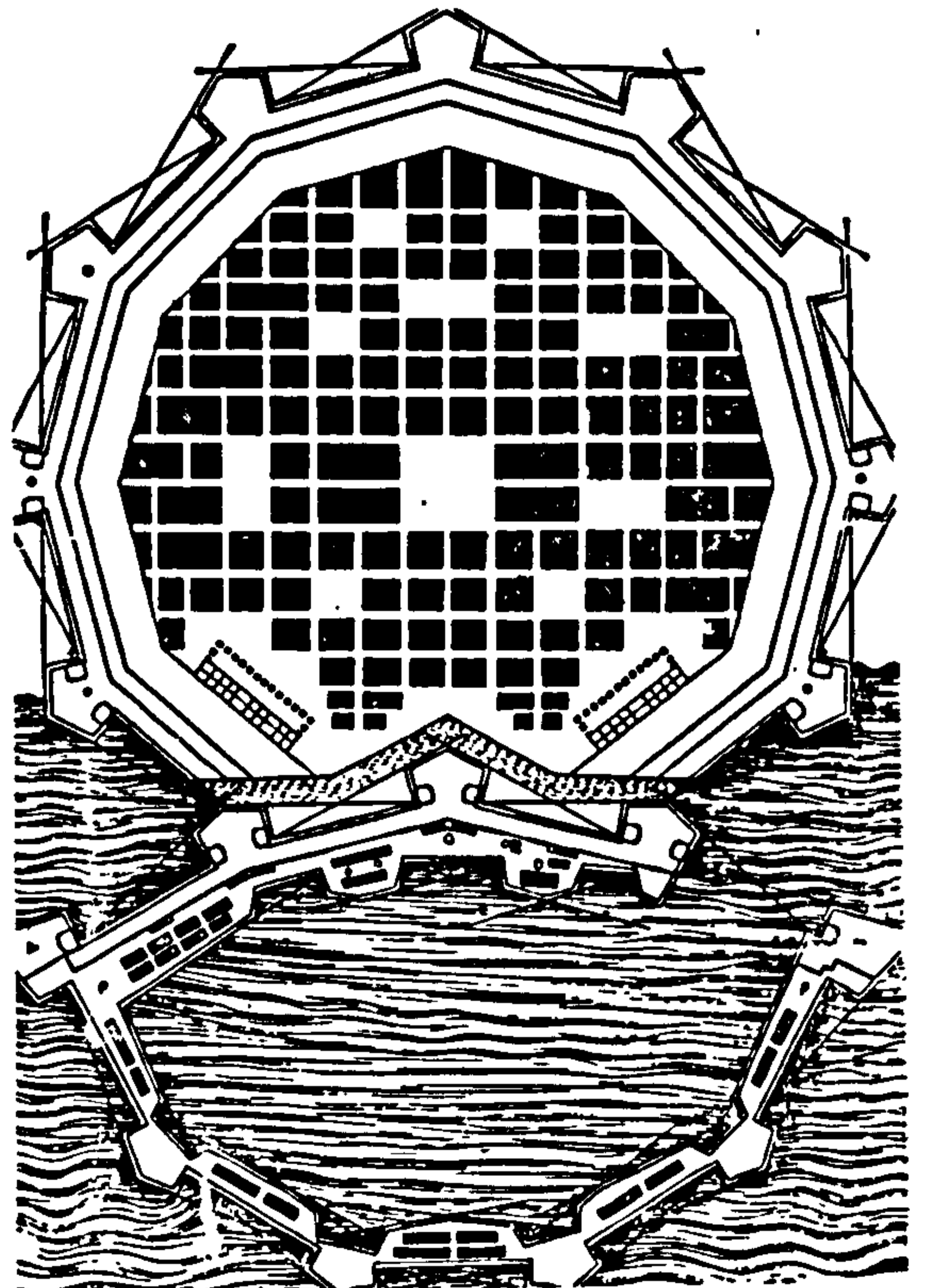
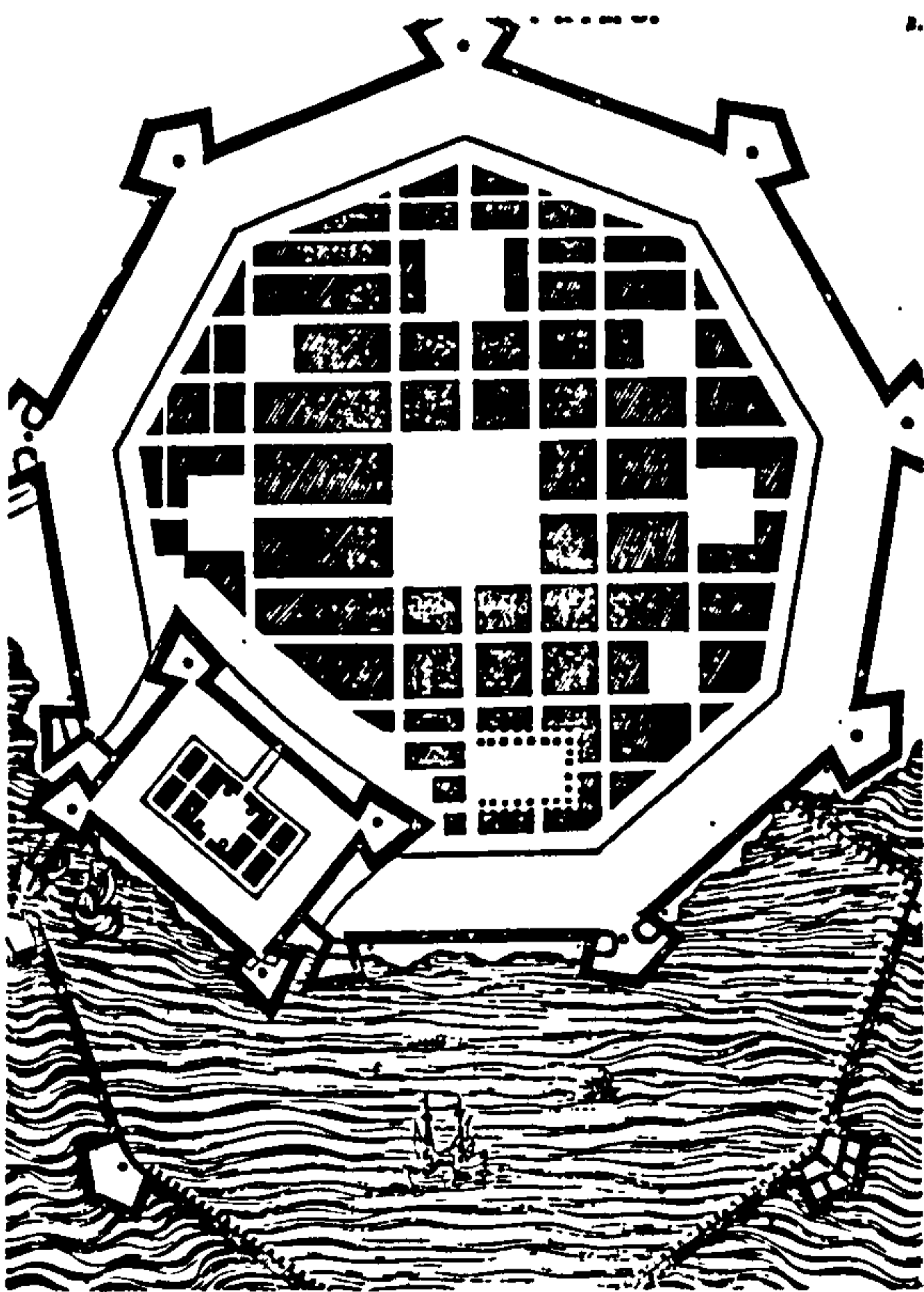
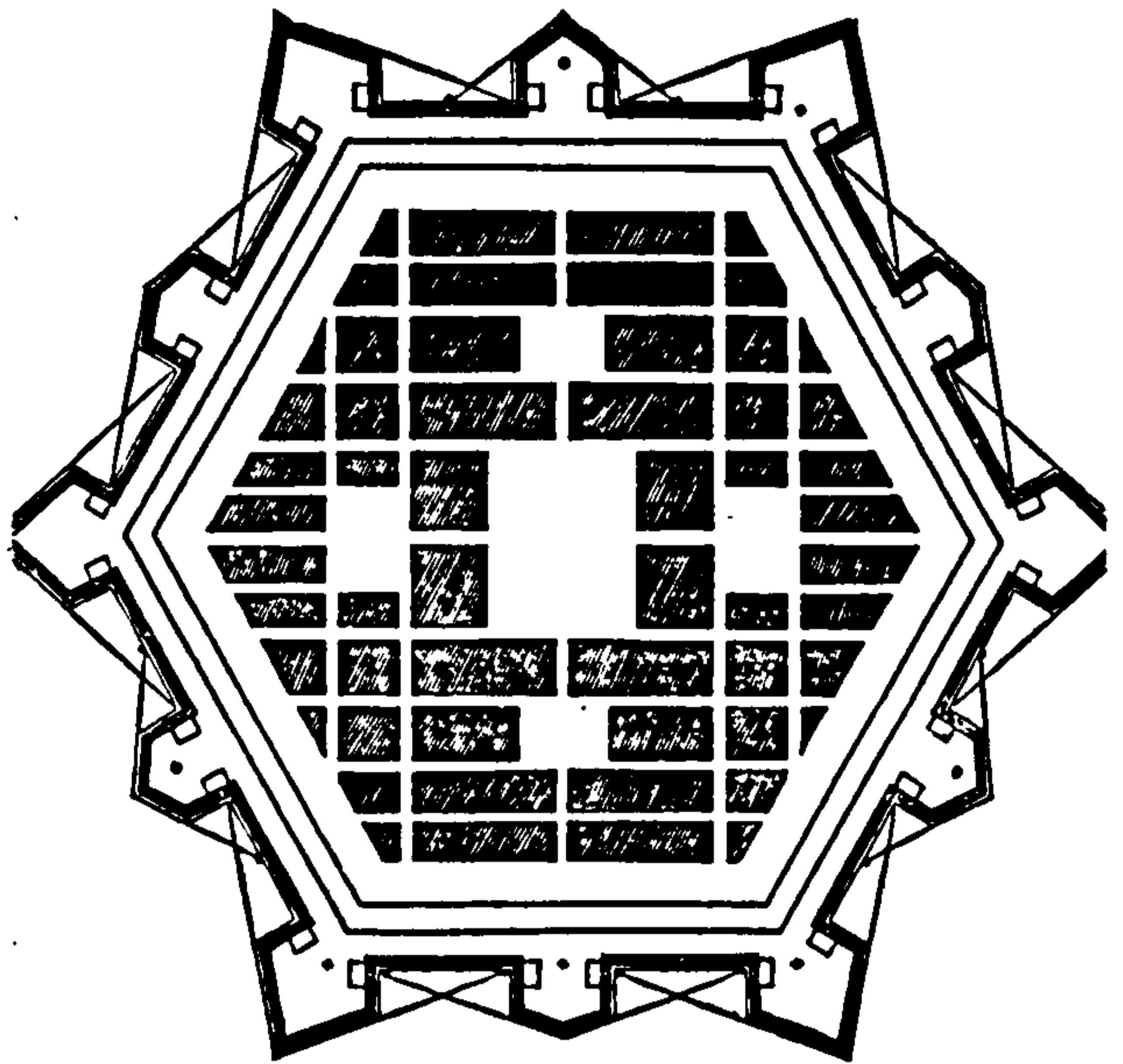
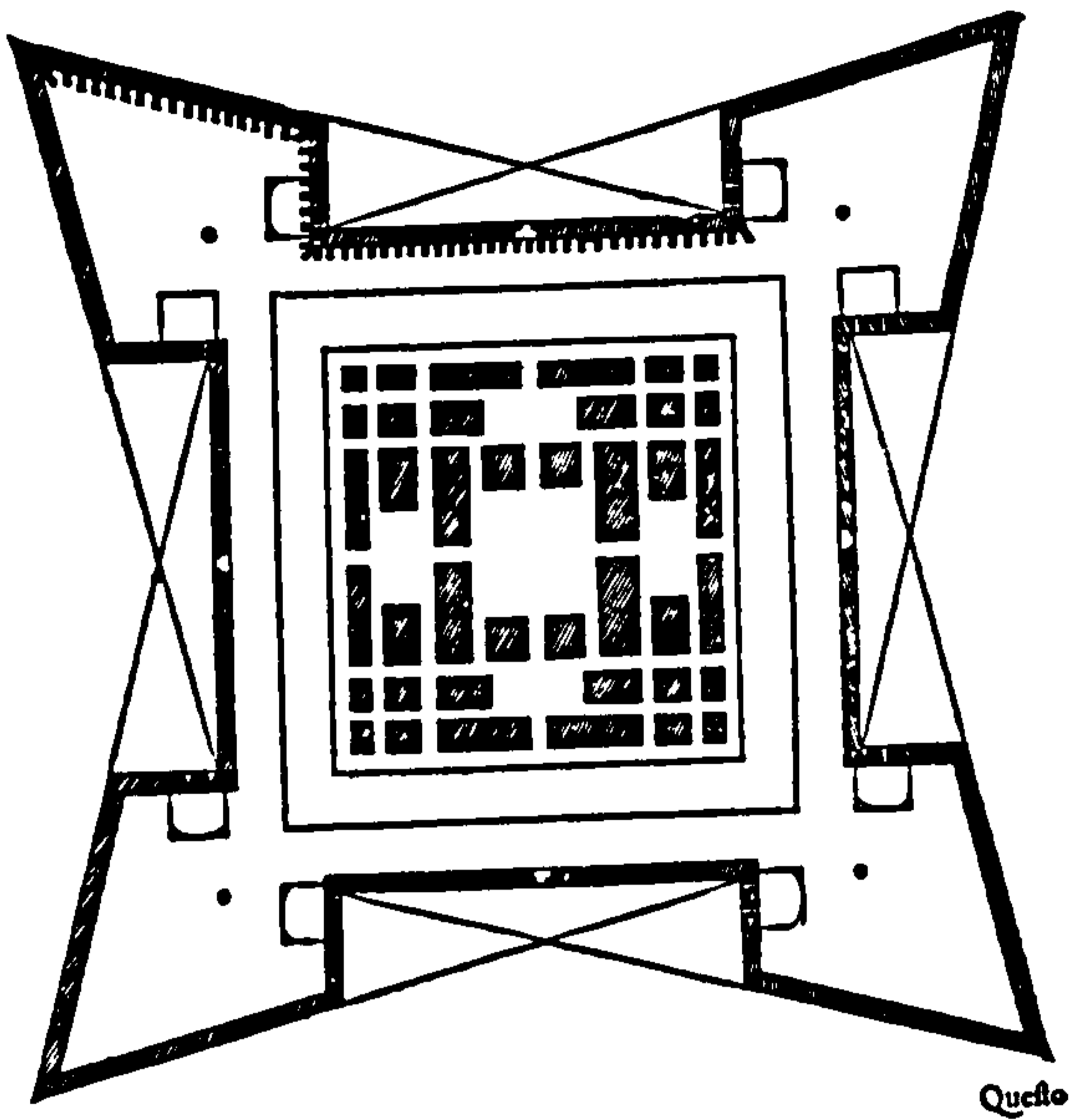


Fig.1.4 (a,b) - Cataneo's visionary cities I. Source: Cataneo, 1964.

Fig.1.5 (a,b) - Cataneo's visionary cities II. Source: Cataneo, 1964.

period that was to inspire Renaissance authors, as attested by Plato's description of the legendary island of 'Atlantis', 'which contained a mount, encircled by five zones of land and water, and a palace enclosed by round walls, on the 'secret island'...'7. The same notion is found in Vitruvius' *Ten Books*, for instance, when he describes the origins of dwelling:

... it was the discovery of fire that originally gave rise to the coming together of men, to the deliberative assembly, and social intercourse.⁸

or when he comments upon the general layout of towns (see fig.1.1):

Towns should be laid out not as an exact square nor with salient angles, but in circular form...⁹

Following Alberti's *Ten Books on Architecture* (which was first presented to the Pope Nicholas V in 1452 and first printed in Florence in 1485)¹⁰, many more treatises appeared. Among the most important ones we find that of Antonio Filarete (written between 1460 and 1464, and published posthumously¹¹), where the convergent feature is strongly expressed through the octagonal shape that the city assumes, with eight streets radiating from the central square (fig.1.2). Francesco di Giorgio Martini also proposes an octagonal shape in his *Trattato di*

7. Rosenau, H., The Ideal City, in its Architectural Evolution (London: Routledge and Kegan Paul, 1959), p. 12.

8. Vitruvius, The ten Books on Architecture, translated by M. H. Morgan (New York: Dover, 1960), Book II, Chapter I.

9. Vitruvius, Book I, Chapter V.

10. Alberti, L.B., Ten Books on Architecture. Translated into English by Leoni, and edited by J. Rykwert (London: Alec Tiranti Ltd., 1955), p.vi.

11. Zucker, op.cit., p.101.

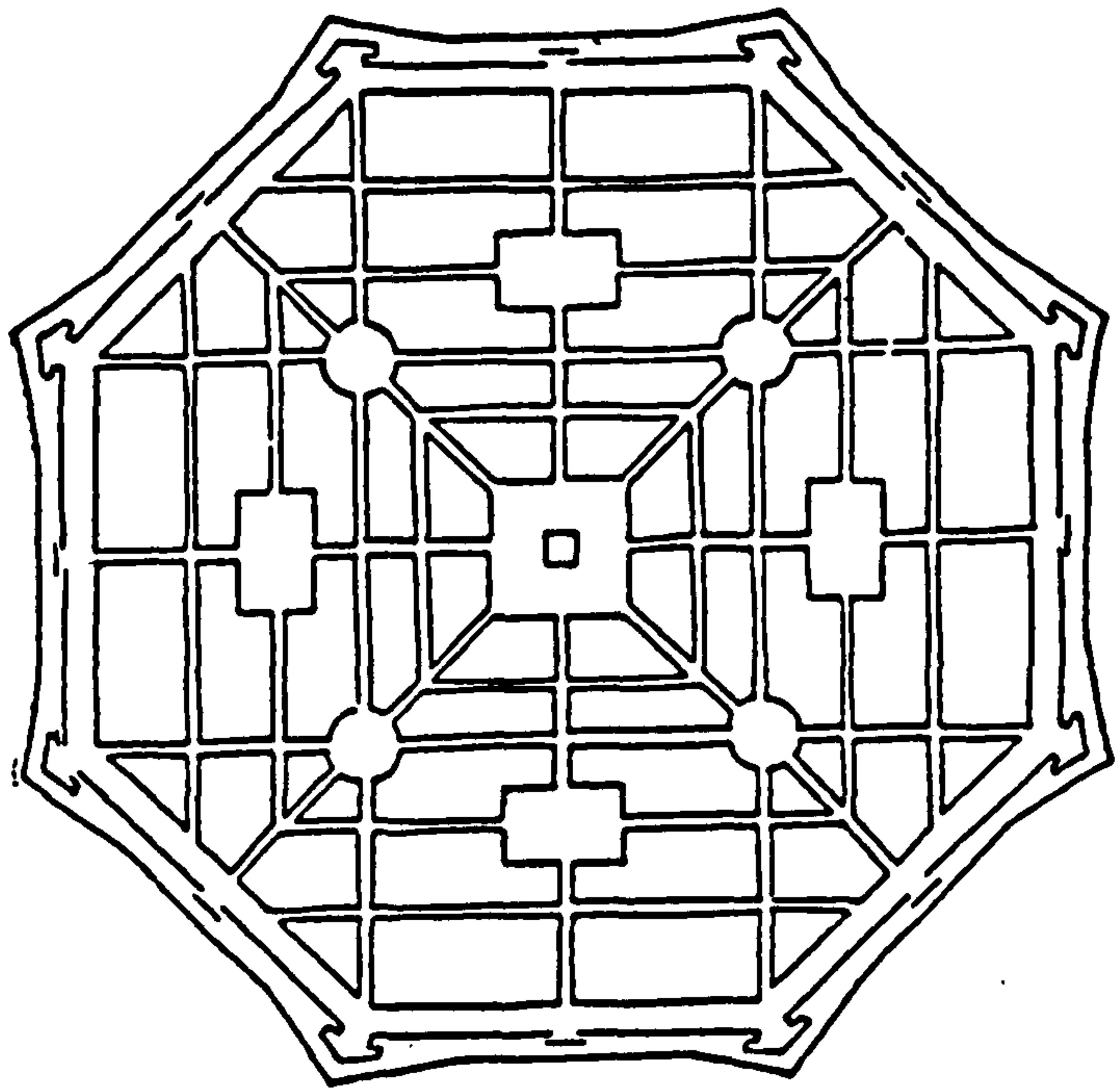


Fig.1.6 - Giovane's ideal city. Source: Zucker, 1959.

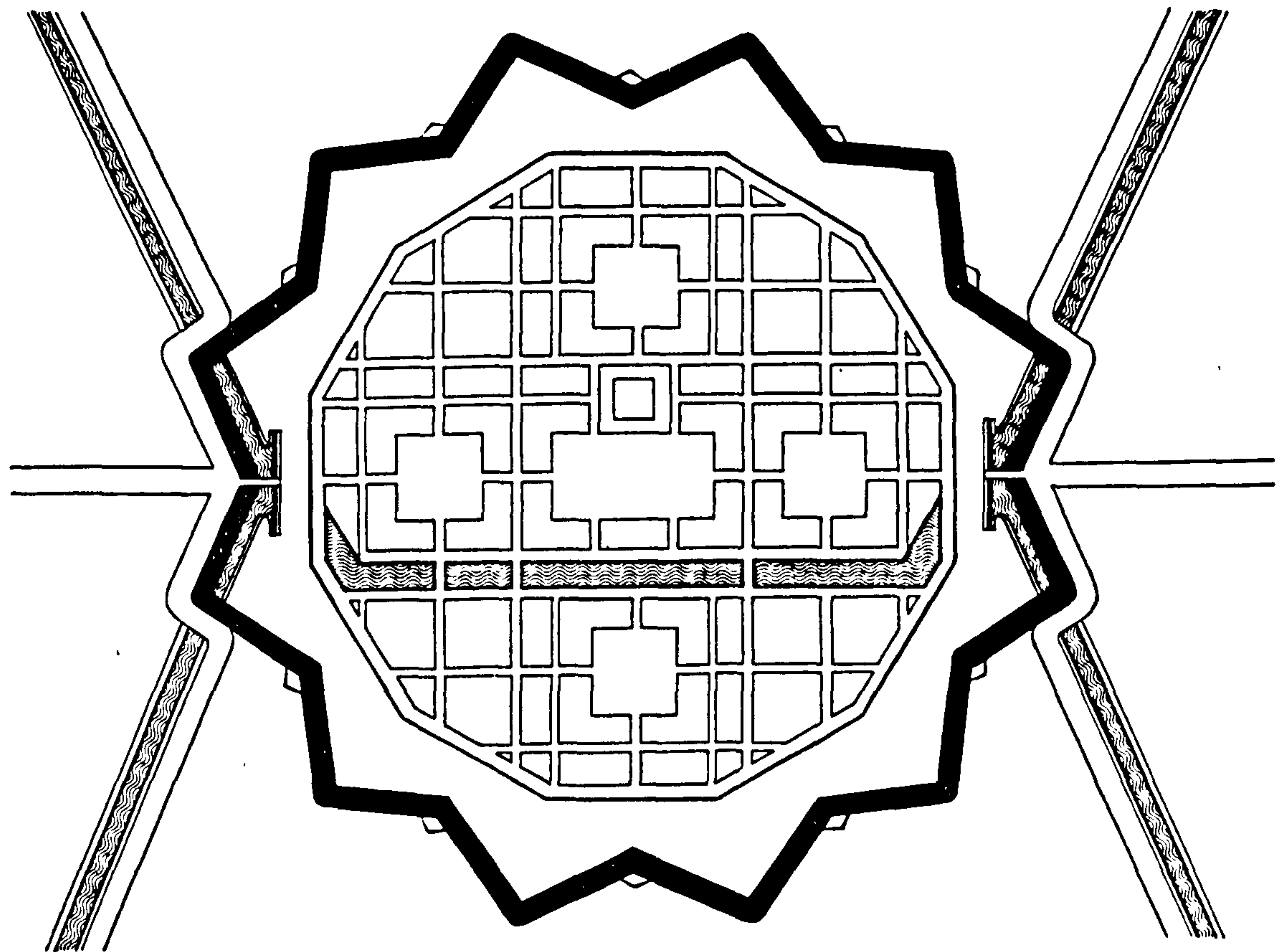


Fig.1.7 - Scamozzi's ideal city. Source: Rosenau, 1959.

Architettura Civile e Militare (ca. 1500, first published in 1841¹²), where the overall layout is similar to that of the ideal city depicted in a drawing attributed to Fra Giocondo (ca. 1500), shown here in fig.1.3. Another important treatise is *I Quattro Primi Libri di Architettura* by Pietro Cataneo, which was to be extremely influential in the two centuries that followed its publication in 1554¹³. Cataneo's treatise is lavishly illustrated with visionary cities of different regular shapes, such as the square, the pentagon, the hexagon (figs.1.4), and shapes derived from these (fig.1.5).

Looking at the plans for ideal cities proposed in the late XVI century, such as those in Vasari il Giovane's treatise *Citta Ideale* (1598)¹⁴ (fig.1.6), or by Vincenzo Scamozzi (ca. 1615)¹⁵ (fig.1.7), we find city layouts similar to those in Cataneo's treatise.

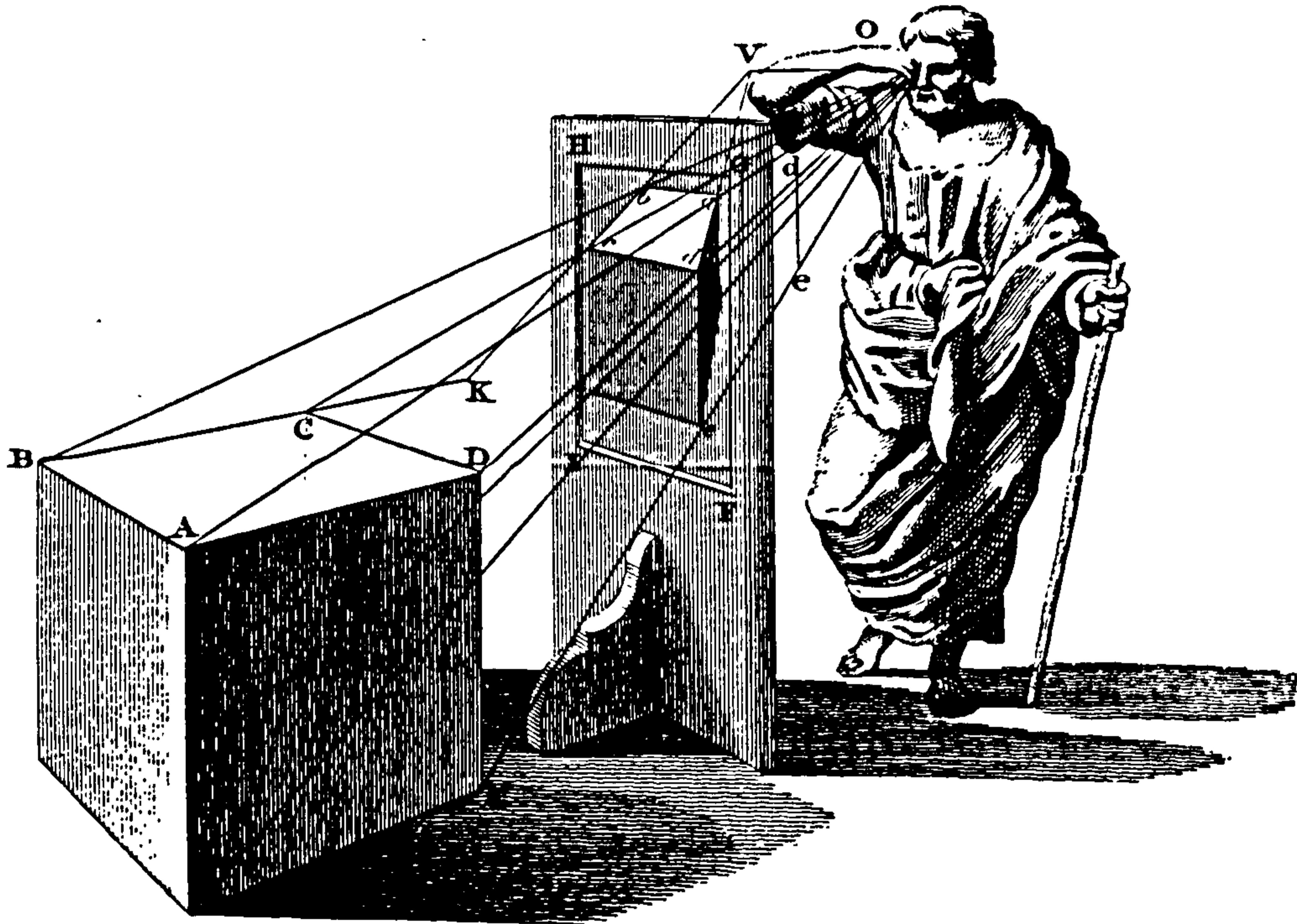
But convergence is only one aspect that interest us in these visions. Another important factor is the very abundance of writings about the city that sprung up from the XIV century onwards. Such an abundance needs to be seen in the light of the rationalist project that gained impetus in the Renaissance, where the essential concern was with the building up of a precise and perfect description and analysis of the world. This is an ideal expressed in the formulation of the linear perspective drawing, where the optic principles laid down by Euclid in his treatise (ca. 300 BC.) were retrieved. First formulated by L.B. Alberti in a book entitled *Della Pittura* (written in 1436), the

12.Ibid.

13.Ibid., p.103.

14.Ibid., p.105.

15.Ibid.



7.1 The principle of linear perspective

The pyramid of sight defined by the object $ABCDE$ and the centre of rotation O of the eye of the spectator, who keeps his other eye shut, is intersected by the surface $FGHI$, thus forming on it the projection $abcde$ in linear perspective. If the surface $FGHI$ is a transparent Leonardo window, the eye sees this perspective covering the actual object exactly. (The whole figure here is of course shown in perspective including the picture $abcde$, which is seen foreshortened, and from the side opposite to the eye O . The spectator is depicted holding his hand to his eye presumably because in earlier illustrations of this period strings were used to materialize the lines constituting the pyramid of sight.) (From Brook Taylor (1811), *New Principles of Linear Perspective*.)

Fig.1.8 - The principle of linear perspective. Source: Pirenne, 1970.

'construzione legitima', proposed an accurate mapping of the retinal image onto an imaginary plan that was made to intersect the pyramid of sight (fig.1.8).

Alberti's *Della Pittura* reveals the paramount status attributed to absolute mathematics in our relationship with the world. Book One of that treatise starts with the following statement:

To make clear my exposition in writing this brief commentary on painting, I will take first from the mathematicians those things with which my subject is concerned. When they are understood, I will enlarge on the art of painting from its first principles in nature in so far as I am able.¹⁶

This first book consists almost entirely of mathematics and geometric considerations. Only once these considerations have been articulated does Alberti go on to talk about other features of painting such as colour, composition, and so forth. Such features, in their turn, are subjected to mathematical treatment, so as to allow for the re-creation of a three-dimensional reality:

I say the function of the painter is this: to describe with lines and to tint with colour on whatever panel or wall is given him similar observed planes of any body so that at a certain distance and in a certain position from the centre they appear in relief, seem to have mass and to be lifelike.¹⁷

The painter, in Alberti's words, must be primarily a geometrician:

It would please me if the painter were as learned as possible in all the liberal arts, but first of all I desire he know geometry... Our instruction in which all the perfect absolute art of painting is explained will be

16. Alberti, L.A., *On Painting*, translated by J. R. Spencer (New Haven & London: Yale University Press), p. 43.

17. *Ibid.*, p. 89.

easily understood by a geometrician, but one who is ignorant in geometry will not understand these or any other rules of painting. Therefore, I assert that it is necessary for the painter to learn geometry.¹⁸

Della Pittura concludes with a statement which summarises the intent of Alberti's own project, and how that author sees further contribution to it: 'I believe that if my successor is more studious and more capable than I he will (be able to) make painting absolute and perfect'.¹⁹

Or, such an ideal was widely shared by Renaissance (and post-Renaissance) authors on art and architecture. The machines for drawing depicted in Albrecht Durer's woodcuts are a good illustration of the Humanists' obsession with accuracy and perfection, another is the description of the method of perspective drawing given to us by Brook Taylor in his *New Principles of Linear Perspective* (first published in 1715):

...let the reader consider that a picture drawn in the utmost Degree of Perfection, and placed in a proper Position, ought so to appear to the Spectator, that he should not be able to distinguish what is there represented, from the real original Objects actually placed where they are represented to be... In order to produce this Effect, it is necessary that the Rays of Light ought to come from the several Parts of the Picture to the spectators Eye, with all the same Circumstances of Direction, Strength of Light and Shadow, and Colour, as they would do from the corresponding Parts of the real Objects seen in their proper Places.²⁰

From the above fragment we shall pick out terms such as 'utmost

18.Ibid., p. 90, emphasis added.

19.Ibid., p.98.

20.In Pirenne, M.H., Optics Painting and Photography (Cambridge: Cambridge University Press, 1970), p. 72 .

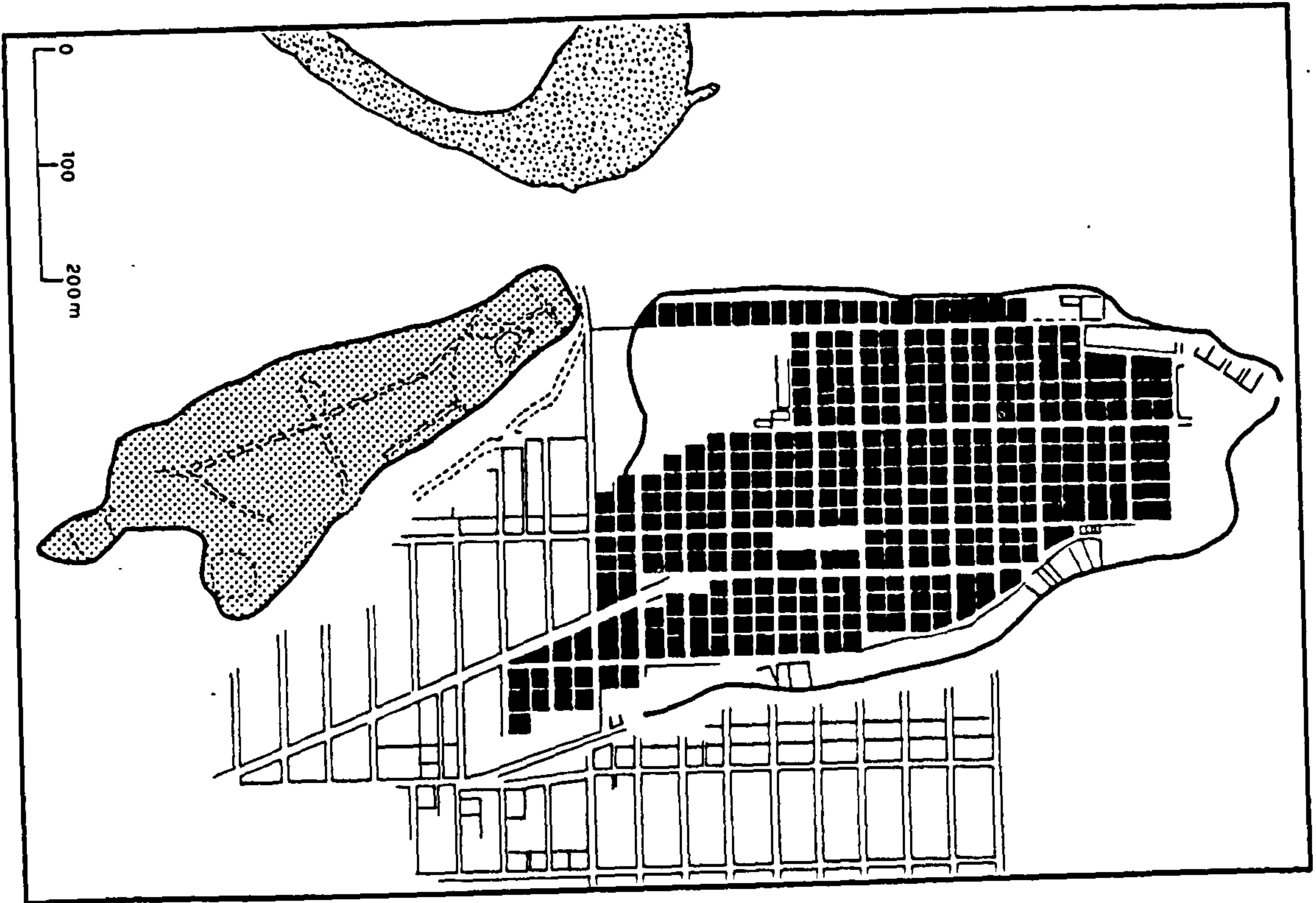
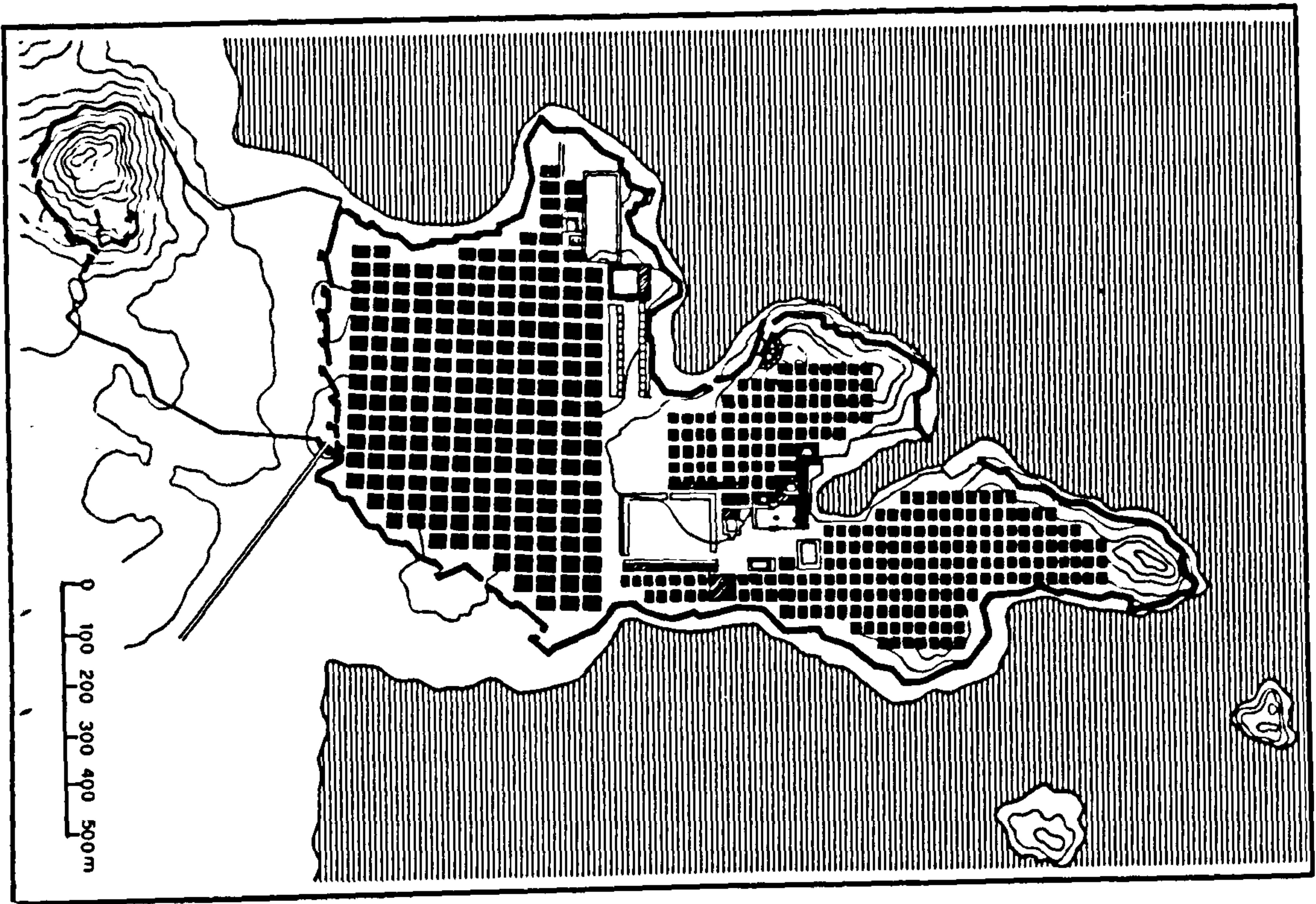


Fig.1.9 (a,b) - Plan of Miletus & Olympus. Source: Benevolo, 1980.

degree of perfection', 'proper position', 'correspondence', 'real objects', and 'proper places', as they denote the ethos of the rationalist project: namely the assertion of a reality out there, which is waiting to be described and precisely measured for subsequent control by man.

The fore mentioned proliferation of writings about the city can be seen as an expression of the above described rationalist ideal of controlling the environment, and imposing 'rational order'. Such an ideal is, to be sure, not born with the Renaissance, being already present in the classical culture it took its inspiration from, as attested by the deployment of the chequer board pattern by ancient Greeks in the layout of their colonies (fig.1.9).

A third aspect that is of utmost importance to us, and which is repeated throughout the visions presented in the beginning of this chapter, is the fact that the ideal cities are self-contained structures, that they have clear-cut boundaries. Such a self-contained feature is directly related to the regular geometric shapes these cities adopt; which is again part of the movement towards past classical cultures, notably here, the retrieval of Euclid's principles of optics and geometry - the straight line (that defines the trajectory of the emission of 'tentacles' making possible the process of vision²¹), the plane, the square, the circle, and the triangle.

If we come to Alberti once more, we find an extensive use of Euclidean geometry in the description of environmental features, such as platforms:

21. According to Euclid vision was based on the emission of visual rays from the eyes to objects in space. Such rays were said to travel in a straight line, in a medium of even density.

Every design therefore is composed of lines and angles; the lines are that extreme design which includes the whole space of the platform.²²

Of platforms, some are angular and others circular; of the angular, some consist all of right lines, and some of right lines and curve mixed together.²³

Right angles are very convenient; the acute are never used even in mean inconsiderable platforms...²⁴

Alberti looked at the environment and characterised straight lines, curves (defined by him as 'part of a circle'), and angles. When describing urban spaces the same regular geometry was visualised by that author:

The streets within the city, besides being handsomely paved and cleanly kept, will be rendered much more noble, if the doors are built all after the same model, and the houses on each side stand in an even line, and none higher than the other.^{25 26}

22. Alberti, Book I, Chapter VII.

23. Alberti, Book I, Chapter VIII.

24. Ibid.

25. Ibid. Book VIII, Chapter VI

26. Broadbent, G., Emerging Concepts in Urban Space Design (London & New York: Van Nostrand Reinhold, 1990), pp.35/6.

points out that Alberti, in his *De Re Aedificatori* (Ten Books on Architecture) advocates a 'medieval irregular' layout:

'If the city is noble and powerful, the streets should be straight and broad, which carries an air of greatness and majesty; but if it is only a small town or a fortification, it will be better, and as safe, not for the streets to run straight to the gates; but to have them wind about sometimes to the left, near the wall, and specially under the towers upon the wall; and in the heart of the town, it will be handsomer not to have them straight, but winding about several ways, backwards and forwards, like the course of a river'. (Alberti, op.cit., Book IV chap. V).

In his justification for the adoption of an irregular layout for small settlements, Alberti relies on his own experience of urban spaces: by having an organic layout, streets 'by appearing much longer, ...will add to the idea of greatness of the town, they (streets) will likewise conduce very much to beauty and convenience, and be greater security against all accidents and emergencies...' (Ibid.)

On the other hand, Alberti compares his ideas with the ancient wisdom,

And where the environment seemed to move away from these pure geometric elements, there was nothing to be seen but disorder. As Cataneo says of the cities of antiquity, they 'have sprung up without rational uniform plans, that means by mere chance'.²⁷ And for a more radical view on the subject, we have a comment by one of the (if not 'the') protagonist(s) of rationalist thinking, the French mathematician and philosopher Rene Descartes:

...there is not usually so much perfection in works composed of several parts and produced by different craftsmen as in the works of one man. Thus we see that buildings undertaken and completed by a single architect

(Footnote 26 continued from previous page)

referring to the account of writers of the past: '*Cornelius Tacitus* writes, that *Nero* having widened the Streets of *Rome*, thereby made the city hotter, and therefore less healthy...' (Ibid.)

The passages quoted above are by no means exceptions in Alberti's Ten Books on Architecture. References to his own experience and to the accounts of ancients often recur throughout his text (e.g. Book I chap. X, or chap. XII). Such a way of approaching the problem of architecture reveals that Alberti was quite happy to describe and evaluate spaces and buildings in terms of how they felt to him (and other people - the ancients), rather than through the strict mathematical approach later adopted by philosophers such as Descartes. The starting point of Alberti, however, is the mathematical world of Euclidean geometry (which also underlies other of his works such as *Della Pittura*), composed of points, straight lines, circles, plans, etc.. In the first chapter of Book One of *De Re Aedificatori*, for instance, Alberti states that: 'The whole force and rule of the design, consists in a right and exact adapting and joining together the lines and angles which compose and form the face of the buildings. It is the property and business of the design to appoint to the edifice and all its parts their proper places, determinate number, just proportion and beautiful order, so that the whole form of the structure be proportionable'.

Even when Alberti refers to the ancients (to gain insight into the disposition of walls, for instance), who 'constantly avoided drawing any of the outer lines of the platform quite straight, so as to let any great length go on without being interrupted by the concavity of some curve line, or the intersection of some angle...' (Book I Chap. X), he still describes the issue in terms of Euclidean geometry; i.e. lines, curves, angles, etc.. The main drive of Alberti, when talking about the urban environment is essentially a rationalist one. The question of how such rationalist inclination fits with his observations of empirical nature, to be sure is an interesting problem. However, I shall not address it, given the limited space available here.

27.Zucker, op.cit., p.103.

are usually more attractive and better planned than those which several have tried to patch up by adapting old walls built for different purposes. Again, ancient cities which have gradually grown up from mere villages into large towns are usually ill proportioned, compared with those orderly towns which planners lay out as they fancy on level ground. Looking at buildings of the former individually, you will often find as much art in them if not more than in those of the latter; but in view of their arrangement - a tall one here, a small one there - and the way they make the streets crooked and irregular you would say it is chance rather than the will of men using reason, that placed them so. And when you consider that there have always been certain officials whose job is to see that private buildings embellish public places you will understand how difficult it is to make something perfect by working only on what others have produced.²⁸

Descartes' architectural analogy epitomises the ideals of perfection and imposition of order associated with self-contained structures, repetition, and geometrically regular shapes, proper to the rationalist project.

As Andrew Benjamin points out, the passage above 'refers, if only initially, to Descartes' attempt to justify both his own philosophical project as well as establish the necessity of its being undertaken by a single philosopher working alone'.²⁹ This idea of the need of an individual, who through the power of reflection and use of reason, will lead the way towards perfection, is a most influential concept in the architectural milieu, which we shall find not only in the 'Prime Mover' impersonation of Le Corbusier, but also creeping into frameworks of authors who direct their interests to vernacular architecture.

28. Descartes, R., Discourse on Method, in Philosophical Writings of Descartes, vol.1 (Cambridge: Cambridge University Press, 1985), p.116.

29. Benjamin, A., 'Derrida, Architecture and Philosophy', Architectural Design, 58, no.3/4 (1988), 8-11 (p.8).

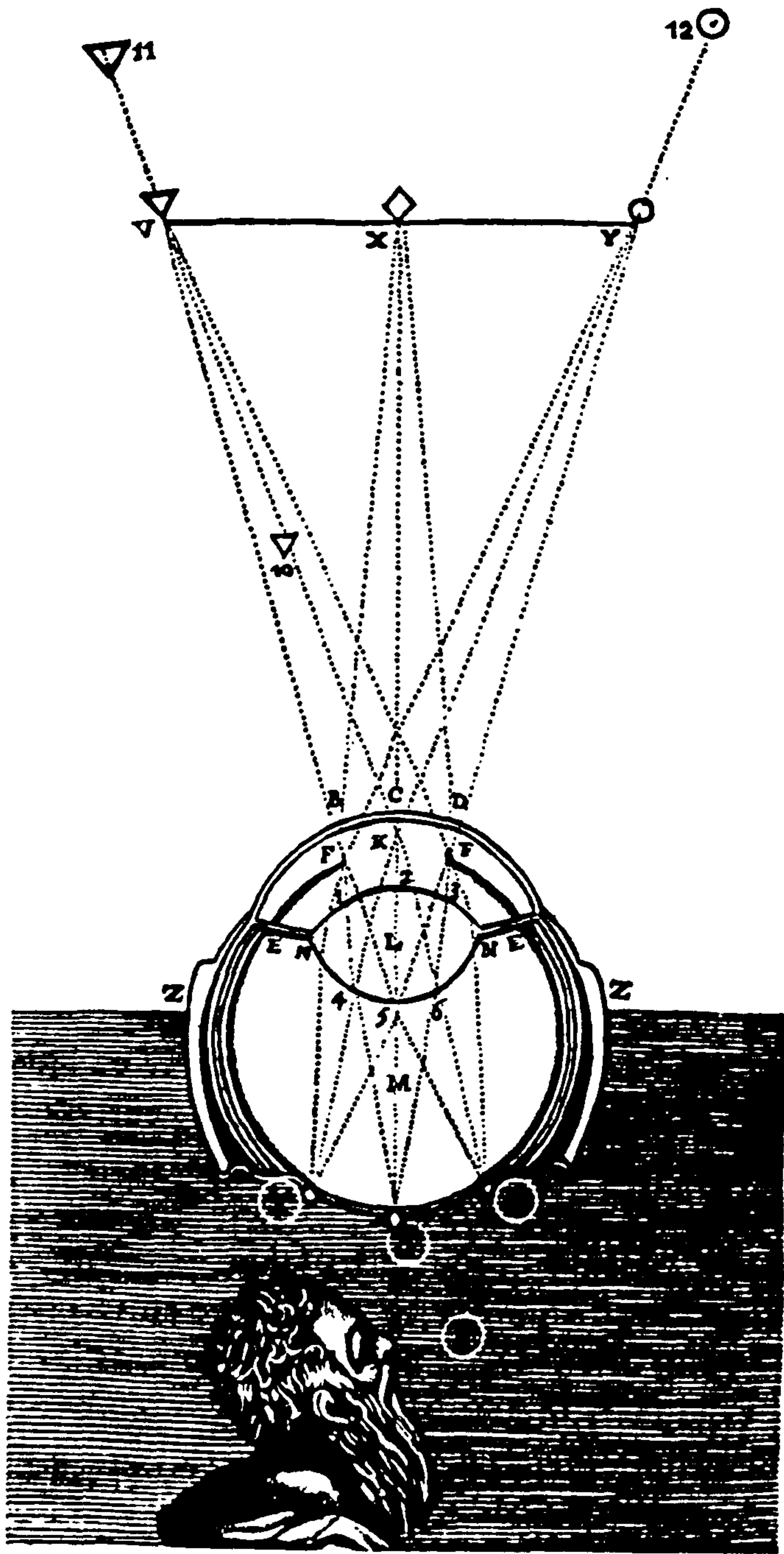


Fig.1.10 - Indirect perception. Source: Descartes, 1963.

The importance of reason in people's relationship with the world, is further emphasised by Descartes when he puts forward his ideas about perception:

First, it is the soul which sees, and not the eye; and it does not see directly, but only by the means of a brain (fig.1.10).³⁰

Descartes' contribution to the rationalistic project was not only at the philosophical level, it also extends to the provision of tools for the actualisation of such a project. The system of co-ordinates, which is at the basis of the elaboration of systems of descriptions, such as analytic geometry, is an example of that.

From Descartes to the present, this rationalist project has continued; indeed, is at its peak, with scientific development, space travels, and control over (or rather attempt to control) the environment (as attested by hydroelectric power stations, and satellites, among others).

In the history of reflections on the urban environment (permeated by the rationalist attitude as much as other areas of knowledge), we shall see that the above mentioned continuity has persisted unshaken, even if punctuated by a number of reactions. The odd Baroque, or Rococo (as the very spiteful terminologies reveal: the term 'baroque' originally means an irregularly shaped pearl, 'rococo' denotes excessively elaborated ornamentation), were quickly dismissed by the more enduring and deeply rooted rationalist movements, such as the Neo-classical, the Beaux-arts tradition, or the Modern Movement. Let us look more closely at the attitudes that followed the Renaissance

30. Descartes, R., Optics, Ibid. p. .

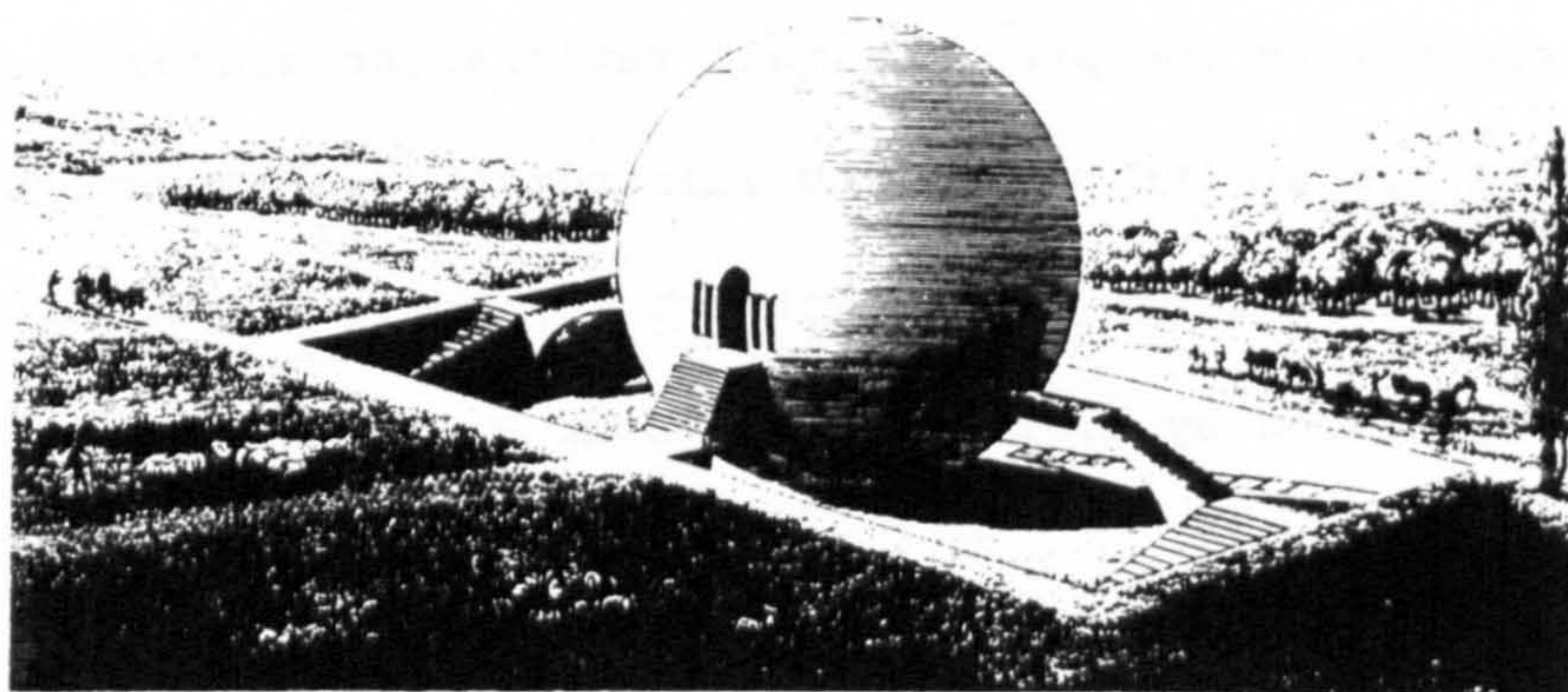
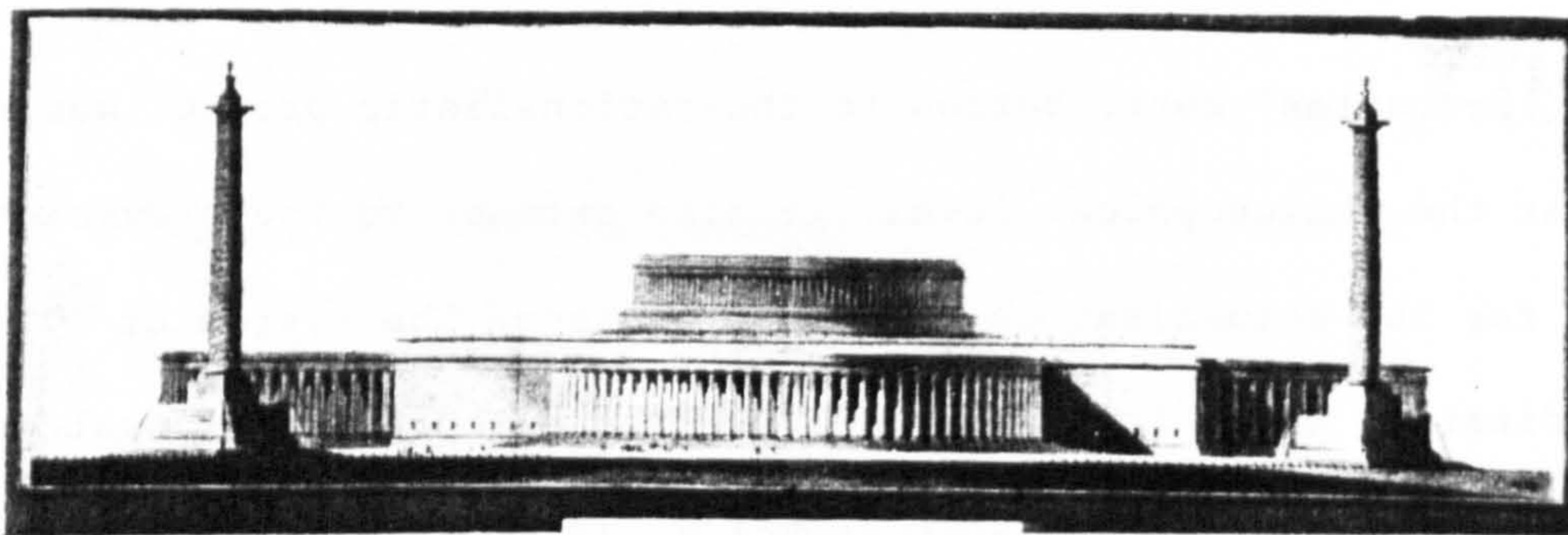
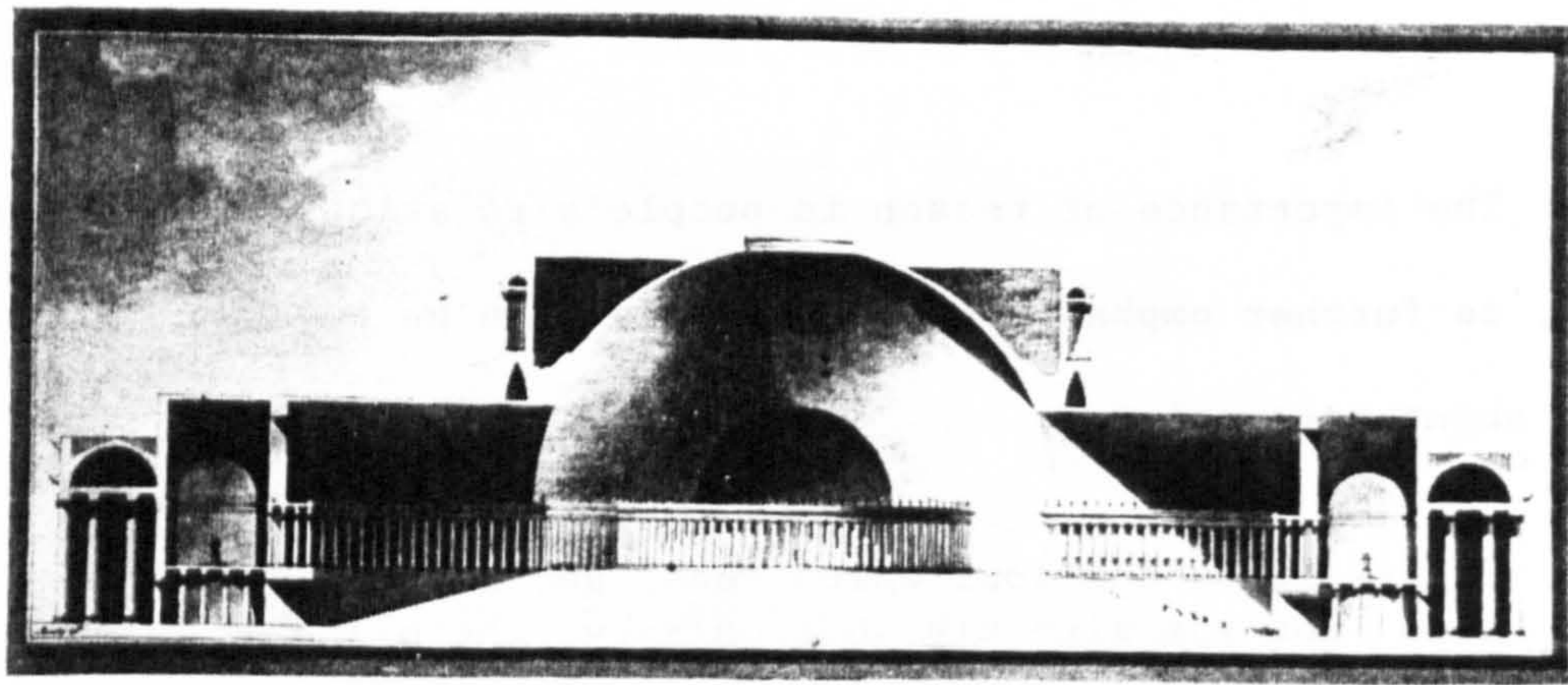


Fig.1.11 - Visionary projects of Ledoux and Boulee. Sources: Christ, 1961, and Rosenau, 1953.

period by talking about two important names of the architectural scene at the end of the eighteenth century in France - two architects who although keeping to the rationalist tradition also adopted by the neo-classical style, had a very distinct approach to architecture and design.

The Visionary Architecture of Boulees and Ledoux

Il faut concevoir pour effectuer. Nos premiers peres n'ont bati leurs cabanes qu'apres en avoir concu l'image.³¹

We started off the present chapter by talking about vision and its relation to rationalism. The imposition of order onto nature, the self-contained forms, and the use of geometric regularity and repetition were highlighted. In the work of these two visionary architects, we shall find vision coming to the forefront of the process of architectural production, and it will do so in an explicit and pronounced fashion.

This is apparent, to be sure, in the flamboyant projects of these architects (figs.1.11).

It is also an overwhelming component in Boulees's *Architecture, Essai sur l'Art*. Indeed, the concern with the imaginary, the elaboration on Perrault's idea that architecture does not bear on nature but is an art of fantasy and pure invention, occupy the limelight of Boulees's discussion, even if he ends by rejecting such an extreme view.

31. Boulees, E.T., 'Essay sur l'Art', in H. Rosenau's, editor, Boulees's Treatise on Architecture (London: Alec Tiranti Ltd., 1953), p.27.

From this discussion Bouleee gives us his apology for regular geometry, repetition, and other rationalist features; and more than that, he hints on a vital point about rationality, and the nature of the visionary gesture, and their relation to the layout of artefacts (notably buildings). Namely, an approach to appropriation (which is an essential step in the design process) is presented through the point of view of mental manipulation (this issue will be explored in more detail in the next chapter):

Pourquoi la figure des corps reguliers se saisit-elle au premier aspect? C'est que leurs forms sont simples, que leurs faces sont regulieres, et qu'elles se repetent. Mais comme la mesure des impressions que nous ressentons, a la vue des objects, est en raison de leur evidence, ce qui nous fait plus particulierement distinguer les corps reguliers, c'est que leur regularite et leur symetrie sont l'image de l'ordre, et que cette image est celle de l'evidence elle-meme³².

Through regularity, symmetry and order, we get to perfection - which is a concept repeatedly referred to in *Essai sur l'Art*, and which in Bouleee's view, is captured in the form of the sphere, that he sees as the ultimate image of perfection, precisely because it brings together exact symmetry, perfect regularity and greatest variety³³.

Moving to the nineteenth century we shall find that the rationalist attitude not only persists, but also gains further momentum with the Industrial Revolution.

Nineteenth Century Urban Utopias

London is unique, because it is a city which one can roam for hours without leaving the built-up area and without

32. Bouleee, op.cit., p.35.

33. Ibid. p. 36.

seeing the slightest sign of the approach of open country³⁴.

...they rush past each other as if they had nothing in common. They are tacitly agreed on one thing only - that everyone should keep to the right of the pavement so as not to collide with the stream of people moving in the opposite direction. No one even thinks of sparing a glance for his neighbour in the streets... nowhere is this selfish egotism so blatantly evident as in the frantic bustle of the great city. The disintegration of society into individuals, each guided by his private principles and each pursuing his own aims has been pushed to its furthest limits in London³⁵.

From this it follows that the social conflict - the war of all against all - is fought in the open³⁶.

While I was in England at least twenty or thirty people died of hunger under the most scandalous circumstances...³⁷

The streets (of English slums) themselves are usually unpaved and full of holes. They are filthy and strewn with animal and vegetable refuse³⁸.

Engels account (written in 1844 on the occasion of his two year visit to England) of an urban centre stretching for several miles, or people's lack of mutual interest and egotism, or urban poverty and homelessness, may cause nothing but indifference in us, who have grown accustomed to these scenes, and have educated ourselves to take them for granted.

The words of the young Engels (who was 24 at the time *The Condition of the Working Class in England* was written), however, even

34.Engels, F., The Condition of the Working Class in England, translated and edited by W.O.Henderson, & W.H.Chaloner (Oxford: Basil Blackwell, 1958), p.30.

35.Ibid. p.31.

36.Ibid.

37.Ibid. p.32.

38.Ibid. p.33.

if full of passion, exaggerations and historical inaccuracies³⁹, are most valuable to us, for the sensitivity, and the freshness with which he approaches the recent phenomenon of the industrial city. Through these words, we get some idea of the oddness, and novelty of this industrial urban environment, and the impact on its inhabitants. Such an idea is of great importance to understand the attitudes to the city that sprung up in the XIX century.

Amidst the extreme conditions described by Engels, and together with official reports about social welfare (or lack of it), constitutional reforms, and philanthropic gestures, the urban utopias proliferated. These utopias may be seen as a reaction to the crisis of the industrial city; and inasmuch as they generally do not confine themselves to particular situations, they are an overall response to the problem of industrialisation. This is apparent in the words of Victor Considerant when he contrasts the industrial city with his vision of order and harmony:

Les grandes villes, et Paris surtout, sont de tristes spectacles a voir ainsi, pour quiconque a l'idee de l'ordre et de l'harmonie, pour quiconque pense a l'anarchie sociale que traduit en relief, avec une hideuse fidelite cet amas informe, ce fouillis de maisons recouvertes de combles, armes de leurs garnitures metalliques, de leurs girouettes rouillees, de leurs innombrables cheminees, qui dessinent encore mieux l'incoherence sociale, le Morcellement d'ou ce chaos architectural est sorti⁴⁰.

But in his reaction to the process of industrialisation (at least in respect to some of its features, namely the industrial city).

39.For a comment on that aspect of Engel's *The Condition of the Working Class in England* see the editor's introduction. Ibid. pp. xi - xxxi.

40.Choay, F., *L'Urbanism*, Utopies et Realites, une Anthologie (Paris: Editions du Seuil, 1965), p.107.

Victor Considerant, through his apology of order, which he sees impersonated in Fourier's 'Phalanstere', does nothing more than perpetuate the rationalist tradition that is at the very foundations of the industrial development.

The same contradiction is found in many other XIX century utopists, such as Charles Fourier, who criticises 'disformity' and proposes instead 'phalanges' which conform regular buildings⁴¹; or Etienne Cabet, who describing the utopic 'Icara', exclaims:

Voyez les rues toutes droites et larges! En voila cinquante grandes qui traversent la ville parallelement a la riviere, et cinquante qui la traversent perpendiculairement⁴².

The present account has taken us to the XIX century. At that time, we see the birth of a number of important conceptions and solutions about the city that were to be taken over by twentieth century Modernists. Before we pass on to describe the Modern attitude towards the urban environment, I believe it would be helpful to summarise what has been said so far, and ponder on some aspects of the rationalist perspective to the city.

Summary

I started describing rationalism in architecture by quoting Alberti and his recommendations for the city of the tyrant. Such recommendations were used to illustrate the conception of the city as a convergent entity. And as we saw, this conception was also shared by Alberti contemporaries.

41.Ibid.

42.Ibid., p.121 (emphasis added).

This conception addresses the urban environment in its essence, and articulates an archetypal vision of it (figs.1.4 & 1.5). Moreover, such an archetypal vision takes the form of self-contained regular geometric forms.

We may see that fact in the light of the pronounced revival of mathematical study in the later Middle Ages, which was related to thinking 'by means of spatial images... and to represent what was known... *geometrically*.'⁴³ Following the same attitude, reflections about, and production of, the urban environment were related to a vision of geometric regular forms.

A number of changes have taken place in the field of mathematics and science since the later Middle Ages. As Burt points out, if on the one hand 'geometry has always been the mathematical science *par excellence*', on the other hand, in the last two centuries 'higher algebra has to a considerable extent freed men's minds from dependence on spatial representations in their mathematical thinking...'⁴⁴

Despite these changes, the dualistic metaphysical foundations of modern science - and I add architecture, has persisted. The conception of people's relationship with the urban environment relying upon the existence of a mathematical world, as a separated reality, has survived through the sixteenth, seventeenth, eighteenth, and nineteenth century (and as I shall argue shortly, it is still common place in this century). From Cataneo's visionary cities, Vasari il Giovanni's *Citta Ideale*, Filarete's *Sforzinda*, through Boullée's and Ledoux's spheres, to the nineteenth century utopias, we still find the articulation of a

43. Burt, op.cit., p. 42, my emphasis.

44. Ibid., p.42.

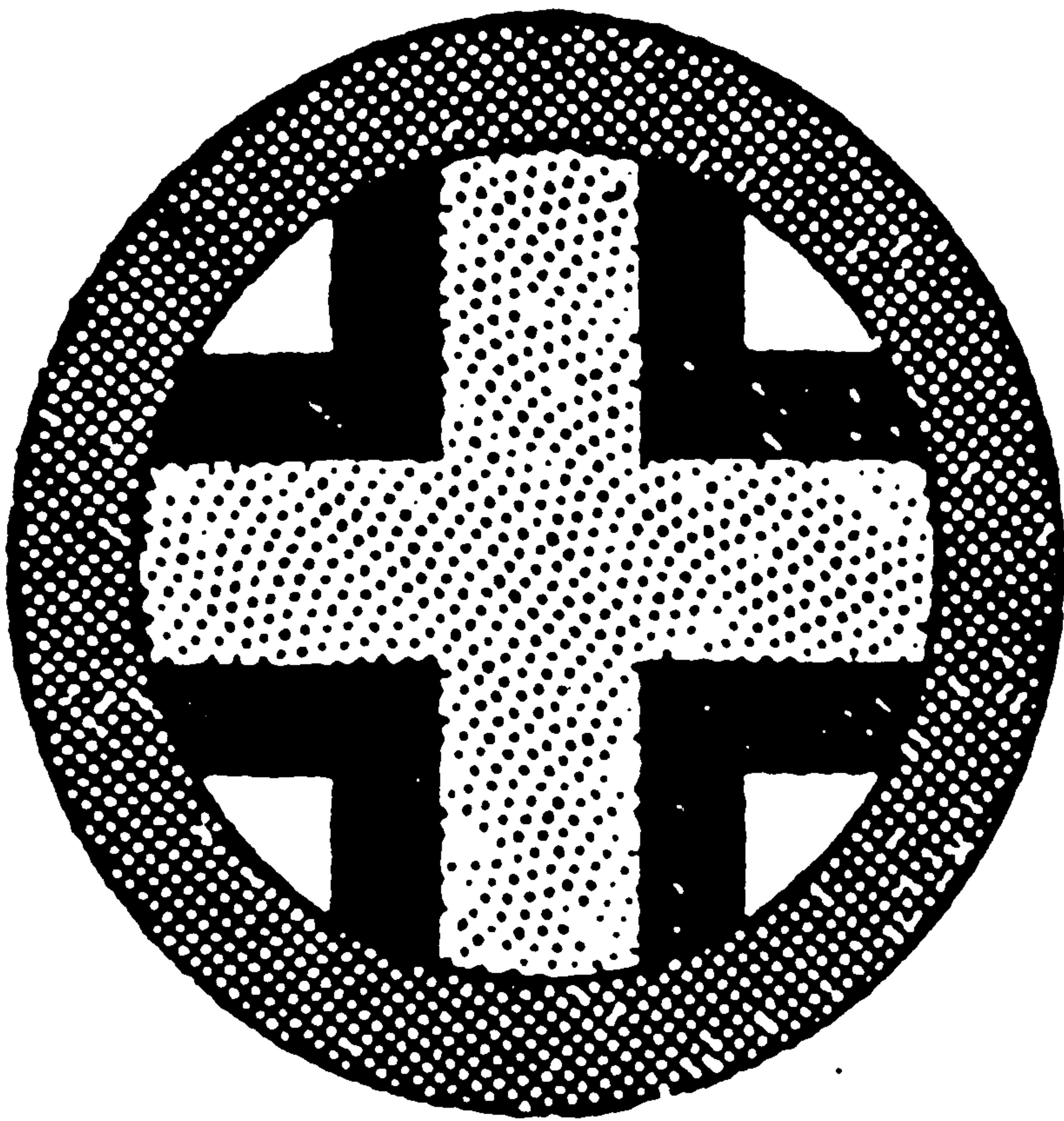


Fig.1.12 - Egyptian hieroglyph for city. Source: Benevolo, 1980.

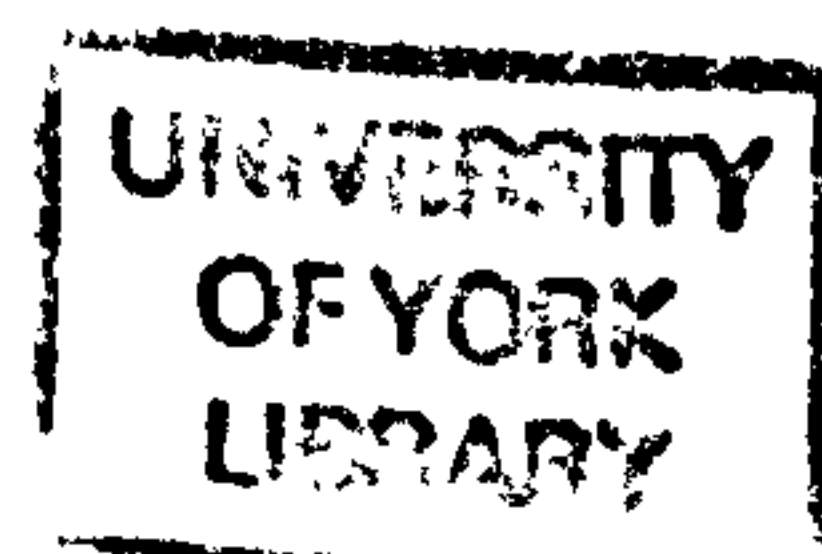
general vision of regular forms and self-contained volumes, with occasional or no reference to a particular context (site, society, etc.). The act of conception of an architectural project through this approach, treats the design as a mathematical geometrical entity, independently conceived in the mind of the designer, and isolated from the requirements of particular societies and specific physical constraints: the rational architecture, conceived in the mind of the designer, with its perfectly mathematical, self-contained layout, lands on a site, and makes little concession to its surroundings.

But if on the one hand, this rationalist endeavour of addressing the city in its essence, isolates it from its users, by confining it to a perfect mathematical geometrical world; on the other hand, such an endeavour may be said to grasp the city's basic nature.

In fact, the conception of the city as convergent entity has persisted in time. It is already embodied in the Egyptian hieroglyph for city (fig.1.12); it figures in the writings of classical authors such as Plato and Vitruvius (as we saw earlier on). Moreover, it is an important component in the work of contemporary authors such as C. Alexander.⁴⁵

Let us now move to the twentieth century, and observe how the Modern Movement in architecture gave continuity to the rationalist project described above.

45. The idea of the 'centring nature' of the city is at the very basis of the argument developed by C. Alexander in his 'A New Theory of Urban Design'.



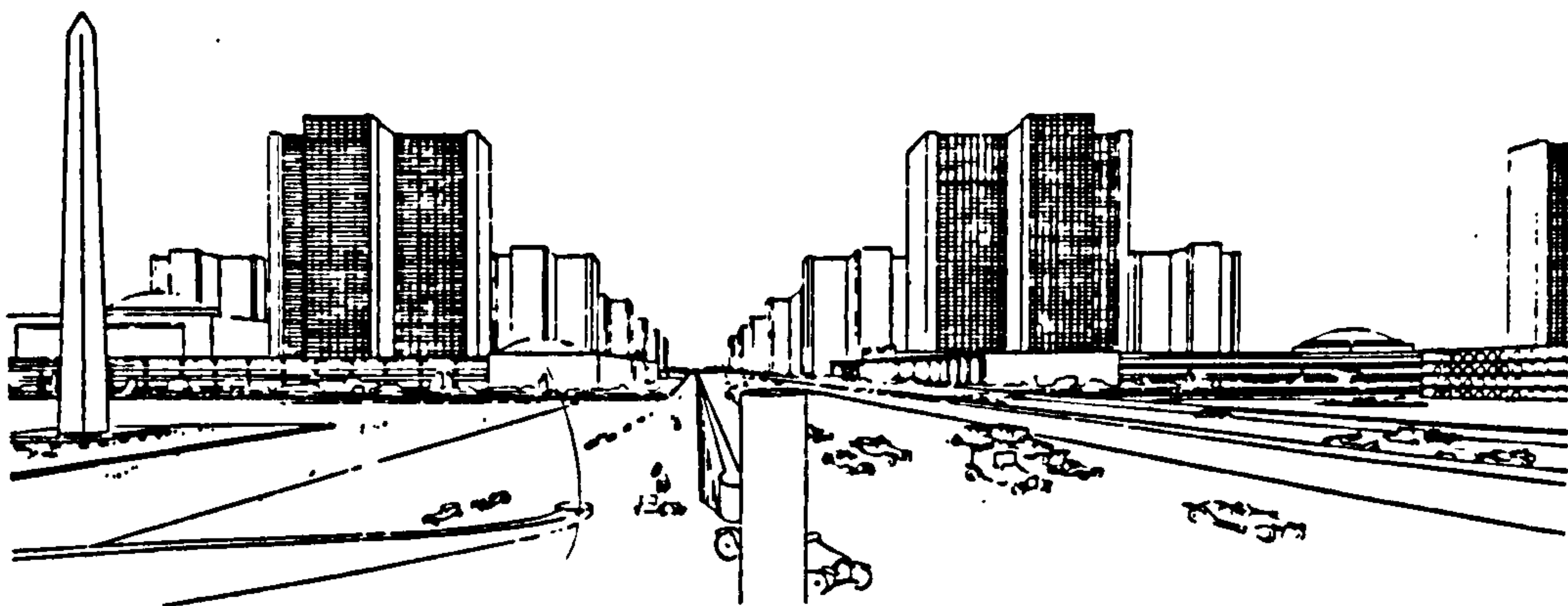


Fig.1.13 - Le Corbusier's 'Ville Radieuse'. Source: Broadbent, 1990.

The Modern Movement

In the Modern Movement, the concern with the problems of the industrial city, such as overcrowding and hygiene, touched upon by XIX writers such as Friedrich Engels, Etienne Cabet, and Benjamin Richardson, among others, gains further impetus. This concern drives modernists by the same route of their fellow utopians; as Choay puts it: 'l' obsession de l'hygiene se polarise autour des notions du soleil et de la verdure'⁴⁶. And the remedy for the industrial evils finds its roots in the work of these utopians; for instance, in the form of the 'rue-galerie' that appeared in Fourier's phalanstere, or the idea of the standard house 'le plus parfait sous tous les rapports'⁴⁷, as Etienne Cabet tells us, or the zoning, or the idea of a scattered urban environment with compact buildings spread amidst the greenery (e.g. B.W.Richardson), or even the flat-roof, acclaimed by Etienne Cabet.

Added to the nineteenth century legacy, the Modern Movement was to incorporate into the layout of the urban environment what was to become an essential element of its physiognomy: the machine.

The machine was to inspire the geometric layout of buildings; which should be self-contained structures, of 'pure' (polished and regular) forms. The various elements of such buildings took the form of individualised parts, like the components of an engine.

Houses then became machines for living (as Le Corbusier put it), the traffic of automobiles gained primary importance in the new city layout, causing a dissociation between pedestrian and motorised circulations, and the street was abolished inasmuch as it 'symbolises

46.Op.cit., p.35.

47.Ibid., p.123.

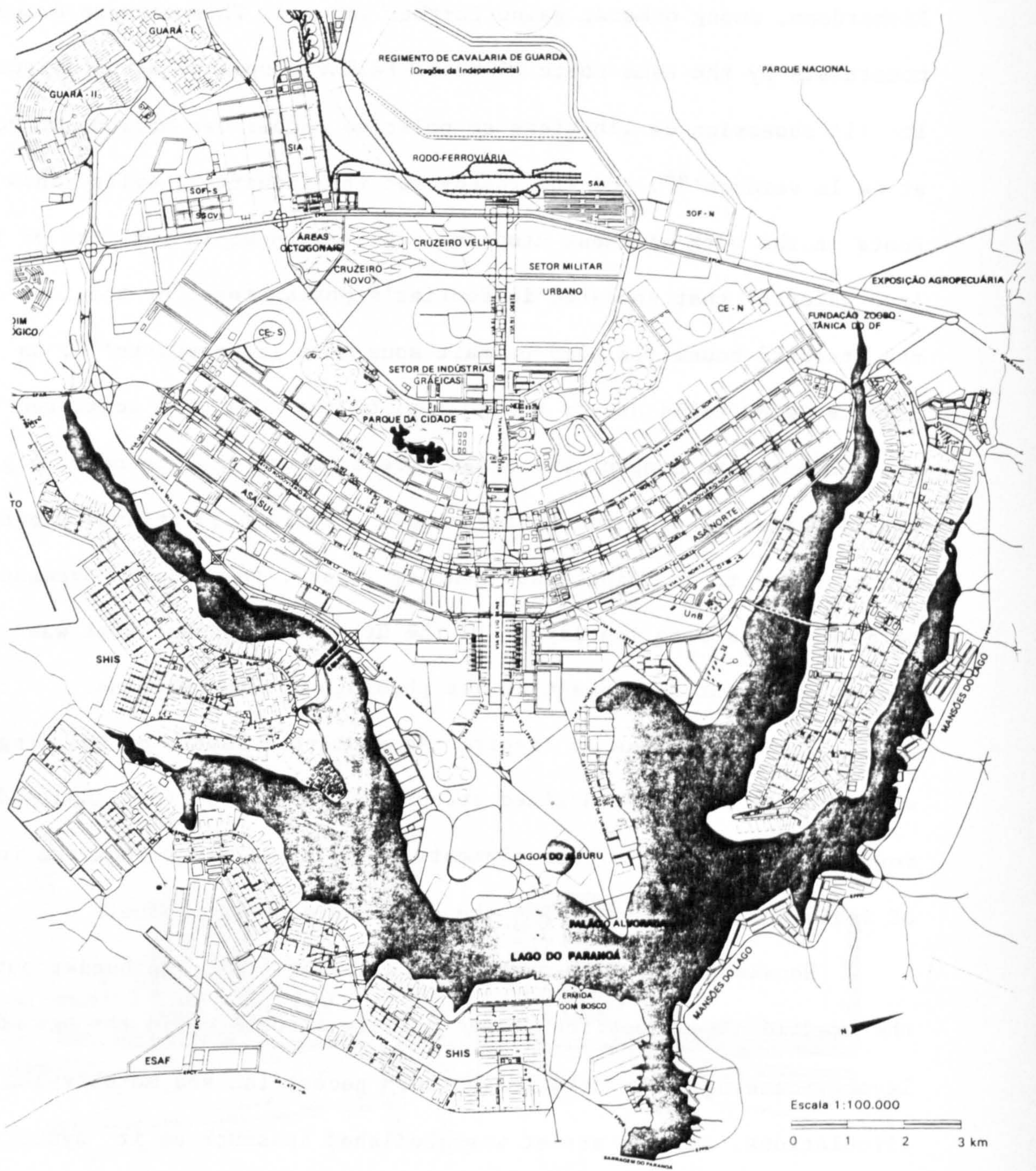


Fig.1.14 - Brasília (plan). Source: CODEPLAN.

in our times the disorder of circulation'⁴⁸ (fig.1.13).

The principles of regular geometry, and repetition, are strongly present in the work of modernists. In the words of Le Corbusier:

La geometrie est la base... Toute l'epoque contemporaine est donc de geometrie, eminentement; son reve, elle l'oriente vers les joies de la geometrie. Les arts et la pensee modern, apres un siecle d'analyse, cherchent au-dela du fait accidentel et la geometrie les conduit a un ordre des mathematiques⁴⁹.

At this stage, I may further explore the implications of such a rationalist (dualistic approach) to the urban environment, commenting upon some of its major limitations. The Modern Movement offers a particularly good ground for such an endeavour, inasmuch as it provides a number of built realities - such as Brasilia (built in 1960), whose vision and performance may be put side by side.

Brasilia and a Critique of Modern Rationalism

Let us start by recalling some aspects of the vision the Modern city (formalised by Le Corbusier in the Athens Charter, first published in 1941, after the 1933 meeting of CIAM in Athens). As we saw, such a vision originated in response to the industrial city with its polluted air, unsanitary streets, overcrowding, etc.. Also it came as a response to Eclecticism in architecture, and other revivalist movements such as the Neo-gothic.

If we now add to these ingredients the *machine*, we have the mixture to produce a vision of the Modern city; a vision of pure geometrical volumes scattered in space, with abundant greenery between

48. Le Corbusier, quoted in Choay, F., op.cit., p.36.

49. Ibid., p.37/38.

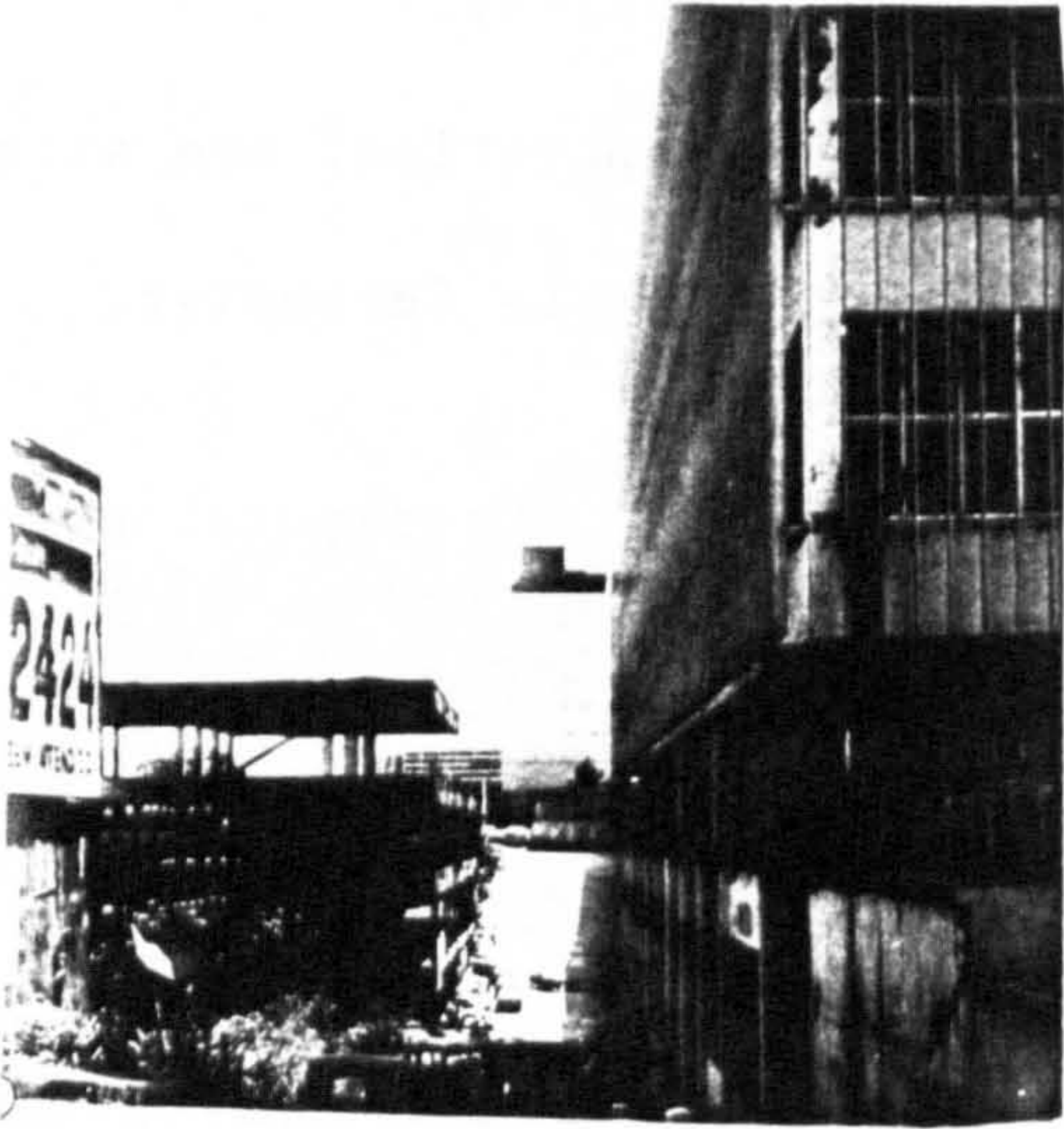


Fig.1.15 - Brasilia (central area - view). Source: author.

them; exposed to the sun light, and enjoying plenty of ventilation. The open space, dotted by those self-contained structures accommodate highways for the rapid traffic of vehicles. Different areas and buildings in the Modern city operate like the components of a machine, each performing a distinct function.

Now Brasilia, as an embodiment of such principles, gives us a different perspective to such a vision. Brasilia incorporates the modernist mechanistic conception of the city described above (fig.1.14). This is revealed in a number of features, which I describe below.

The treatment of automobiles as elements with the function of transporting people *quickly and efficiently* from zone A (e.g. residential) to zone B (e.g. shopping) has led to the proposal of a network of highways, slicing this Modern city, along and across its main axes (the residential and the monumental axes, which combine to form the aeroplane layout). Whenever possible, viaducts appear to facilitate the efficient flow of vehicles.

The pedestrian circulation is then treated as a separate function: that of covering small distances (a visit to a local shop, for instance). In that way, pedestrian and vehicular circulations are segregated. In fact, one rarely finds pedestrians walking along the highways of Brasilia: these cover long distances, stretching through open spaces with no attractive feature (e.g. shops, pubs, benches, etc.) for such pedestrians. And little facilities are provided for pedestrian circulation along these highways. The pedestrian, according to the 'instructions for use of the machine' is to confine her/his movement to a local, segregated zone, and only go from one zone to another by automobile. This is clearly the case in the central area of

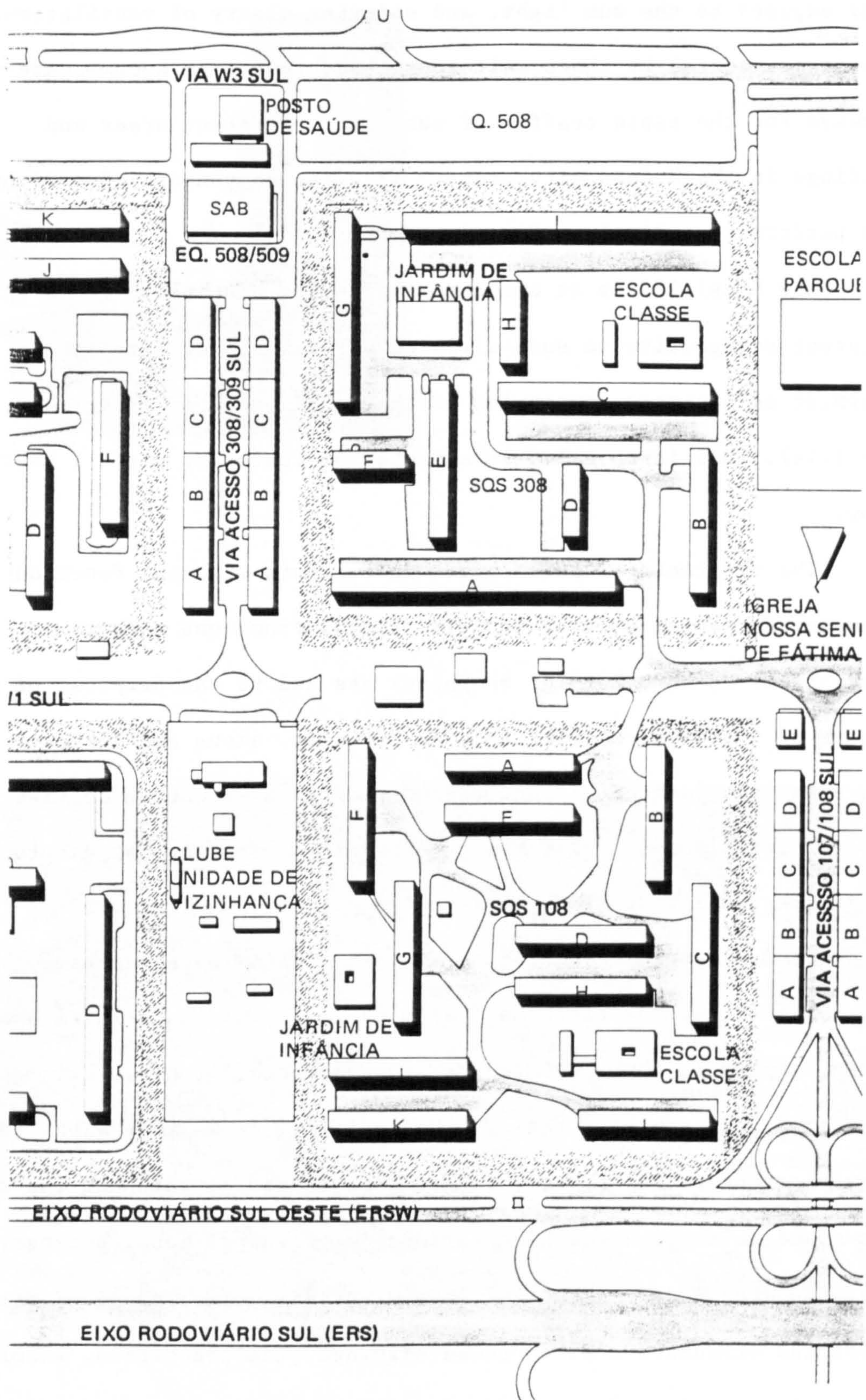


Fig.1.16 - Brasilia (superquadras). Source: CODEPLAN.

Brasilia, at the crossing of the residential and monumental axes, where there are viaducts enough to create a dramatic and frequent change of level, raised platforms, and steep surfaces, making it quite an adventure to cross it by foot (fig.1.15). The pattern of pedestrian movement within the residential areas, initially suggested an articulation of commercial establishments facing towards the inside of the residential units (the *Superquadras*) (fig.1.16): local shops, in theory, were destined for the exclusive use of the inhabitants of the *Superquadras*, and the highways that run next to it were conceived as mere servicing accesses. Vehicles, according to that original idea, would go along these servicing streets only to transport people from A to B, without any interest in the local shops. In practice, however, this did not work at all. Only one local shopping area follows that pattern, and it is a commercial fiasco. In fact, the circulation of cars turned out to have a much more diverse use than that of taking people from A to B. It also, works as a means of interchange between the person that passes by, and the local people and establishments. In that way, the worker going home and passing by a bakery on his way, will possibly stop to buy some bread. Or maybe, as one goes to visit a friend, he stops on the way to buy a bottle of wine, etc..

The segregation of particular functions, and their combination in the mind of an individual, in practice leads to a segregation of individuals and a consequent dispersion of urbanity. In Brasilia, the pedestrian is isolated from the motorist; those who shop are isolated from those who work, from those at home, etc.. The sector of banks, or the shopping centre, for instance, being uni-functional zones, are emptied on Sundays and bank holidays. Those who work in the bank sector, on the other hand, need to walk a relatively long distance

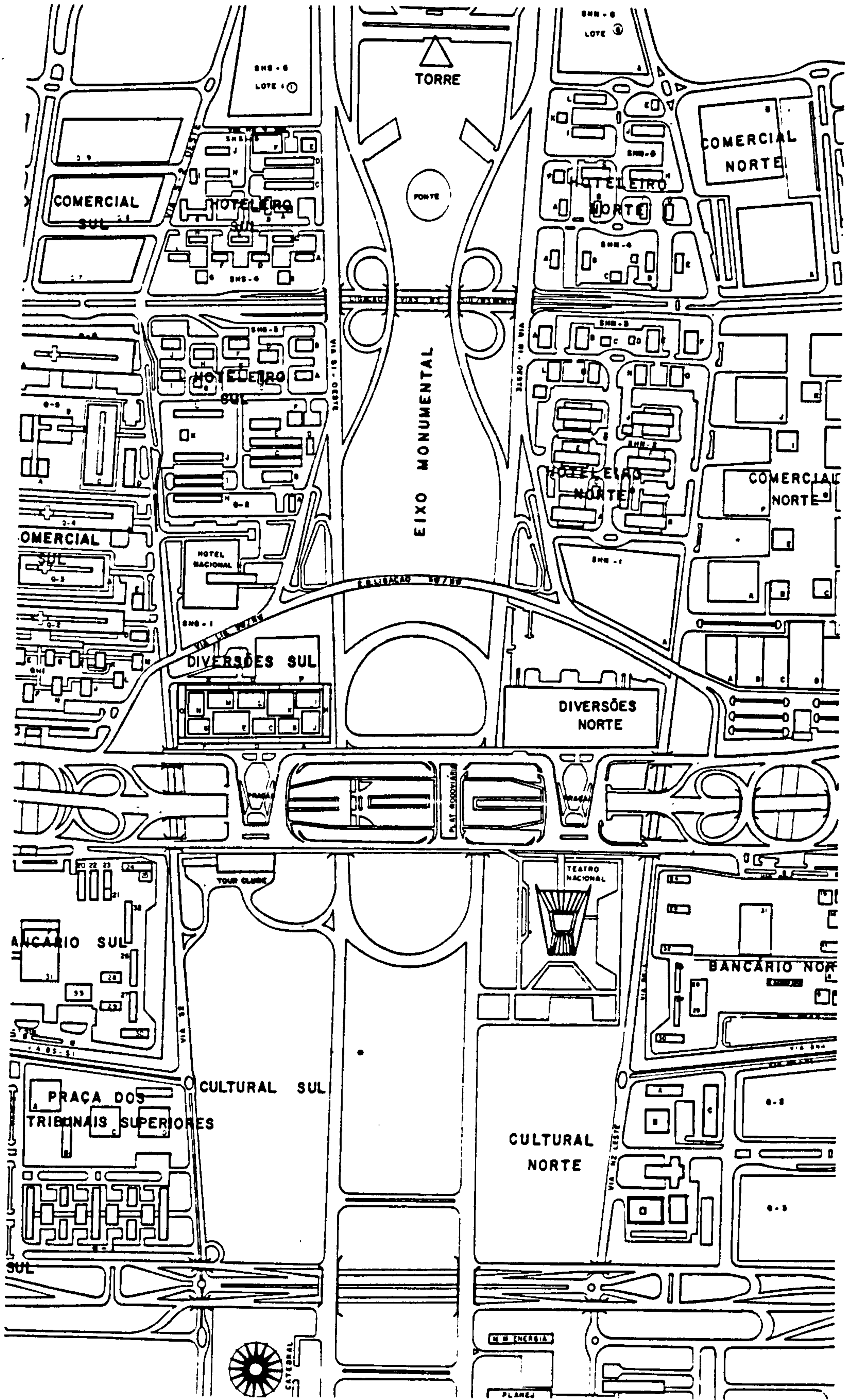


Fig.1.17 - Brasilia (central area - plan). Source: CODEPLAN.

(across or underneath highways) to get to the most immediate shopping commodities (fig.1.17).

The built volumes loosely scattered amidst the greenery, further contribute for a dispersion of urbanity. The 'multifunctional' traditional street, gathering, and affording a clear-cut pattern of circulation (from one place to another), providing interchange between locals and passers-by, defining straight-forward directions of movement, following Le Corbusier's advice, ceases to exist in Brasilia. Here, one may potentially move in any direction, inasmuch as there are very few obstacles on her/his way - the residential buildings actually lift above the ground level allowing for pedestrian movement through the 'pilotis' (fig.1.18).

Brasilia with its green areas and verdured trees, at times offers pleasant spaces for people to be in. Such spaces, however, provide only for limited instances of people's relationship with the urban environment - similar to those provided by a park, or the wood around the traditional city.

A number of important aspects of such a relationship are alienated from the urban spaces of Brasilia. The more critical limitation, as I see it, lies in the narrow account the spaces of Brasilia take of the ways people actually use urban spaces. These ways cannot be taken to be the amalgamation of individual components, with particular functions. Rather, they involve a number of features that overlap and intersperse⁵⁰. These features cannot be pulled apart for *individual* treatment, and then assembled together to form a whole.

50. See Alexander C., 'A City is not a Tree', in J. Thackara's (ed.) Design After Modernism (London: Thames & Hudson, 1988), pp. 67-84; for a discussion of the interspersed and overlapping of the many elements of a city.



Fig.1.18 - Brasilia (pilotis). Source: GDF, 1986.

without alienating a number of aspects of our relationship with the urban environment - such a relationship does not seem to be composed of component functions.

Or, Brasilia only illustrates the more general rational attitude of the Modern Movement, which consists in mentally conceiving, or analytically picking out, a number of individual categories, subsequently combined into a synthesis of the Modern city. Such a mental exercise is clearly of dualistic nature: the categories exist primarily in the mind of the Modern designer, and as built realities such as Brasilia reveal, the mental manipulations of those categories are disconnected from the ways people actually use urban spaces.

Let us now look at the work of rationalist authors and designers of the second half of this century; such as Aldo Rossi and the Krier brothers, who differ from Modernists in their conception of the city, among other things, inasmuch as they propose the retention of certain traditional morphological elements such as the street and the square. Of the work of Leon Krier, and Aldo Rossi, I present a few drawings illustrating how these morphological components appear in their design proposals. Aldo Rossi, in particular, has written influential material about the city, and so has Rob Krier. Given the fact that this is not a thorough review of the literature, but only an illustrative background, I shall limit myself to quickly describe and comment upon Krier's reflections about the city (*Urban Space*), in order to provide a general idea about the directions that rationalist architecture is taking at present.

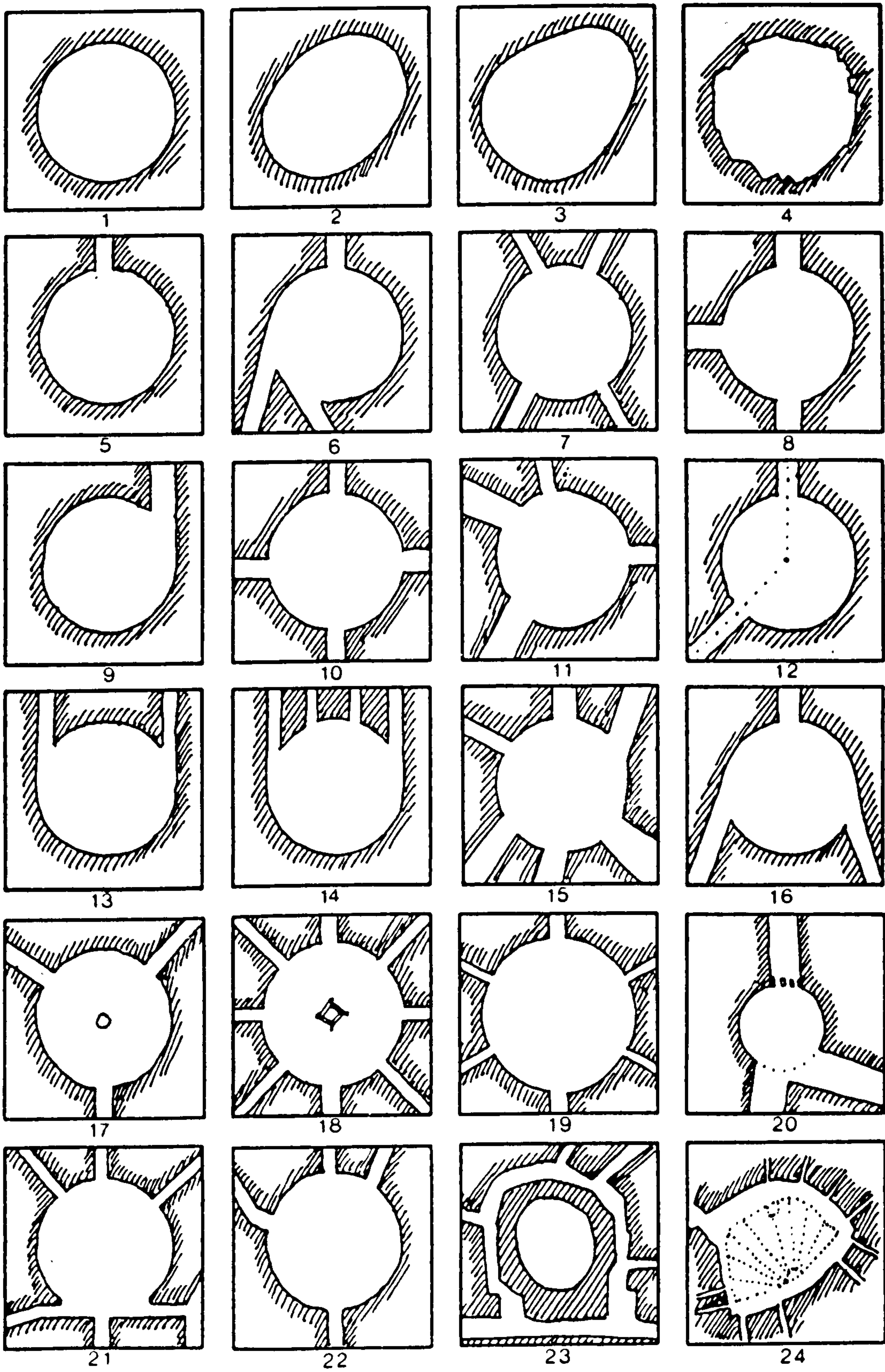


Fig.1.19 - R. Krier's typological description. Source: Krier, 1979.

Recent Rational Architecture

The opening sentence of Rob Krier's *Urban Space* (first published in Germany in 1975), points out the loss of the traditional understanding of urban space in our modern cities. The book is an attempt to retrieve such an understanding by looking at experiments carried out in the past and re-presenting them in a diagrammatic form (fig.1.19). To those that fear such a retrieval may be irrelevant, given the contextual gap between the present times and those of the past, Krier has the following to say:

Each period in art history develops gradually out of the assimilated functional and formal elements which precede it. The more conscious a society is of its history, the more effortlessly and thoroughly it handles historic elements of styles. This truism is important in as far as it legitimises the artist's relationship with the universally accepted wealth of formal vocabulary of all preceding ages - this is as applicable in the twentieth as in the seventeenth century⁵¹.

From these different periods, Krier selects a number of urban spaces, which he classifies according to three basic types: namely the triangle, the square, and the circle. And the space layouts that we find in urban environments throughout Europe, such as the Piazza del Campo in Sienna, are described by Krier, as particular variations of one of these basic types. Such variations occur as those three regular forms undergo one or more geometrical transformations, such as: 'angling, segment, addition, overlapping, and distortion'.

Further confirming his rationalist inclination, in a statement very similar to that of Descartes quoted a few pages ago, Krier tells us that there is:

51.Krier, R., Urban Space (London: Academy Editions, 1979), p. 15.

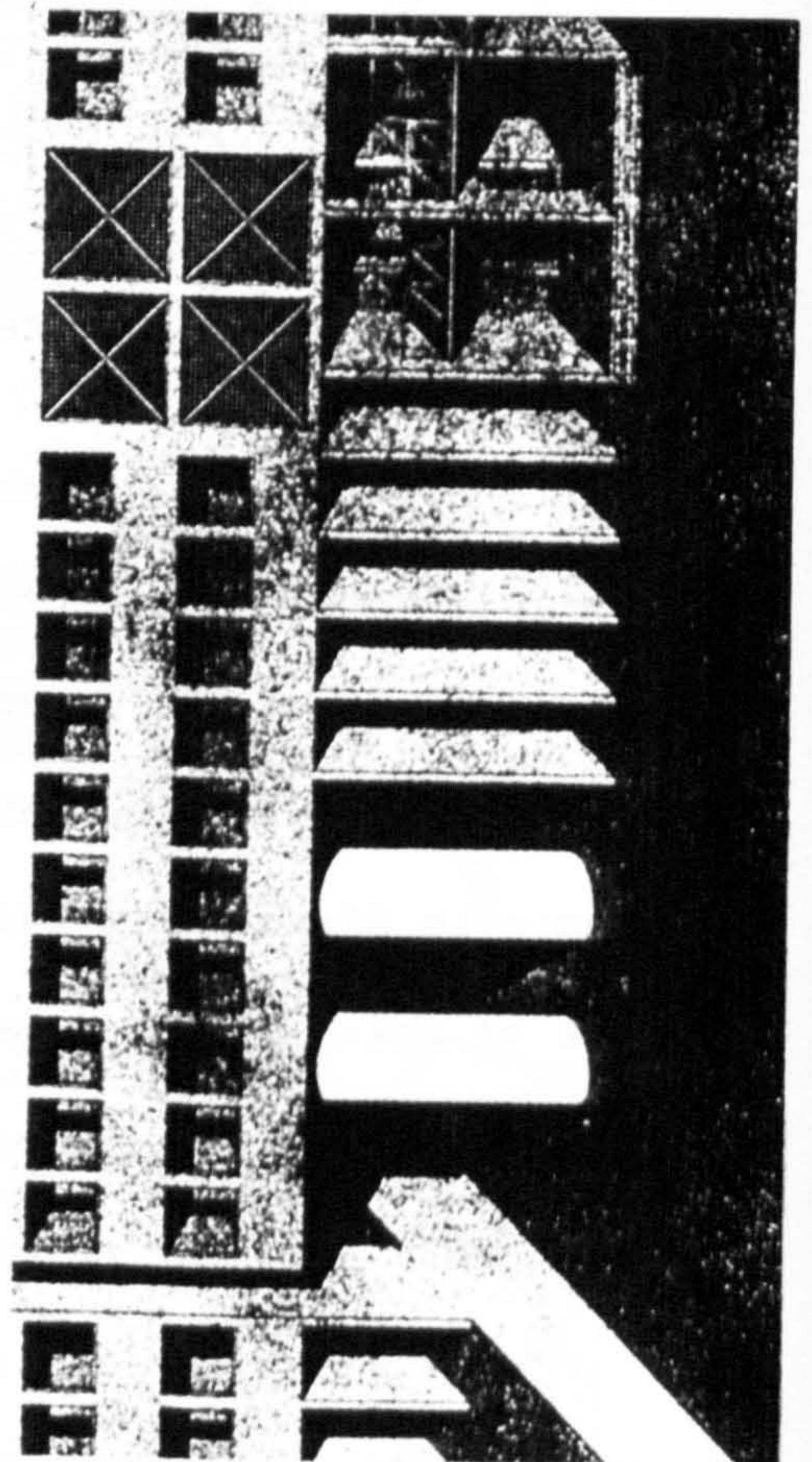
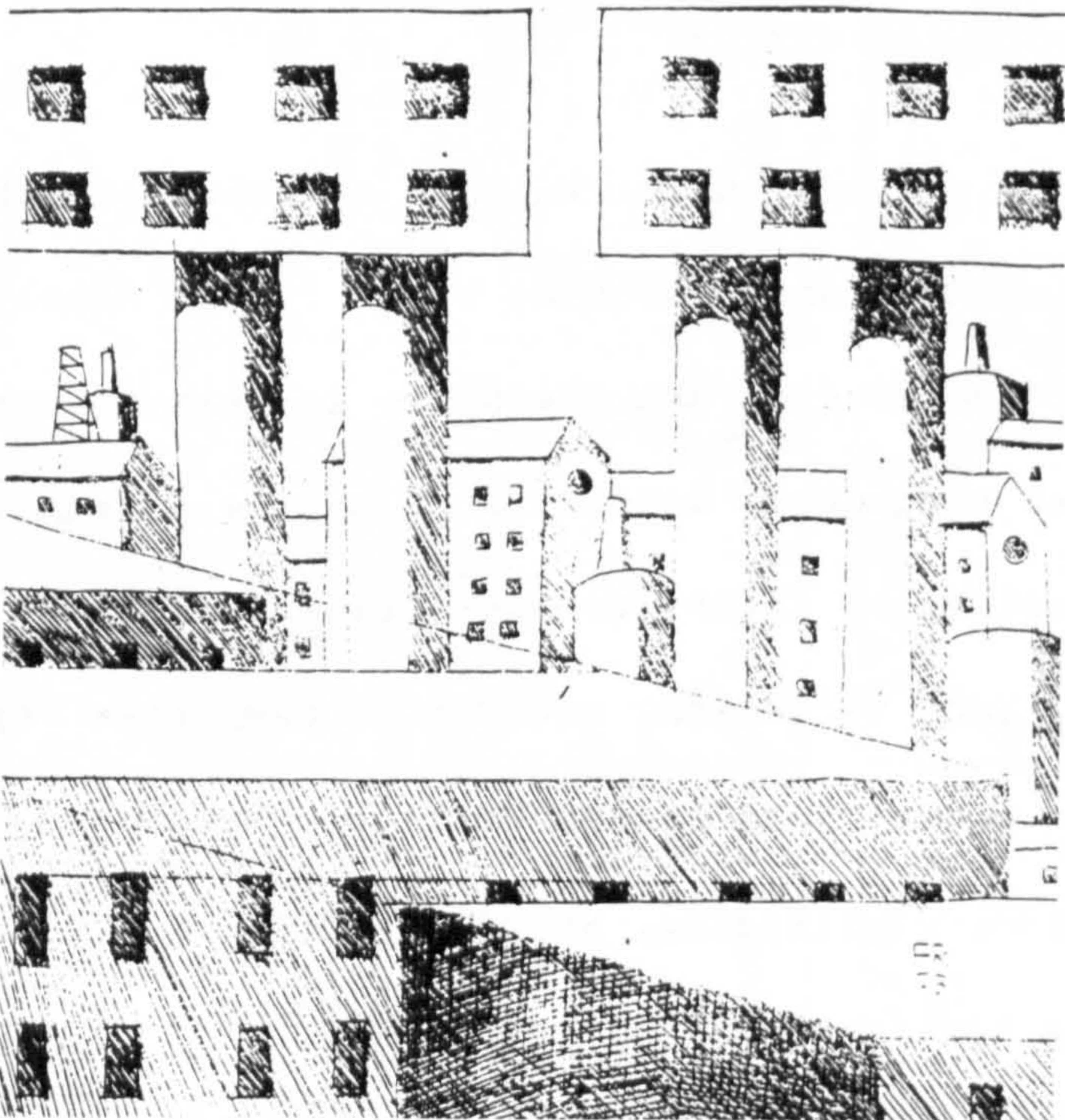
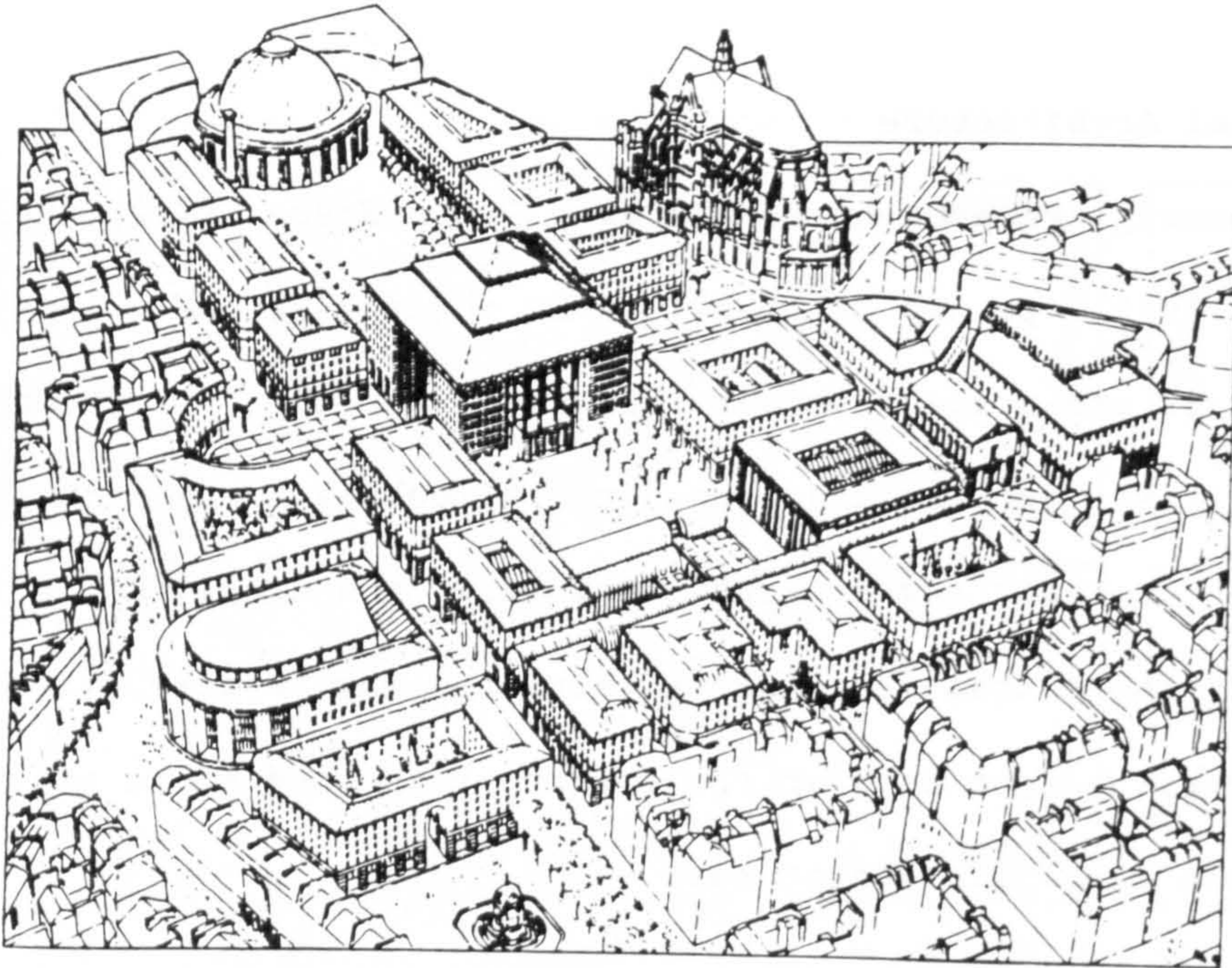


Fig.1.20 - Leon Krier: some projects. Source: Broadbent, 1990.

Fig.1.21 - Aldo Rossi: some projects. Source: Broadbent, 1990, etc..

a widespread and naive view prevalent among art historians as well as the general public that... irregular or 'organic' architecture is more beautiful than a group of urban buildings planned synchronically⁵².

The views advanced by Rob Krier are extremely influential in the architectural milieu at present. They are reflected in the design of current architects, such as (his brother) Leon Krier (fig.1.20). They are also found in Rossi's writings, and projects (fig.1.21). The main innovation of such views, lies in them drawing from morphological elements of the past to propose new interventions in the urban environment. However, these views rely on a geometrical realm of triangles, squares, and circles, to describe the urban environment. Inasmuch as they do so, such recent rationalist views do not essentially differ from the rationalist tradition described earlier on. To be sure, the same dualistic conception is present here.

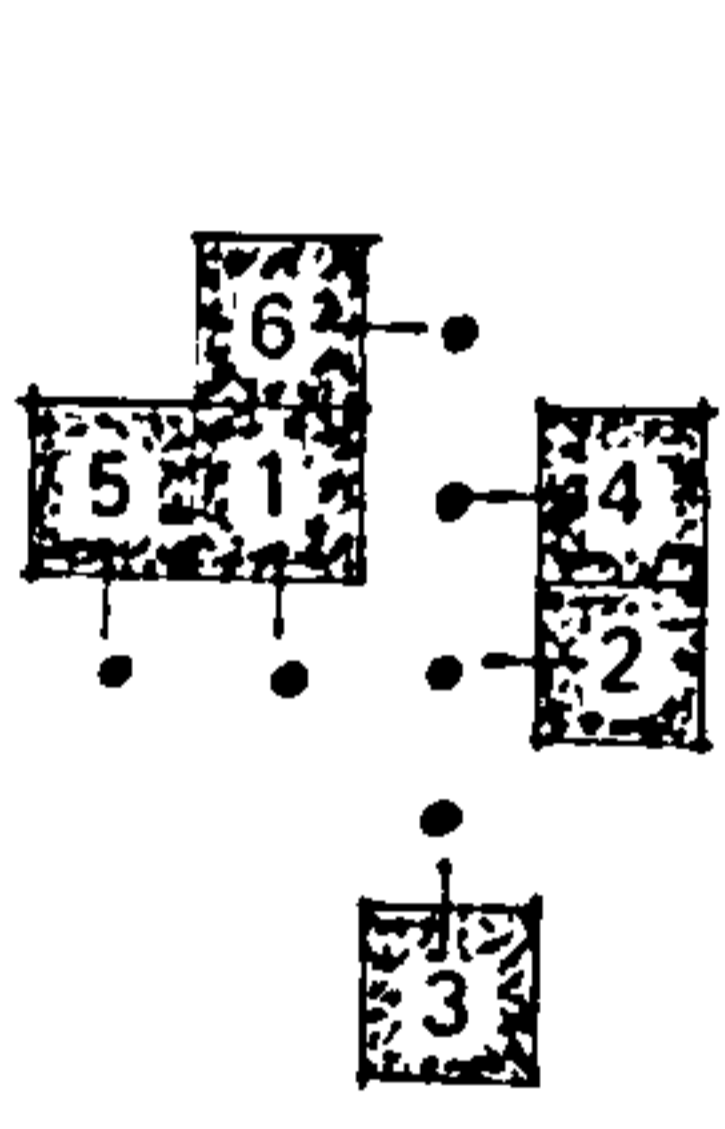
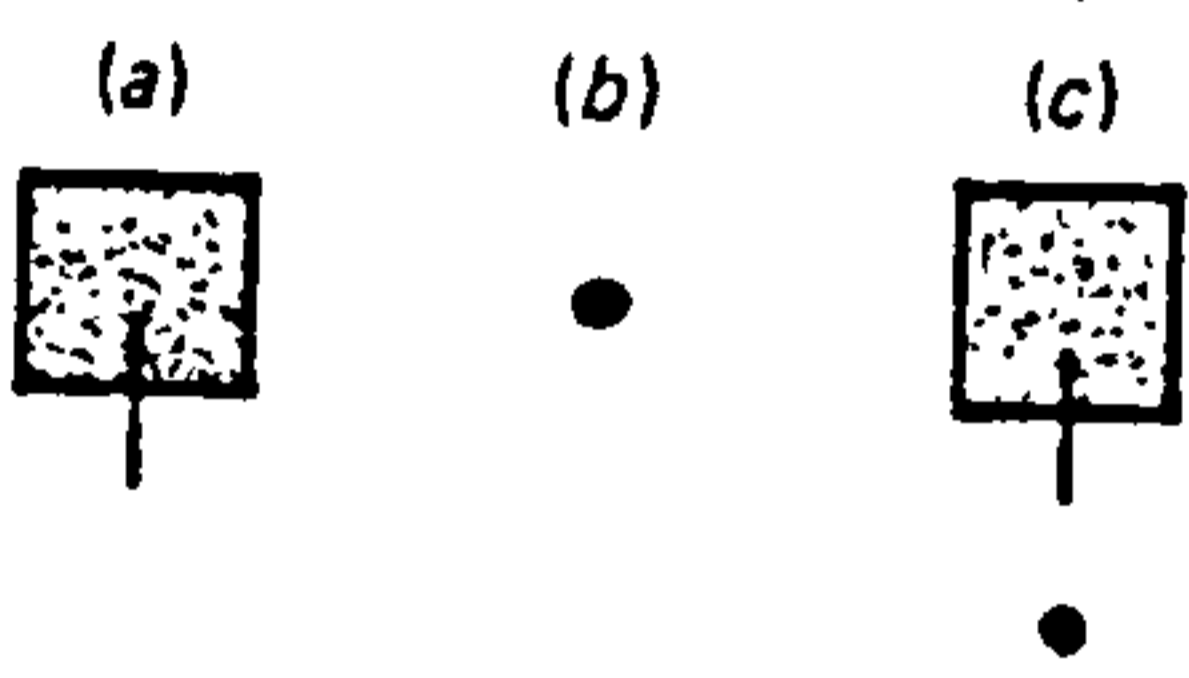
I shall last refer to the work of another author, whom I also argue adopts a rationalist perspective in his account of the urban environment: namely, Bill Hillier.

Bill Hillier's ideas are mainly contained in his publication *The Social Logic of Space*, where he proposes to formulate a 'scientific theory of the society-space relation', which, 'in spite of the two decades or more of the "quantitative revolution"⁵³, architectural inquiry has failed to provide. Such a scientific theory presupposes a 'shape free' description and analysis of 'pattern types':

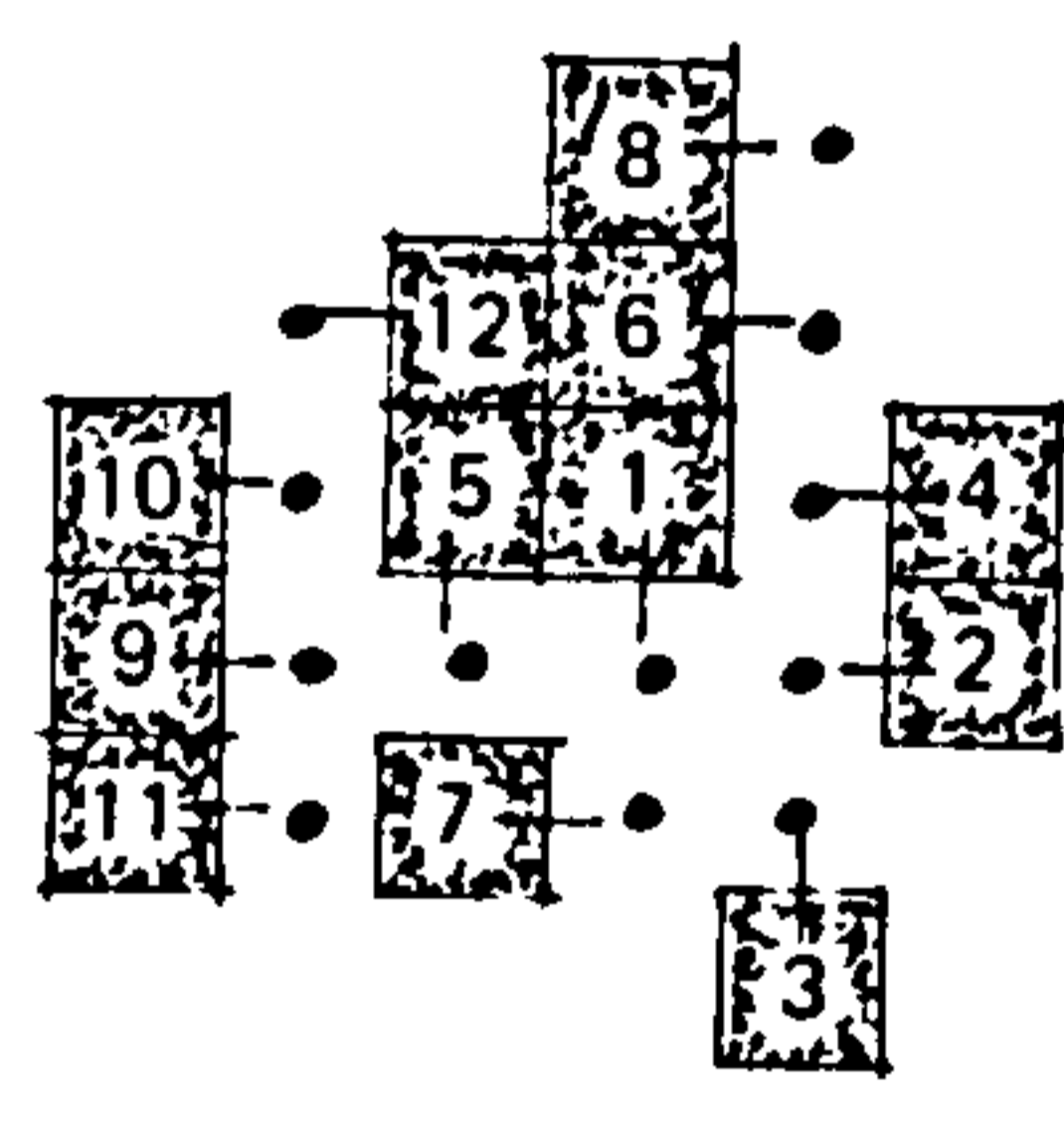
We are convinced that it is unnecessary to specify shape in order to model real-world generative processes; indeed, that the concept of shape obscures the

52.Ibid., p.30.

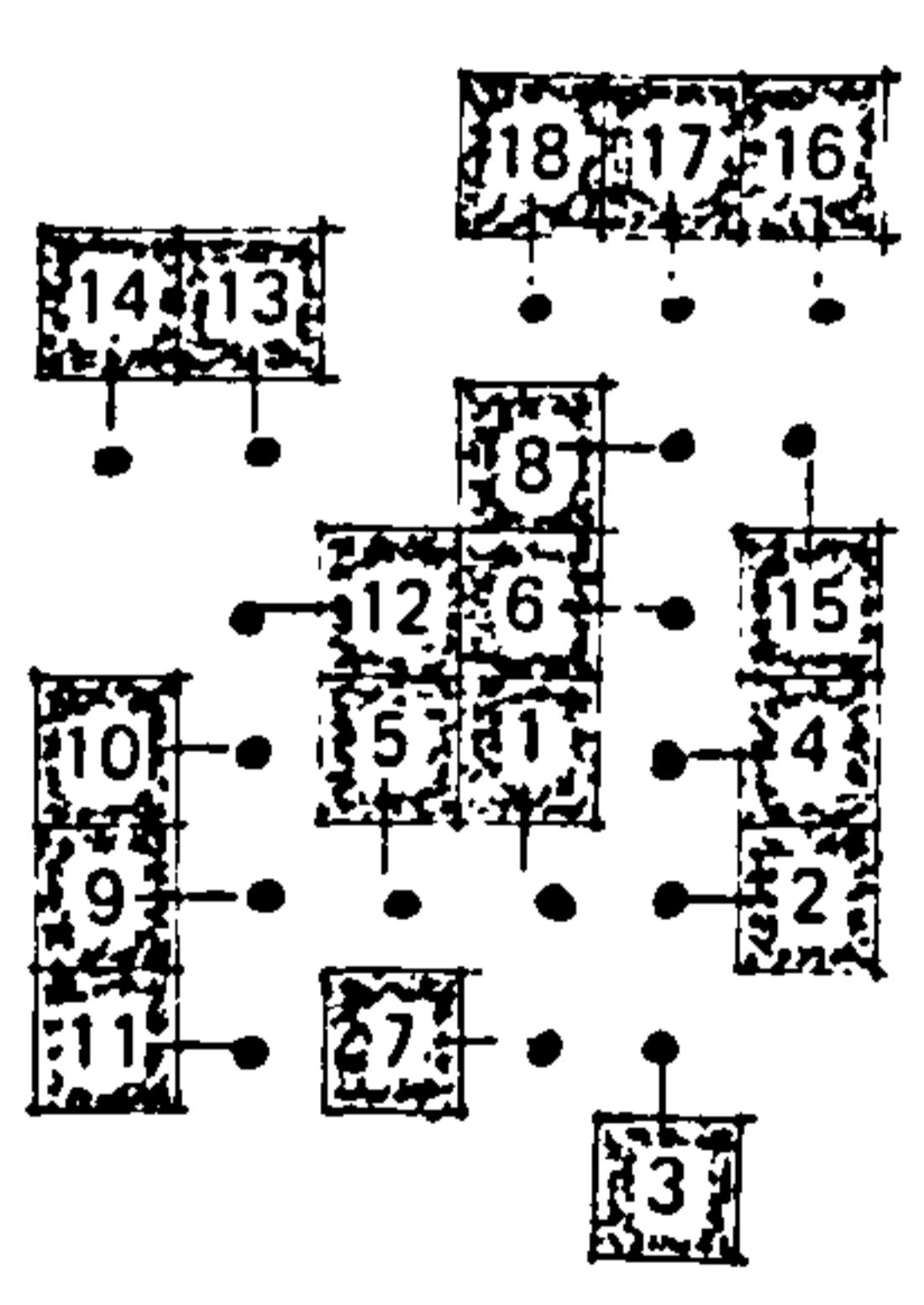
53.Hillier, B., Hanson, J., The Social Logic of Space (Cambridge: Cambridge University Press, 1988), p.x.



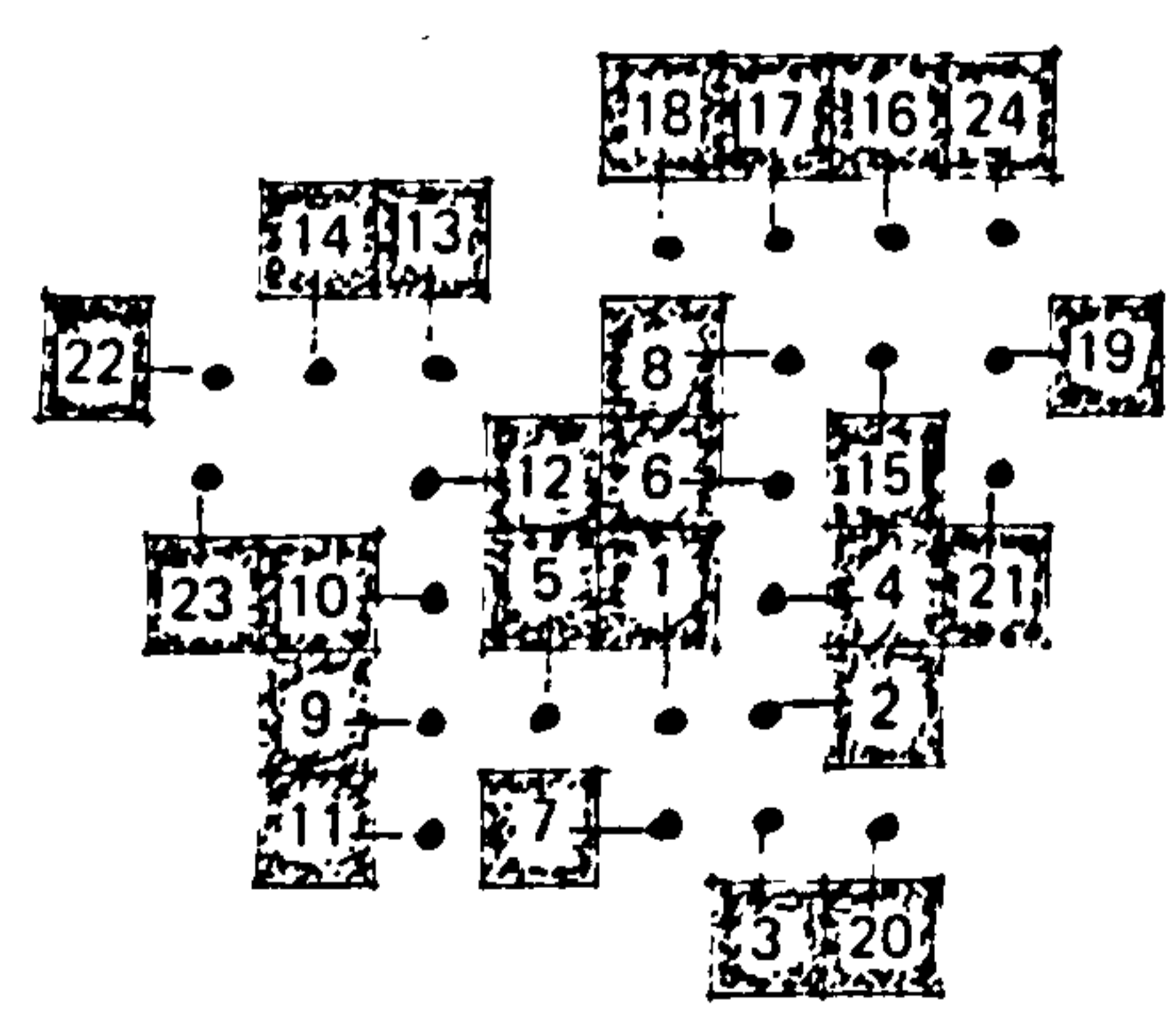
(a)



(b)



(c)



(d)

Fig.1.22 - Hillier's cells . Source: Hillier, 1988.

fundamental relational notions that underpin human spatial order⁵⁴.

Such 'relational notions' are mainly formulated in terms of the dichotomy 'inhabitants-strangers', and the mechanisms for spatial control developed by a society.

The above mentioned dichotomy appears in conjunction with another dichotomy which characterises social systems as varying from 'non-order to order', and from 'non-meaning to meaning'.

The spatial analysis that follows takes the form of an exercise involving the combination of cells - the elementary cell being conceived as the 'simplest spatial structure'⁵⁵ (fig.1.22), which may be arranged according to a basic rule, therefore leaving more flexibility for such an arrangement to take place (very close to non-order in B.Hillier's terms), or which may incorporate an increasing number of rules to produce a very ordered environment, revealing a new pattern of social relations, notably in terms of social control.

Hillier's work, as a 'decent scientific' attempt, heavily relies on quantifications, mathematical formulas, and calculations for the analysis of the urban environment. To be sure, the mathematical world upon which Hillier's framework relies is much more sophisticated than the geometrical types that appear in Krier's urban descriptions. As Hillier himself states, 'it is unnecessary to specify shape in order to model real-world generative processes'. Despite this sophistication - the use of non-geometrical mathematical computations, etc. - Hillier still presupposes the existence of a mathematical reality prior to

54.Ibid., p.xii.

55.Ibid., p.18.

actual urban spaces. This is most evident in his idea of cells (represented in plan by square units) as the 'simplest spatial structure'. The reasons that underlie the choice for the cell as a primary spatial component, which is to be employed subsequently by that author in the analysis of spaces, as I see it are unclear. Such cells do not seem to be essentially different from the modernist functions, or Krier's triangle, square, and circle. They are all categories mentally conceived, with no prior existence to people's relationship with the environment. They are the result of an effort of reason, which relies on a mathematical world (geometrical or not), isolated from the urban reality experienced by people.

CONSTRUCTIVISM⁵⁶ AND ENVIRONMENTAL PSYCHOLOGY (EP)

First, it is the soul which sees, and not the eye; and it does not see directly, but only by the means of a brain.⁵⁷

Because it does not see directly, there needs to be an act of construction performed in the brain. Constructivism, as the very name suggests, proposes that perception is an act of construction. Construction of what? of mental states and representations, by an individual who, in her/his relationship with the environment is faced with sensory stimuli free of meaning or value. Mental states and representations are said to be involved in the organisation and interpretation of such a raw material for perception, constructing, in that way, a meaningful world.

56. The term 'constructivism' refers here to a psychological approach, a not to Russian constructivist architecture.

57. Descartes, R., op.cit..

A typically constructivist conception is expressed by Moore (1979):

There is no "environment" - rather "environment" is a mental construct... Humans do not apprehend the nature of the environment directly but through a highly developed interpretive process.⁵⁸

As Heft points out, such a vantage point will lead authors to focus their psychological inquiry on 'intra-organismic processes on which knowledge construction is seen to be based'.⁵⁹

Constructivist perspectives to perception are widely available in the field of EP. I will not attempt to provide here a review of approaches in that field. As the abundance of publications focusing on human-environment issues attest - see for instance Durrenberger,⁶⁰ who already in 1970 put together an 'environment and man' bibliography, containing 2225 titles; or recent reviews of 'environmental psychology', by authors such as Holahan,⁶¹ or Saegert, & Winkel⁶² - such an undertaking would be rather complex.

One can easily get lost in the multitude of approaches that have sprung up in EP, in the past three decades, figuring among others, 'probabilistic functionalism,' 'transactionalism,' 'information-

58. Quoted by Heft, H., 'An Examination of Constructivist and Gibsonian Approaches to Environmental Psychology', Population and Environment, vol. 4(4), Winter 1981, 227-245, p. 229.

59. Ibid..

60. Durrenberger, R. W., Environment and Man, a Bibliography (Palo Alto: National Press Books, 1970).

61. Holahan, C. J., 'Environmental Psychology', Annual Review of Psychology, 1986, 37, 381-407.

62. Saegert, S., Winkel, G. H., 'Environmental Psychology', Annual Review of Psychology, 1990, 41, 441-477.

processing theory,' and 'Piaget's genetic epistemology'.⁶³

I shall also prevent myself from promoting a debate between the various ways of looking at the discipline of EP, and refer, instead, to approaches that reflect a constructivist attitude.

Of special interest to this dissertation is what Heft refers to as *Piaget's cognitive theory and environmental cognition*, where he identifies the prominent role played by the cognitive map, defined as 'a mental representation of an overview or configurational knowledge of a locale'.⁶⁴ Applications of such an approach are found in works about way-finding behaviour, in which mental representations of the environment are said to play a fundamental role, as illustrated by K. Lynch's *Image of the City*.⁶⁵

In Holahan's review of EP writings, we shall further attest the deeply rooted influence of constructivism. When talking about works

63. The labels we attribute, and the way we choose to describe these approaches will vary from one author to another, according to their particular standpoint. C. J. Holahan, for instance, will talk about trends such as 'environmental assessment', 'cognitive mapping', 'environmental stress', and 'spatial behaviour'; Saegert & Winkel, on the other hand, will present us with 'adaptation', 'goal-directed behaviour', and 'sociocultural' paradigms.

64. *Ibid.*, p. 232.

65. Lynch's most celebrated book, published in 1960, analyses three American cities: Boston, Jersey City, and Los Angeles. Its title is very suggestive of what such an analysis consists of. *The Image of the city*

Lynch, K., *The Image of the City* (Massachusetts: MIT Press, 1960, 1977).

is concerned with people's mental conceptions of the three above mentioned urban settlements. It deals with the building up of mental representations, images, and their relations to people's evaluation of these settlements (or parts of them). The same approach is pursued in a later book

Lynch, K., *A Theory of Good City Form* (Massachusetts: MIT Press, 1981) in which Lynch proposes a 'normative theory' to urban analysis. Such a theory aims to look at 'purposeful human behaviour and images and feelings that accompany it' (p. 49).

oriented towards 'environmental assessment'. Holahan presents us a number of studies concerned with 'place evaluation' (maybe interested in affective appraisals of environmental settings). Such studies (of theoretical and practical nature), may propose, as Kaplan (1982) does, that 'considerable cognitive analysis and calculation precede an affective appraisal...'⁶⁶.

Much in tune with such a conception are the methods employed in the above mentioned studies in the evaluation of places. Those are characterised by the use of research tools such as questionnaires (e.g. Weideman et al (1982)⁶⁷, or Canter (1974)⁶⁸), photographs of environmental scenes or buildings (e.g. Russell & Lanius (1984),⁶⁹ or Canter, (1974)), slides (e.g. Nasar (1983)⁷⁰), or 'photoquestionnaires'.

Canter in an experiment designed to assess visual pleasantness, presents his subjects with a series of photographs of houses, and as the order of presentation varies, Canter observes that so does the preference pattern. Such an approach, which proposes a link between the theory of adaptation level (Helson 1964) and environmental assessment is also found in the work of Russell & Lanius.⁷¹ In that study, involving the presentation of photographs of environmental scenes to college students, these authors 'found that changes in assessment of

66.Holahan, op.cit., p. 384.

67.Weideman, S., 'Resident's Perceptions of Satisfaction and Safety, a Basis for Change in multifamily Housing, Environment and Behaviour, 1982, 14, 695-724.

68.Canter, D., Psychology for Architects (London: Applied Publishers Lt 1974).

69.See Holahan, op.cit., p. 383.

70.Ibid., p. 384.

71.Ibid., p. 383.

environments' degree of pleasantness and arousal quality, as well as of more categorical affective descriptors (e.g. sad and calm), were predictable from systematic variations in prior adaptation level', i.e., 'adaptation level was varied by the affective nature of an earlier scene the students were exposed to.'⁷²

The above described strategy to the problem of human-environment relationships clearly reveals a constructivist content. The interference of the mentally constructed component is dominant in them, appearing in the form of objects intermediating the relationship between user and environment. Questionnaires, photographs, and photoquestionnaires, as artefacts conceived by the environmental psychologist will bridge the subject to her/his environment; and the subject, through an effort of making explicit aspects of her/his relationship with the latter, will attempt to meet those structures (questionnaires, photographs, etc.) specified by the psychologist.

Maybe the limitation of constructivist approaches is here at its most evident state. We witness, indeed, the interference of a mental construct (product of the researcher's exercise of selection and choice, external to the subject, and prior to that subject's relationship with the environment) - crystallised in the form of questionnaires and photographs (and order of their presentation); suggesting an alienation of the original condition of an individual directly experiencing an environment. Faced with such a state of affairs, we may ask the following:

A - By adding the 'research artefact', how much do we interfere in the object we are hoping to investigate, i.e. the

72. Ibid., p. 383.

relationship between person and environment? In the case of a sequence of photographs or slides, we may point out that unlike natural perception of the environment, photographs present clear-cut boundaries. And that depending on the angle the building is viewed from, the illumination of the scene (and other climatic variables), and composition and colour variation of the photograph, the building in question will appear in a variety of ways, giving rise, to be sure, to multiple possibilities of appraisal (a fact that is well known by post card makers and travel agents). Moreover, a photograph is perceived as an static two-dimensional arrangement, whereas a building is experienced in three dimensions in a dynamic interaction.

B - To which extent are people's verbal accounts, or answers to questionnaires representative of their experience of the environment?

Looking at the EP review by Saegert & Winkel, we come across the 'transactionalist approach' that these authors advocate. Such an approach promotes the need for an interdisciplinary effort, and proposes to 'view the observer as a particular individual in a particular "location" with regard to a particular phenomenon'.⁷³ Or, phenomena are variable in time, and individuals are embedded in diverse social contexts. Such features guide Saegert & Winkel in their review of approaches to EP. In relation to what they call 'adaptation paradigm', based on 'the assumption that the goal of biological and

73.Saegert, & Winkel, op.cit., p. 443.

psychological survival motivates behaviour',⁷⁴ Saegert & Winkel point out that there is a neglect of temporal processes. Or when talking about the work of Rapoport, these authors observe that 'his work includes little discussion of changes in meaning over time...'⁷⁵ On the other hand, there will be no comment on the assumption - shared by authors that subscribe to Saegert & Winkel's 'sociocultural paradigm', as does Rapoport - that 'the person as a social agent seeks and creates meaning in the environment'.^{76 77}

74.Ibid., p. 446.

75.Ibid., p. 459.

76.Ibid., p. 457.

77.Rapoport seems to share, with a number of other authors [interested the analysis of urban environments (notably vernacular) in different societies] such as Oliver, P., Dwellings: Houses across the World (Oxford: Phaidon Press, 1987), or Denyer, S., African Traditional Architecture (London: Heineman, 1978), a concern to account for the diversity of such urban environments. Such a concern leads Rapoport to talk about socio-cultural patterns that underlie people's relationship with the urban environment. In his conception, these patterns are mental constructs, related to previous experiences, traditions, etc... 'Perception (of physical and social environments) is affected not only by culture and previous experience but by expectations which these generate and the consequent mental set which may affect how various specific objects (for example, money, food or front lawns) are perceived'. (p. 26) Rapoport, A., Human aspects of Urban Form (Oxford, etc.: Pergamon Press, 1977). So far we are only told that perception is affected by mental constructions. But further on, Rapoport takes a more radical view to say that perception itself is a mental construct. 'While environmental perception is a property of the mind the environment as perceived is a construct...' (pp. 28-9) '...the perceived environment... can be conceived as a construct in people's minds based on what is known, expected, imagined or experienced and such constructs, often embodied in images and schemata, can be mistaken or 'unreal' yet still affect behaviour'. (p. 29) As to people's interaction with the environment as a whole, Rapoport proposes three instances: evaluation, cognition, and perception, which are seen as 'aspects of constructing a perceived environment'. (p. 31) Paramount status is given to the idea of 'mental image'. As Rapoport puts it:

In relation to such widespread constructivist formulations, I would like to observe, with Heft, that where there has been a conception of perception of the environment which relies on the enrichment of sensory input (here illustrated by a focus of sociocultural patterns specific to certain groups, or an emphasis on how groups' conceptualisations affect their evaluation of spaces), 'cognitive processes assume a central and pervasive role...'; and 'while objective or perceptual environment initiates and to some degree shapes perceptual experience, it is relegated to secondary status in comparison to cognitive process':⁷⁸

(Footnote 77 continued from previous page)

"...the notion of 'image' seems to offer possibilities of becoming an organising concept in man-environment interaction as it seems to be in psychology... Most generally an image is an internalised representation and, regarding the environment, it is 'an individual's mental representation of the parts of external reality known to him via any kind of experience'... (Harrison and Sarre 1971)". (Rapoport, op.cit., p. 40).

'The perceived environment can then be seen as a very large scale image'. (p. 42)

Such a pre-eminent role attributed to 'image' in people's interaction with their environment, comes as a response to Rapoport's initial concern for accounting for diversity in urban environments: 'It (the notion of image) is used to emphasise that the city has different meanings for different people...' (p. 41)

In relation to the production of urban spaces, Rapoport conceives it uniquely as the product of mental processes.

'The organisation of the environment is, therefore, the result of the application of sets of rules which reflect differing concepts of environmental quality. Design can hence be seen as an attempt to give form of expression to some image of an ideal environment, to make actual and ideal environments congruent'. (p. 15)

And further he adds:

'All man-made environments are designed in the same sense that they embody human decisions and choices and specific ways of resolving the many conflicts implicit in all decision-making. Since there are few places left on earth which man has not altered in some way... we could say that much of the earth, and certainly all cities, are designed... The work of a tribesman laying out a camp or a village is as much an act of urban design as a new town or pedestrian mall'. (p. 15)

78.Heft, op.cit., p. 229.

CONCLUSION

The rationalist⁷⁹ and constructivist conceptions described above suggest a particular way of looking at the environment. A way which finds its starting point on a mental world separated from the world experienced by the individual.

In the case of rationalism such a mental world has a mathematical nature. In many cases, it is related to the geometry of Euclid. They are, points, lines, circles, and angles, which we found earlier on in the work of Alberti. They are the perfect spherical forms of Boulee. They are, Le Corbusier's machine conception of the city, and his 'pure forms'. Finally, they are Krier's triangle, square, and circle.

Such a scientific, or mathematical bias, has led to a particular conception of order, namely that of regular volumes, pure forms and repetition, at the expense of the disordered environment, generally represented by the vernacular fabric.

In the case of constructivism, the pre-eminence of a mental world of representations and images leads authors to rely on people's mental conceptions and accounts (questionnaires, etc.) to understand relationships between these people and certain environments. On the other hand, such authors look at the production of spaces as an outcome of mental representations (e.g. Rapoport).

In relation to such dualistic views, we may ask about the extent to which architectural inquiry and environmental studies have confined themselves to particular aspects of the environment that are

79. For a comprehensive account on rationalism, empiricism, and pragmatism and their influences in architectural inquiry, see Broadbent 1990, op.cit..

somehow related to the mental (which I may call planned interventions), at the expense of those aspects that are not the result of mental elaboration (interventions that have not been planned, but just occurred as a number of individuals acted in space). Also, one may question the pre-eminence attributed to such a mental world in the relationship between person and environment; and more radically, one may question the very nature and existence of it, as does Rorty when discussing the 'invention of the mind'. As I see it, there seems to be a danger in confining ourselves to a mental world, overlooking the ways in which people actually experience their environment. In many cases, as modernist designs such as Brasilia attest, such a mental bias may lead to an exercise with geometrical forms which bear little with people's use of spaces (their patterns of movements, the activities they develop, etc.).

This dissertation proposes an alternative to such dualistic views by exploring a kind of interaction between person and environment that does not rely on mental conceptions (and studying the spaces that are shaped as such an interaction occurs). Instead of a mentally mediated relationship, I will be concerned with an immediate interaction. This is reflected in the phenomenological idea that individuals are in the world, and that such a state of affairs already suggests particular patterns of action. The same notion is also present in Gibson's ecological approach to perception, which proposes that perception is direct.

We look at these notions in more detail in the chapter that follows.

ARCHITECTURE, ECOLOGY, AND PHENOMENOLOGY

Contrasting with the fore mentioned dualistic notion of a mental world existing independently from the world of experience, and of individuals constructing meaning in their minds, an ecological approach to perception takes a mutualistic view, in which organism and environment form an inseparable pair¹ - one cannot exist without the other, whenever we talk about an organism, an environment is implied and vice-versa. This suggests that the environment is immediately given to the individual; that human action in the environment, before being mentally mediated, is already born in such an immediate interface.

Before going on to talk in more detail about the 'ecological approach to perception' developed by J.J. Gibson, I will explore some issues related to the conception of the relationship between person and environment as an immediate affair. I shall look at questions such as: how individuals may be said to be at the root of their relationship with the environment without necessarily being responsible for the construction of meaning in their heads. Questions like these are explored by phenomenological authors such as Merleau-Ponty (among others).

1. Gibson, J.J., The Ecological Approach to Visual Perception (Boston: Houghton Mifflin Co., 1979), p.

PHENOMENOLOGY AND THE URBAN ENVIRONMENT

Phenomenology rejects the dualist approach (of mental categorisations conceived prior to people's experience) discussed in the previous chapter. The idea of experience is taken by Phenomenology as the very starting point for an inquiry into the relationship between humans and the world. As Merleau-Ponty puts it:

Phenomenology is the study of essences; and according to it, all problems amount to finding definitions of essences... But phenomenology is also a philosophy which puts essences back into existence, and does not expect to arrive at an understanding of man and the world from any starting point other than that of their "facticity".²

In its effort to transcend mental preconceptions, to understand things in their essence, and to account for the world as experienced, phenomenology focuses on the individual and conceives her/him as the generator of her/his relationship with the environment. Merleau-Ponty tells us:

I am the absolute source, my existence does not stem from my antecedents, from my physical and social environment, instead it moves out towards them and sustains them, for I alone bring into being for myself (and therefore into being in the only sense that the word can have to me) the tradition which I elect to carry on, or the horizon whose distance from me would be abolished - since that distance is not one of its properties - if I were not there to scan it with my gaze.³

Antecedents, physical and social environment (and more broadly things in the world) are sustained by me (the individual). I bring into being my tradition, I bring into being the horizon. And the distance

2. Merleau-Ponty, M., Phenomenology of Perception, translated from the French by Colin Smith (London: Routledge and Kegan Paul: 1962), p. vii

3. Merleau-Ponty, M., Signs, translated by R. C. McCleary (US.: Northwestern U. P., 1962), p. ix.

which separates me from it is only meaningful in relation to me. In the words of Merleau-Ponty, the relationship between humans and the world has to be approached through me (the individual), inasmuch as it is me who grants existence to the world, furthermore, the world is perceived from a point centred on me. In that perspective, there is not 'a horizon,' but 'a horizon which lies at a certain distance from me.'

At first sight this conception may seem to approach the constructivist perspective that was criticised earlier. A closer inspection, however, reveals the distinction between the two approaches. To talk about an individual as the source, generating a relationship, is not the same as to say that individuals rely on mental representations to construct meaning about the world. What it does imply is that a relationship is seen through the perspective of the individual.

The idea of experience helps us to focus on the individual. Experience is not an abstract thing, a mental construct (imposed by the constructivist questionnaire) imposed onto a relationship, it is the very heart of such a relationship. It is about a person interacting with an environment, inclining her/himself in a particular way, according to environmental properties; standing in space at a certain distance from the horizon; a distance which is particular to the person, and which colours the experience with a special hue.

And let us not forget Merleau-Ponty's observation that distance (from the observer) is not a property of the environment; as it reaffirms what was argued above, and also tells us that the horizon has properties. In this statement, it is clear that although the existence of the horizon stems from me, and the distance which separates it from me depends on my presence, there is a horizon, which is not a vacuum

awaiting to be attributed meaning to, but a particular thing which has certain properties.

We see, therefore, in our conception of individuals generating their relationship with the world, that they are faced with a number of properties that are given to them from the start; but which do not present themselves on their own, rather, in relation to an individual (at a certain distance), and which undergo a process of appropriation by such an individual.

APPROPRIATION

Appropriation may be described as a process whereby an individual makes a thing her/his own. It carries a dimension of belonging (to an individual or group), being in that way, something socially and individually relative.

We may illustrate appropriation by the interaction between a person and a rod, which may initially be used to reach a fruit on a tree, and subsequently be employed as a lever-arm, or in the making of a fence, etc.. Looking at the rod through the point of view of the person, we may observe that its meaning has apparently undergone a series of transformations, from being a useless piece of wood in the field, to an everyday use tool. The relationship between the individual and the rod in that case has certainly changed in time, and we may justly conclude that a relationship between an individual and a thing will depend on the type or degree of appropriation of the thing by the individual.

This is most apparent in the example (of less primitive flavour), of learning to drive a car. One needs to become familiar with the various controlling devices built into the automobile. As long as

this becoming familiar is not well developed, the individual's feeling for the car will be marked by insecurity, and strangeness, of being involved with an entity which is foreign and maybe adverse to her/him. Such a feeling will generally persist even after one gets one's driving license, tending to disappear as one drives the car. On the other hand, if one gets a license without owning a car, and years later is contingently found in a position of having to drive, the same feeling of insecurity is likely to recur.

It seems apparent that appropriation is a function of use. It is a gradual process whereby the individual becomes acquainted and probably attached to the thing she/he is relating to. The two examples given above, referred to (what we are used to call) physical objects (rod and car), the same notion applies, nevertheless, to other people, sentiments, and ideas.

And as we move from physical entities to sentiments and ideas, the notion of appropriation as an active process stemming from the individual becomes more apparent. If one is to appropriate the ideas expressed in a book, one requires more than a passive attitude, one needs to make an effort of understanding. And such an idea remains alien to the individual unless she/he is able to manipulate it and use it in new contexts. If this is achieved, we may say that the idea has undergone a process of appropriation.

Coming to the field of architecture, we may observe that appropriation is connected to the idea of place. The expression 'sense of place' carries a dimension of belonging to an individual or social group, and is presented in opposition to impersonal space.

These two expressions (space and place), widely used in the architectural milieu, are introduced here in terms of appropriation,

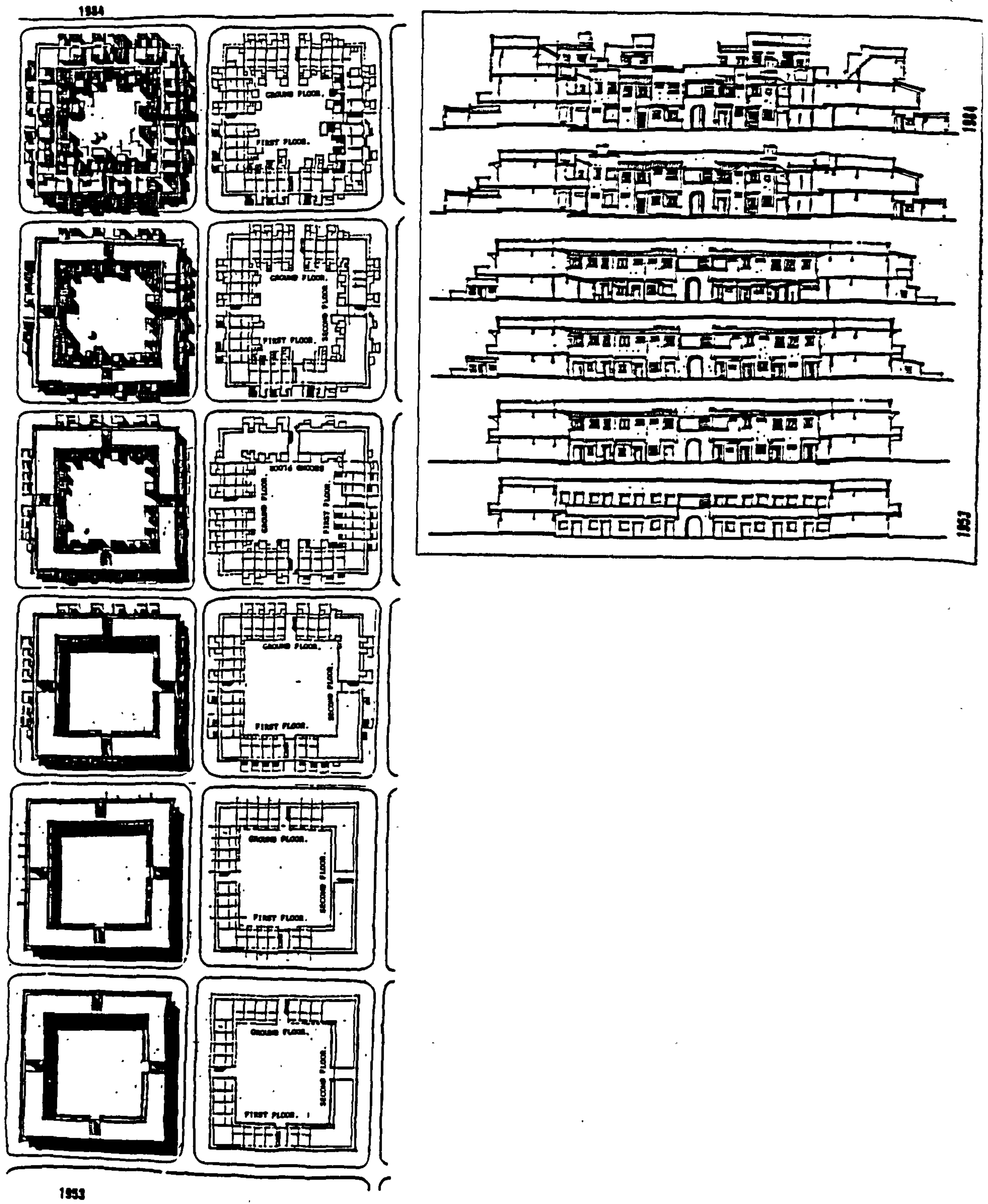


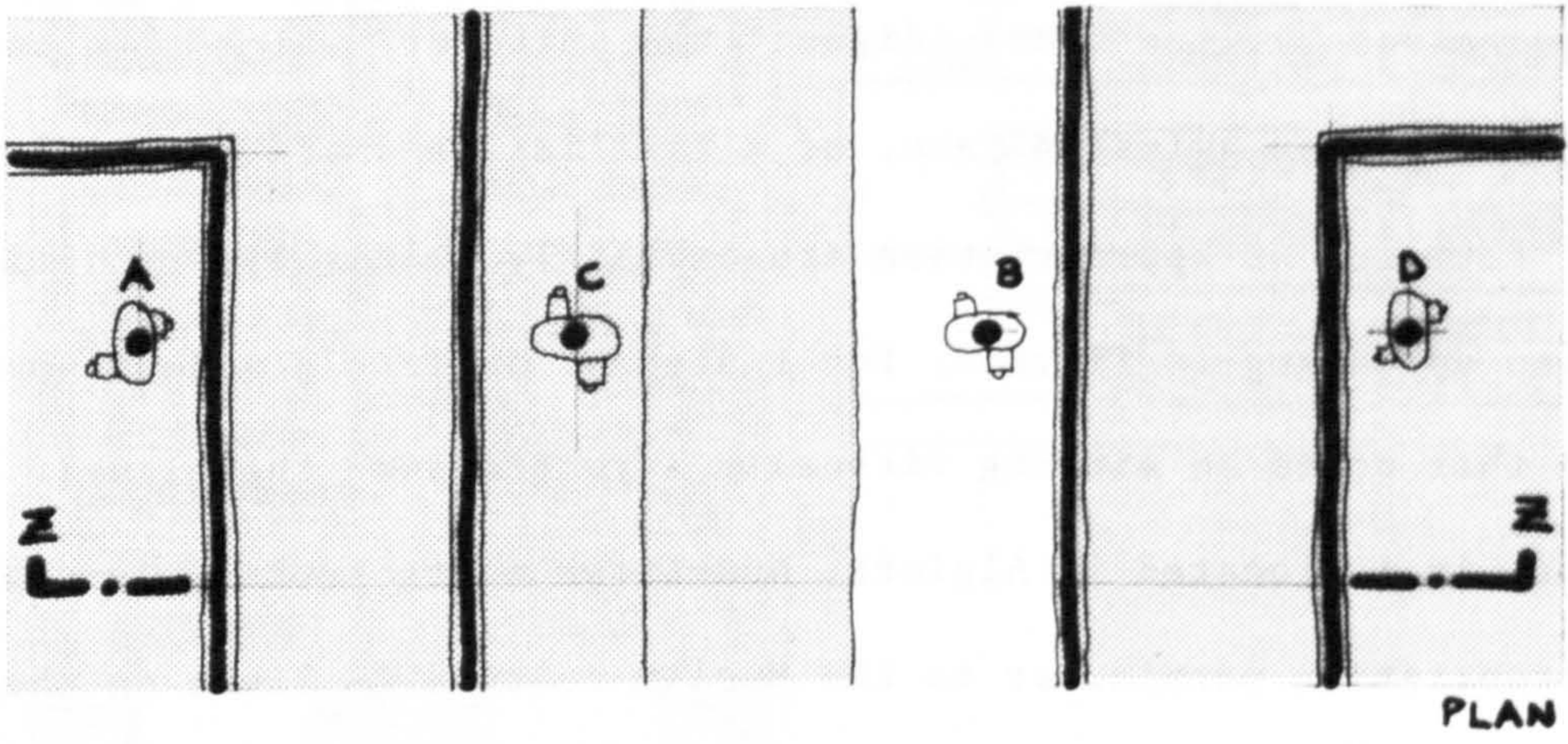
Fig.2.1 - Jangapura extension. Source: AR, 1985.

which is said to be their difference. In other words, place is conceived as appropriated space. Space is the primary structure for appropriation by the individual, an appropriation which occurs in time as the individual uses, becomes acquainted, and shapes the layout according to particular patterns (fig.2.1).

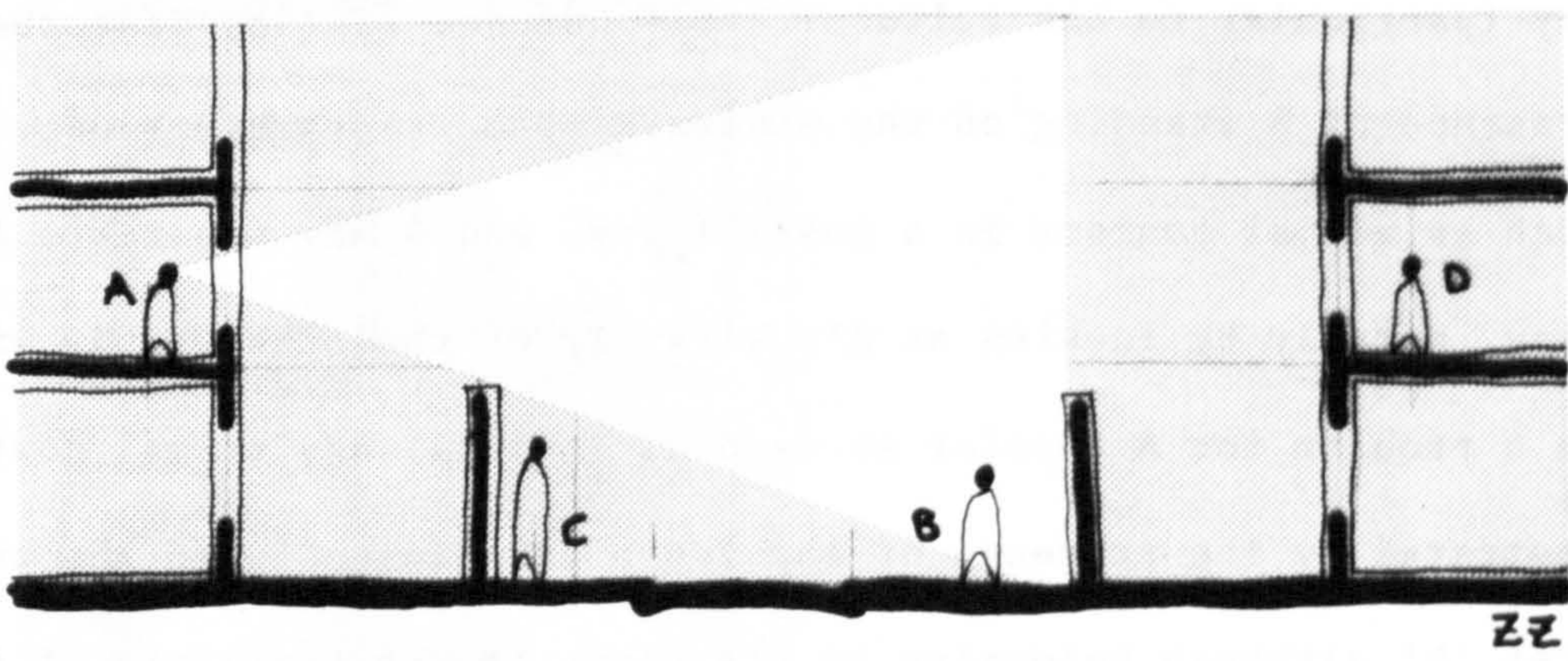
This process is closely observable in the case of an infill, where the new building is immediately noticed by the users of the space configured by it. Such a building creates an impact, giving rise not rarely to controversies and possible rejections by its users. And maybe as time passes by, the users 'digest' the intruder, which then becomes an old friend, an amicable face, or a familiar landmark, possibly.

Patterns of appropriation are certainly culturally conditioned. The plan appearing in fig.2.2, for instance, depicts a modern housing scheme that could be sitting virtually anywhere over the planet. As it happens, it is located in Algiers, and it is characterised by a pattern of appropriation particular to the Muslim culture. A lives on the second floor of a two storey house with his family. For reasons of privacy (particular to his culture), this husband will be disturbed by the presence of B standing on the sidewalk opposite to his house, inasmuch as visual contact is a possibility, and B may penetrate A's intimacy, notably by looking at A's wife. C, on the other hand, will not be a problem for A insofar as (and as long as) any visual contact is frustrated by the presence of the fence standing between the two. The area 'b' although belonging to D's plot, is the territory of A, and vice-versa.⁴ What A defines as his territory, what he has appropriated, is very much determined by the notions of privacy

4.I owe this example to Hammid (PH.D. student at the IoAAS).



PLAN



ZZ

Fig.2.2 - Appropriation of urban spaces. Source: author.

developed in his own culture. If the same layout happened to be in a Western country, for instance, the relationship between people and environment would be different.

In the light of the above considerations, I would suggest that the relationship between person and environment is dependent on appropriation.

To affirm that, however, is not the same as to say that meaning is constructed in the heads of individuals. Appropriation occurs in an environment, and it refers to a number of properties that are given from the start. Individuals do not construct meaning but appropriate already given meaningful environmental properties in particular ways. It is the very idea of appropriation that makes possible for us to talk about a diversified urban environment, without appealing to constructivist approaches to perception. Instead, we are open to contemplate the idea of perception being a non-mentally mediated, or direct affair.

We therefore free ourselves from an approach that is mentally bound, and we are able to expand on the realm of architectural inquiry to look for meaning into space layouts that did not necessarily exist in the mind of individuals before being actualised (such as the formation of vernacular spaces, which are the contribution of a variety of individuals in time). In the same way, we are given a new perspective to the problem of mentally conceived (or planned) spaces, which invites us to see certain solutions, not as sheer mental fancies particular to a certain culture, but as events that before anything are human gestures. This perspective opens interesting views to transcultural studies, to the comparison of similar urban spaces produced by different societies. It also invites us to identify

permanences in the urban environment; and ask why certain spaces have remained unchanged, and how certain changes have occurred in other spaces. Or, how permanences and changes in the urban environment may reflect a direct (i.e. non-mentally mediated) relationship between person and environment; a relationship that happens over time as people move in space.

In short, the concept of appropriation allows us to account for cultural variants, at the same time that it accomodates a theory of direct perception, which looks for *invariants* in a relationship between person and the environment.

We may now get more detailed in our inquiry, and ask in what ways are environments intrinsically meaningful to humans? This calls for a closer examination of environmental properties; and in that aspect, I believe we can benefit from the work of J. J. Gibson. I next introduce his 'ecological approach to perception'.

ECOLOGICAL PSYCHOLOGY AND THE STUDY OF ENVIRONMENTAL PROPERTIES

Let us start with a brief overview of the ecological approach to perception, and subsequently build up on it to propose an environmental description and analysis.

Gibson begins by talking about the environment, proposing to describe it in terms of a *medium*, *substances*, and *surfaces* that separate them.

A medium is essentially characterised by it affording an organism to move in it without resistance, to respirate or breath. Besides these properties. A medium is homogeneous and 'can be filled

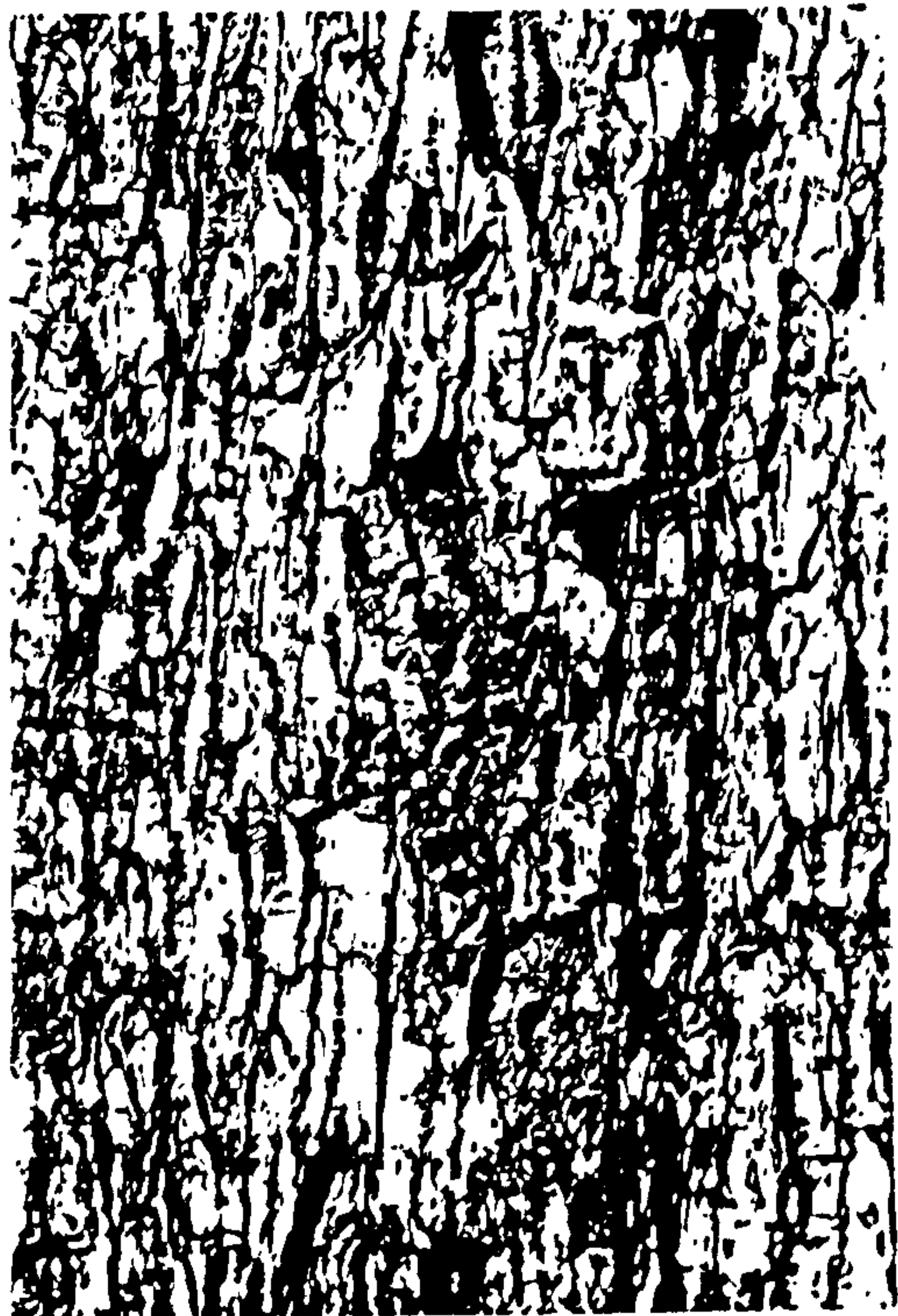
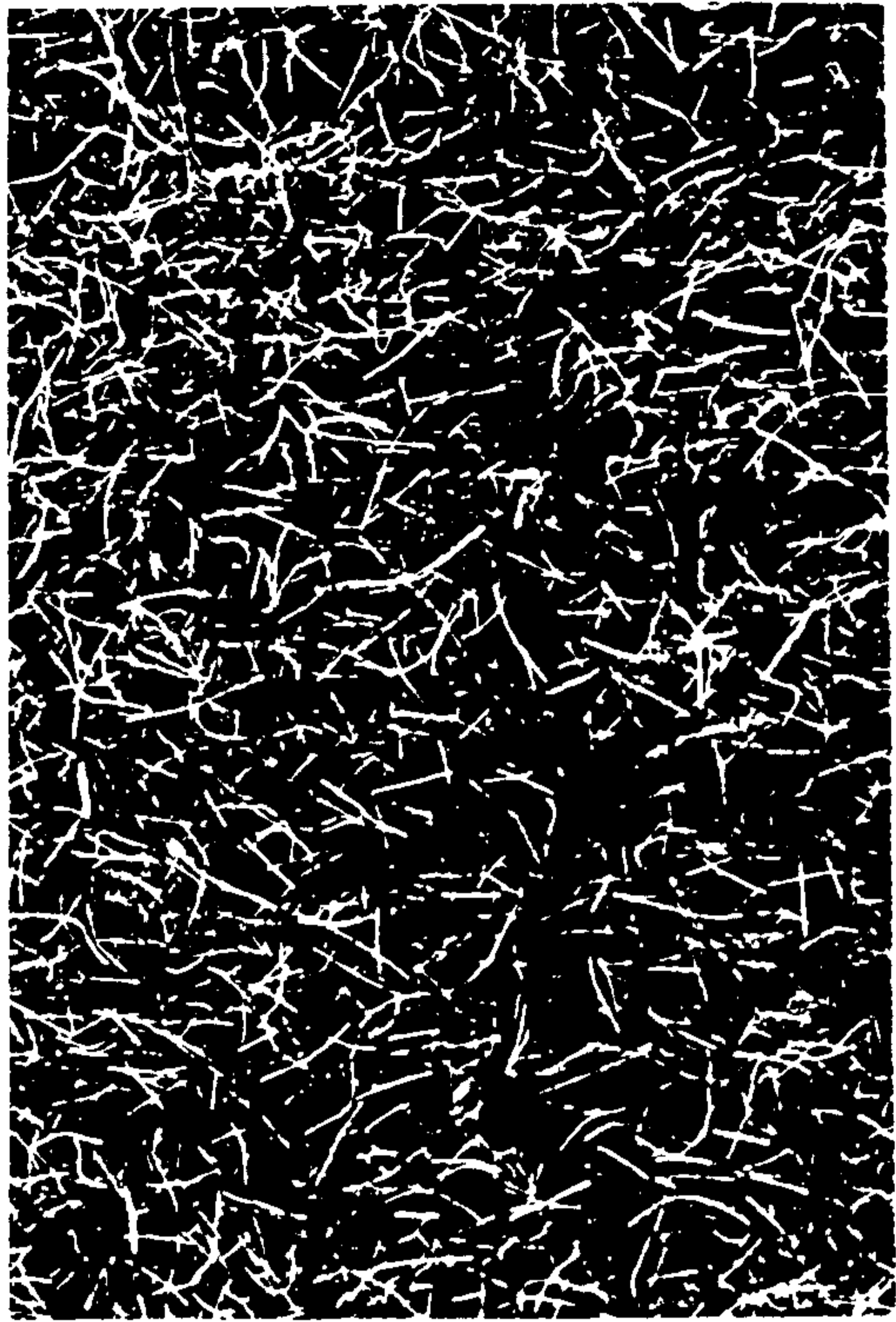
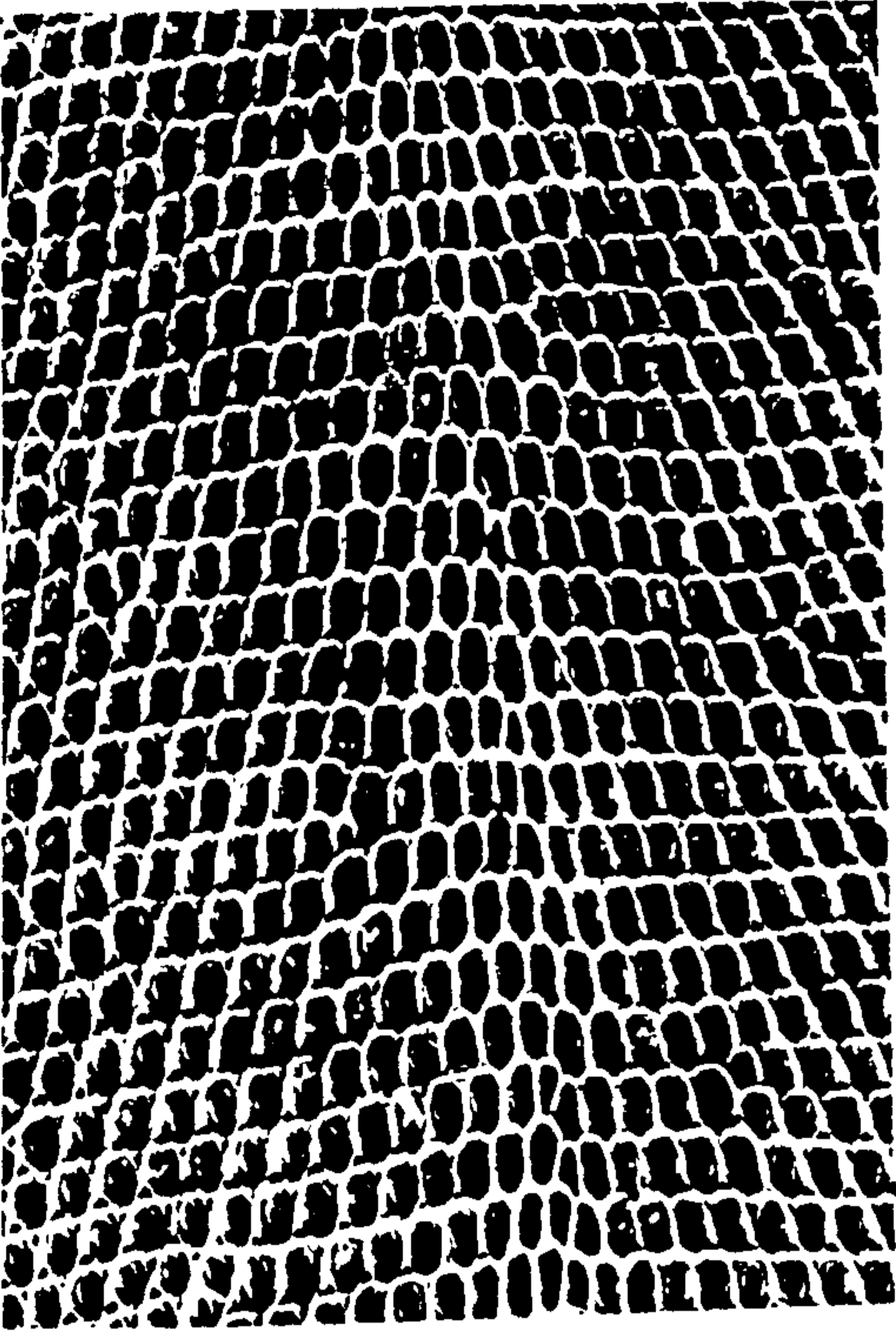


Fig.2.3 - Textures. Source: Brodatz, 1966.

with illumination so as to permit vision.⁵

Substances form 'the portion of the environment that does not freely transmit light or odour and that does not permit the motion of bodies and the locomotion of animals. Matter in the solid or semisolid state is said to be *substantial*, whereas matter in the gaseous state is *insubstantial*, and matter in the liquid state is in between these extremes.⁶

Gibson refers to these three states of matter (solid, liquid, and gaseous) to define surfaces . Surfaces are constituted by the very interface between any of two of these three states of matter.

Whereas a medium allows for illumination to take place, surfaces are responsible for structuring the ambient light, inasmuch as (unlike media) surfaces are heterogeneous. And because of that, surfaces emerge as the central feature of an ecological description of the environment, suggesting a definition of the object of such a description as *surface layout*.

The idea of surface layout goes back to Gibson's 1950 book, *The Perception of the Visual World*. It emerged as a reaction to what Gibson called at the time 'air theory', which proposed to understand depth perception by realising experiments with points of light in a dark room. Gibson's 1950 'ground theory', instead, brought attention to the importance of surface layout for depth perception. Surfaces in the environment, unlike immaterial space, possess texture. Texture is a fundamental feature of surfaces: in that it is inhomogeneous, and therefore has the property of structuring the ambient light (fig.2.3).

5.Ibid., p. 18.

6.Ibid., p. 19.

Structured ambient light contains information about the environment:

Only insofar as ambient light has structure does it specify the environment. I mean by this that the light at the point of observation has to be different in different directions... in order for it to contain any information. The differences are principally differences of intensity. The term that will be used to describe ambient light with structure is an *ambient optic array*.⁷

Gibson backs up this formulation with the 'total field' (Ganzfeld) experiment, which consists of creating a homogeneous optic array:

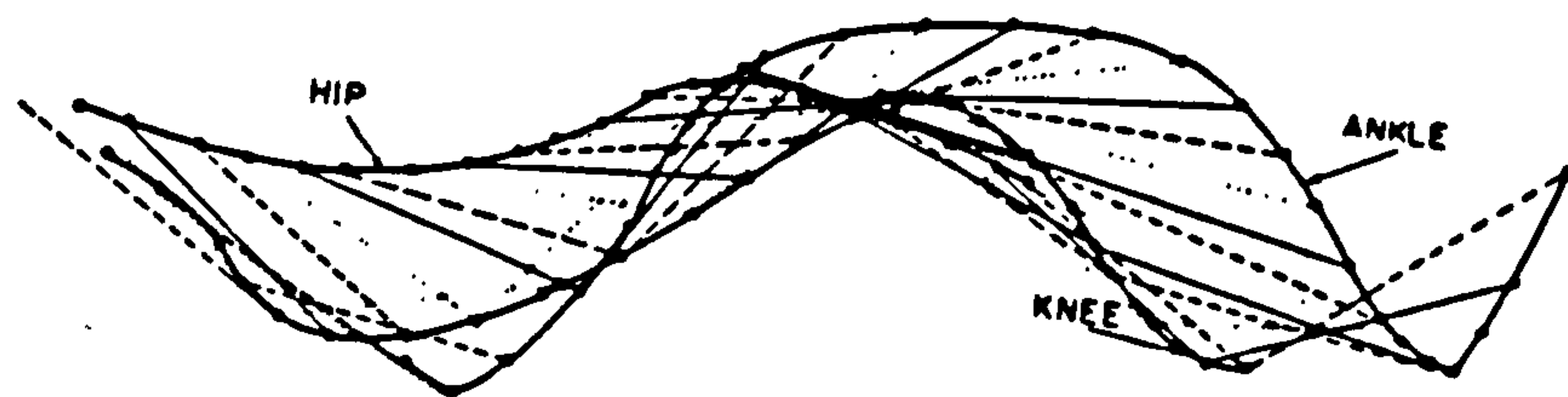
... cover each eye with a fitted cap of strongly diffusing translucent material worn like a pair of goggles... The structure of the entering light, the optical texture, can thus be eliminated at any level of intensity. What my observers and I saw under these conditions could better be described as 'nothing' in the sense of 'no thing'. It was like looking at the sky... Depth was not present in the experience but missing from it. What the observer saw, as I would now put it, was an empty *medium*.⁸

Changing Optic Array

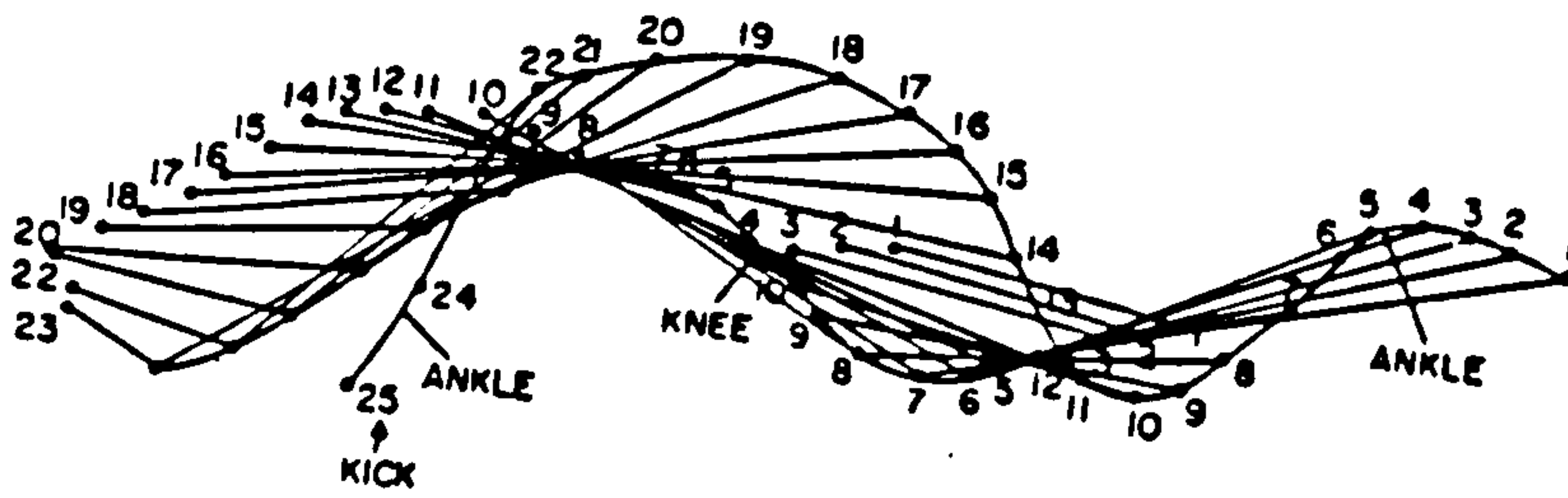
The ambient optic array is not a static thing, rather it is in continuous transformation. The reaction to laboratory experiment tradition, which we saw manifested in Gibson's early work (opposing the fore mentioned 'air theory', and its experiments in dark rooms with light bulbs), is furthered in his formulation of an ecological approach, as Gibson rejects the artificially created laboratory environment, and proposes to study the natural environment. Such a natural environment consists of an observer in movement, immersed in a

7.Gibson, op.cit., p. 51.

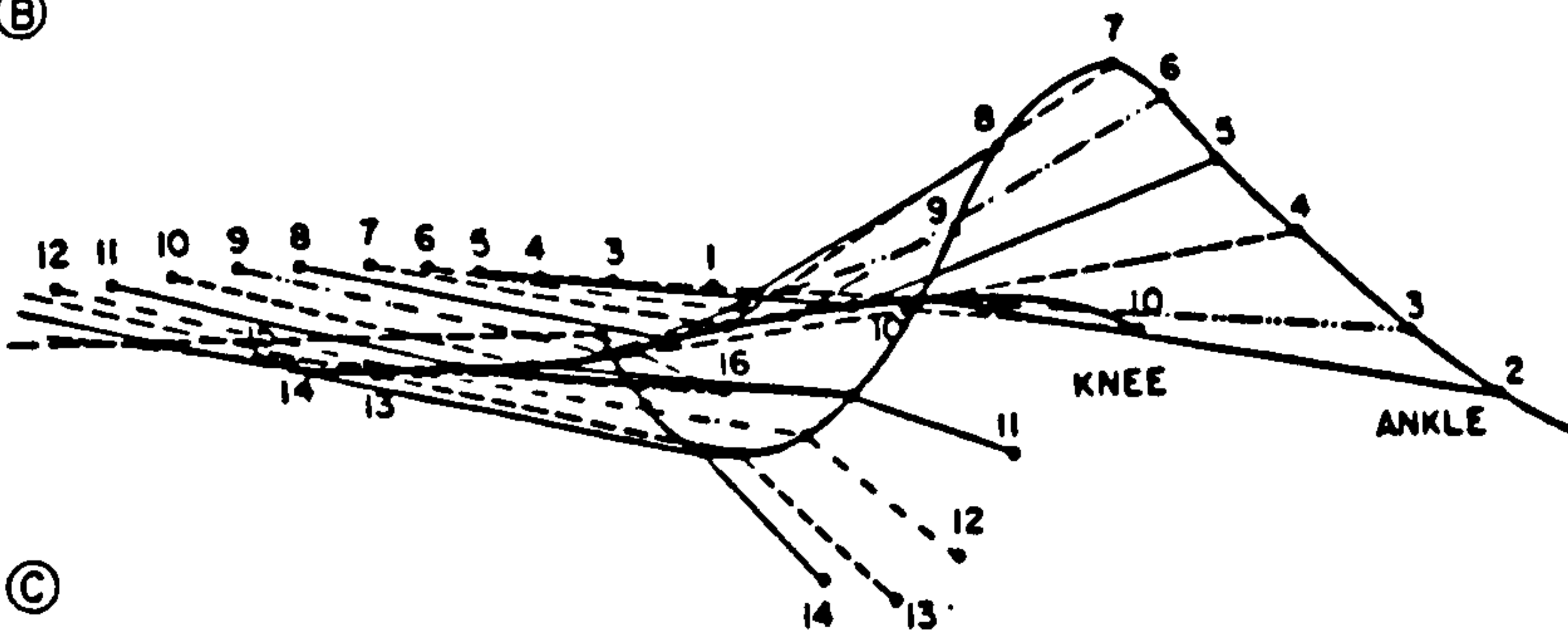
8.Ibid., p. 151.



(A)



(B)



(C)

Fig.2.4 - Swimming kicks. Source: McCabe, 1986.

changing environment.

In that perspective Gibson answers the question of how we get structural information from a continuously changing optic array, by talking about 'invariants under transformation'. This means that variants in the environment (e.g. the changing trapezoidal shapes given to sight by a rectangular table top), will reveal invariant structures (in this case the rectangleness of the table top).

The notion of change on the environment is captured by the term event. Events include not only the movement of the observer, but also environmental changes, such as: changes of layout (e.g. rigid translations and rotations of an object, collisions of an object, surface deformations, etc.),⁹ changes of colour and texture (e.g. flowering or growing of plants), or waxing and waning of a surface due to change in the state of matter.

The concept of event was further elaborated by authors such as McCabe and Balzano, who in the introduction of their book 'Event Cognition' present us with the following definition of event:

An event is defined here as a coherent and meaningful unit that has properties that persist and properties that change as the event occurs over time and space. It could be as short as a raindrop or as long as evolution; it could be as fast as the wink of an eye or as slow as the formation of a mountain...¹⁰

As the title of that book suggests, event is taken to be the basic unit for cognition. McCabe's elaboration on that notion leads to the idea of dynamic geometric patterns, generated by things in the

9. Ibid., p. 95.

10. McCabe, V., Balzano, G. J., Event Cognition: an Ecological Perspective (Hillsdale, etc.: Lawrence Erlbaum, 1986), p. 4 (footnote).

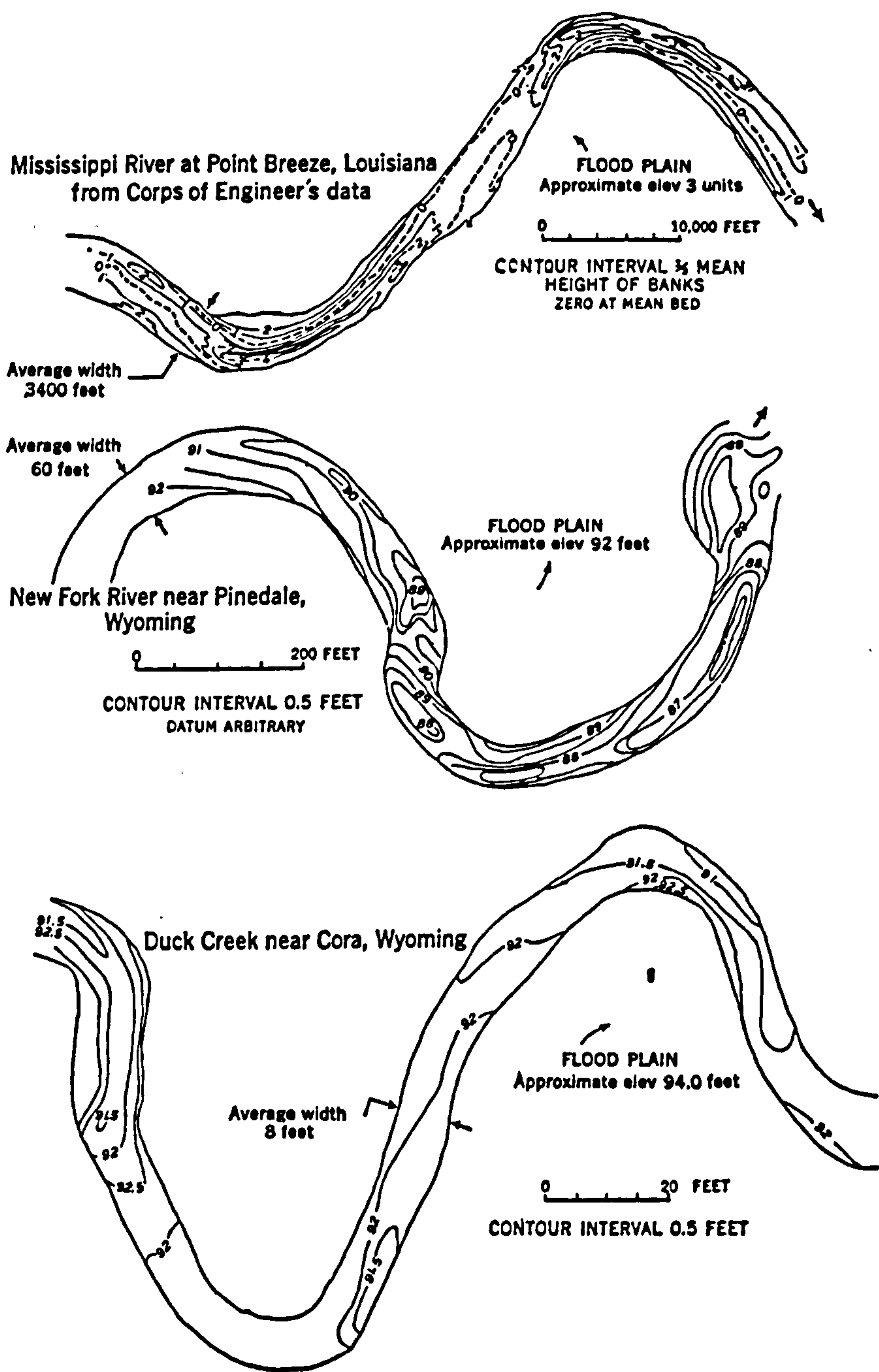


Fig.2.5 - Meanders patterns. Source: McCabe, 1986.

world as they move. These patterns are proposed by that author to be of primary importance in the process of picking up information in the environment.

To illustrate these dynamic geometric patterns, McCabe refers to types of swimming kicks particular to different swimming styles, and observes that they 'produce unique yet similar dynamic patterns that specify both kicking in general (although kicks may vary, they are all kicks) and each unique kick in particular'¹¹ (fig.2.4).

Further illustration of dynamic geometric patterns is given by the meander formation of flowing rivers (fig.2.5). Quoting Stevens (1976), McCabe writes:

A key point is that all waterways..., no matter what their size or location, are specified by the same lawful pattern; each particular waterway, like a melody played in different keys, is simply a variation on the same basic theme.¹²

We have talked about the environment, and the information that it contains for an observer, we now move to the culmination of Gibson's ecological approach to perception, namely the theory of affordances.

Affordances are specified by the informational structure of the ambient light.¹³

Roughly, the affordances of things are what they furnish, for good or ill, that is, what they afford to the observer.¹⁴

11.Ibid., p. 5.

12.Ibid., p. 7.

13.Heft, op.cit., p. 237.

14.Gibson, J. J., 'Notes on Affordances', in E. Reed, and R. Jones's, editors, Reasons for Realism. Selected Essays of James J. Gibson (Hillsdale, etc.: Lawrence Erlbaum, 1982), p. 403.

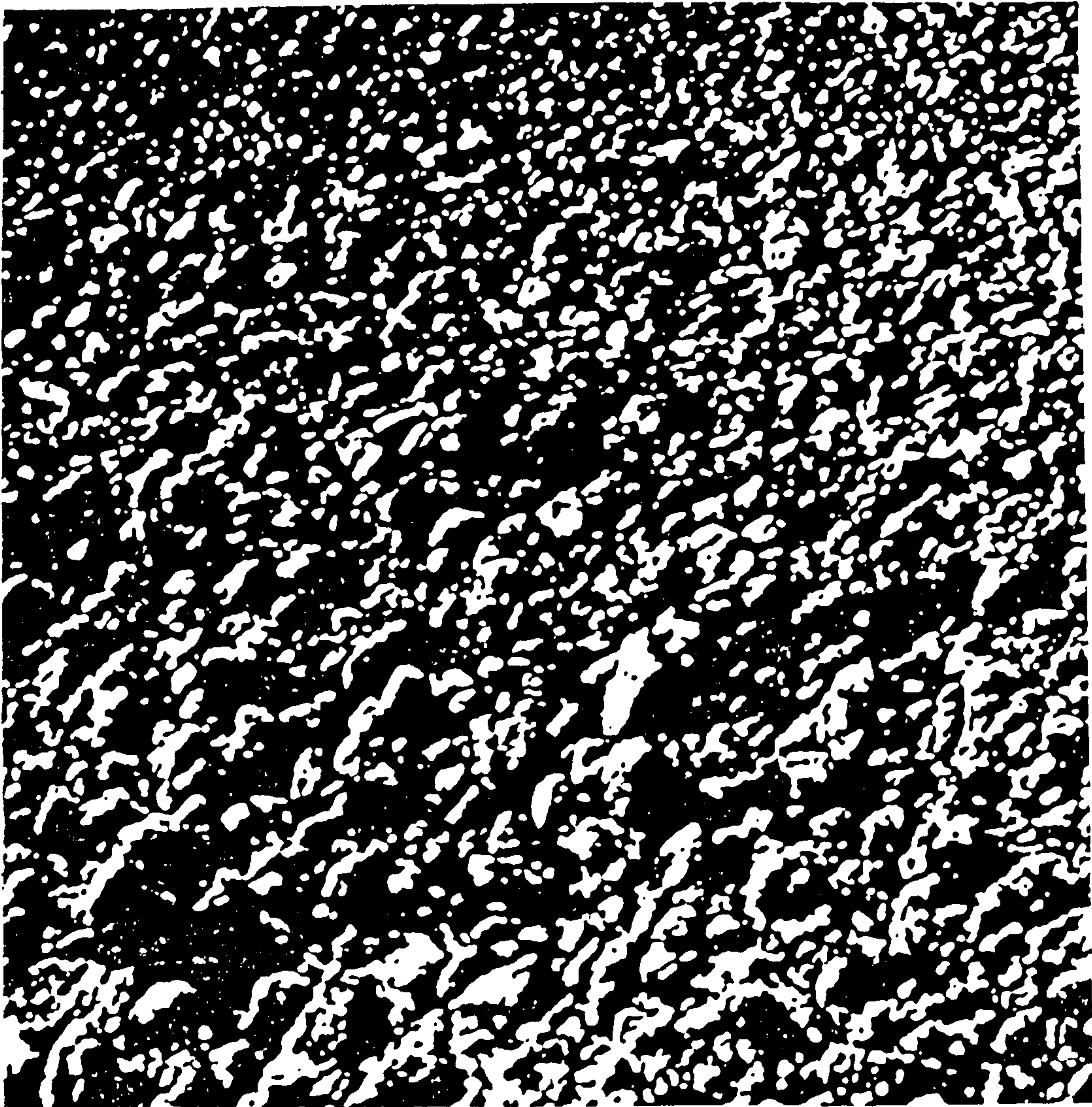
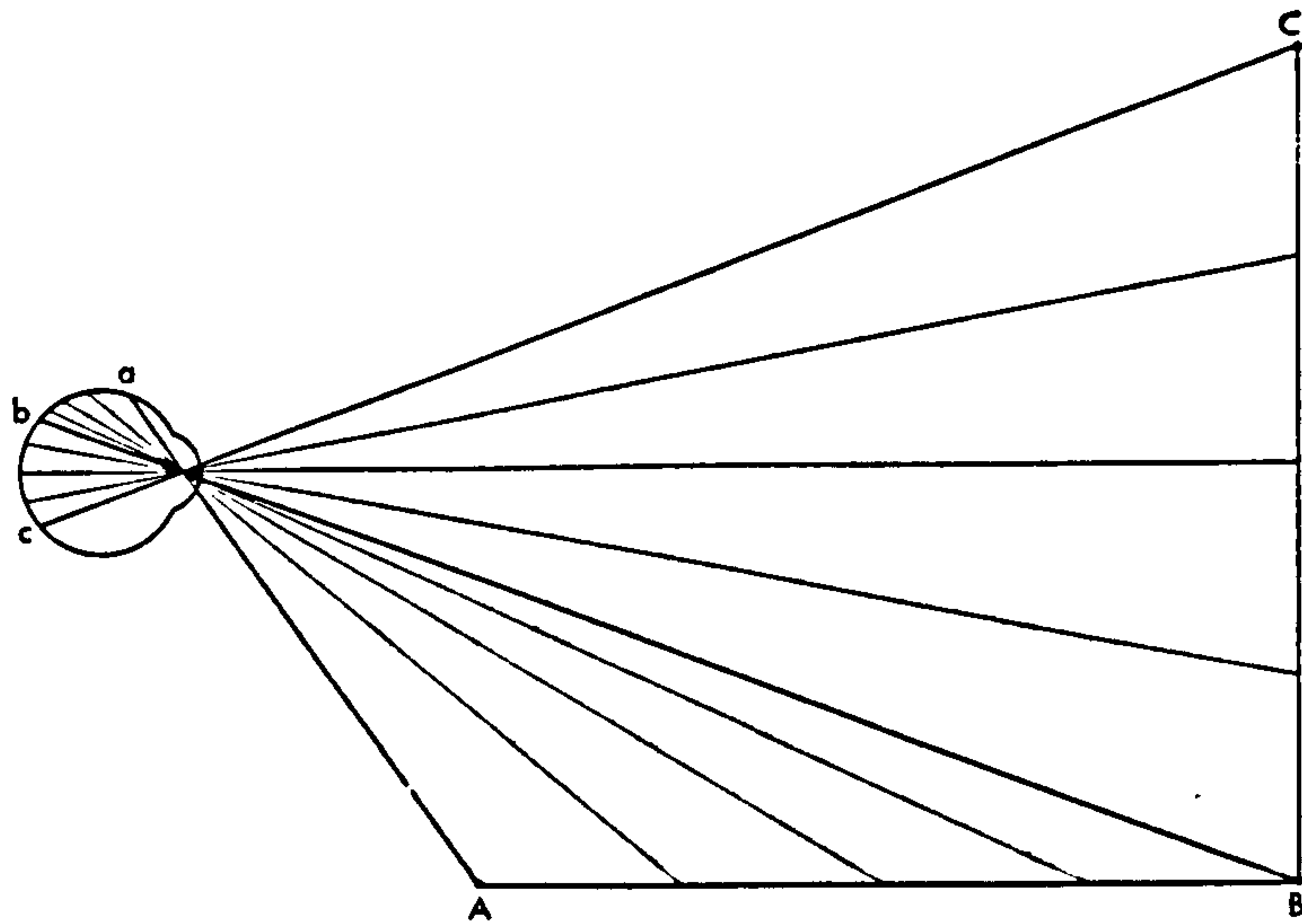


Fig.2.6 - Longitudinal and frontal surfaces. Source: Gibson, 1950.

Fig.2.7 - Gradient of Texture. Source: Gibson, 1950.

optic array gives rise to the perception of nothingness. According to that notion, Gibson gravitates his environmental description around the idea of surface layout.

In his *Perception of the Visual World*, Gibson characterises two extreme positions that surfaces may assume: (a) longitudinal surface, parallel to the line of sight (e.g. ground surface, floor, ceiling or lateral walls) or frontal surfaces which lie transversally to the line of sight (frontal walls) (fig.2.6). Slanted surfaces are an intermediate case between these two extremes. Three dimensional perception is already afforded by the gradient of texture of longitudinal surfaces; i.e. the granulation of textural elements surfaces varies as surfaces stretch away from the observer (fig.2.7).

From surfaces Gibson goes on to talk about edges and corners. And if surfaces, at the threshold of substances and media, express contrast by being textured, edges and corners may be seen as agents of contrast in that they are turning points in a surface. An edge is defined as 'the junction of two surfaces that make a convex dihedral angle', and a corner as 'the junction of two surfaces that make a concave dihedral angle'.¹⁶ These two elements of contrast characterise a sudden change in the structure of the optic array. Such a change is marked by discontinuity in the textural pattern of surfaces (fig.2.8); but not only that, a change of illumination generally comes in association with textural discontinuities. In fact, in the case of the view of hills and valleys from an air plane, shown in the aerial photograph (fig.2.9), the perception of edges and corners is mainly given by the variation of illumination.

16.Ibid., p. 308.

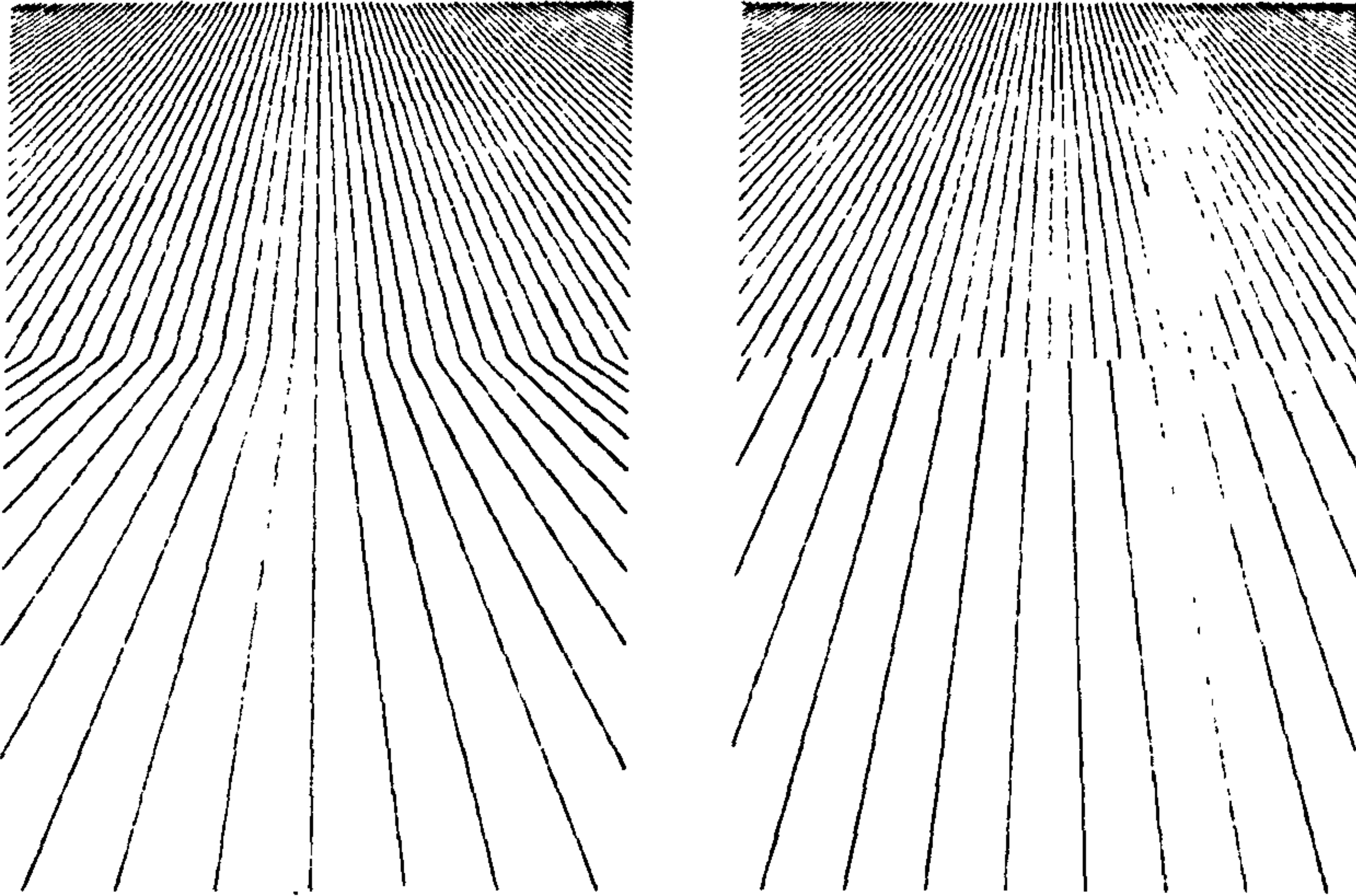


Fig.2.8 - Corner and edge. Source: Gibson, 1950.

Fig.2.9 - Aerial photograph of hills and valleys. Source: Gibson, 1979.

As Gibson starts to consider a moving observer, he introduces us to the idea of the occluding edge. The occluding edge is a crucial feature, where the sliding of a surface behind another, or of a surface from behind, is directly perceived.

Gibson's first step is to spell out the difference between the events 'sliding behind or 'coming from behind', and those of 'vanishing' or 'being created'. The second is to say that the event of sliding behind or coming from behind is directly perceived as such.

That phenomenon, described by Gibson as, reversible occlusion, leads to the idea that: 'an occluding edge is seen as such, that the persistence of a hidden surface is seen, and that the connection of the hidden with the unhidden is perceived'.¹⁷ In other words, what we see is not only the surface that is present in our visual field; we also see other surfaces that slide behind the ones we see, surfaces that went through a process of occlusion as we moved in the environment.¹⁸

17.Ibid., p. 202.

18.Some authors have expressed puzzling at Gibson's idea of an individual being able to see hidden surfaces, or layouts behind walls. Such an idea, which may initially appear to us an absurdity, may be made clear if we refer to experimental evidence such as that provided by one of Gunnar Johansson's classic demonstrations. 'If a stationary man with reflectant tape wrapped around his joints is videotaped with bright lights shinning on him and presented on a monitor with the contrast turned all the way up and the brightness turned nearly all the way down, an observer sees what looks like a random array of light points on a dark background. Let the man begin to walk, however, and the lights begin to move and the observer sees a constantly transforming yet coherent and compelling pattern that reveals a man walking.' (McCabe, & Balzano, op.cit., p. 26). It becomes problematic to attempt to explain how one perceives a human movement in the dynamic pattern of light points, by recurring to memory processes; for what would be the things to be remembered? Light points in particular positions? Instead of these static positions (produced by mental exercise), which have no prior existence whatsoever to the moving human pattern, we may refer to the idea of event. And we may say that what is perceived at a moment is not an isolated frozen state of affairs, rather, it is the unfolding of an event. The development of the event is already gathered in what is presently perceived. The pattern of

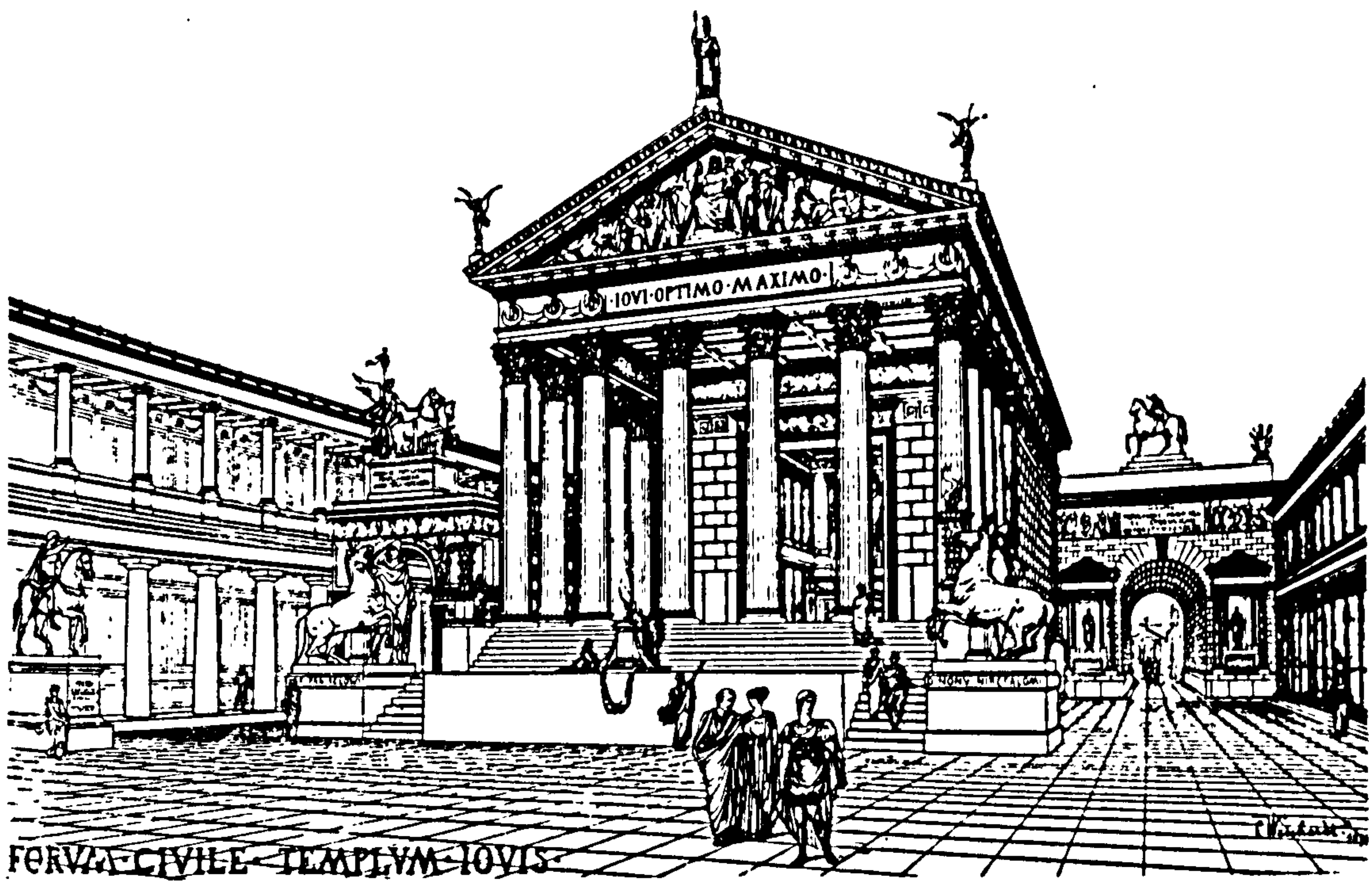


Fig.2.10 - Forum with the Temple of Jupiter (reconstruction). Source:
Zucker, 1966.

Gibson's Nomenclature for Surface Layout

Gibson's nomenclature for surface layout, as he puts it, is an 'attempt at a theory of surface layout, a sort of applied geometry that is appropriate for the study of perception and behaviour.'¹⁹

Below, I list some of the categories proposed by Gibson:

The *ground* refers, of course, to the surface of the earth. It is, on the average, level, that is to say, perpendicular to the force of the gravity...

An *open environment* is a layout consisting of the surface of the earth alone. It is a limiting case, only realised in a perfectly level desert...

An *enclosure* is a layout of surfaces that surrounds the medium in some degree...

A *detached object* refers of a layout of surfaces completely surrounded by the medium...

An *attached object* refers to a layout of surfaces less than completely surrounded by the medium...

A *partial enclosure* is a layout of surfaces that only encloses the medium. It may be a concavity...

A *hollow object* is an object that is also an enclosure...²⁰

I shall refer to one or two items of such a nomenclature shortly. As a starting point for a description of the urban environment, however, I believe Gibson's 1950 characterisation of surfaces according to their position in relation to the line of sight is much more promising.

(Footnote 18 continued from previous page)
moving lights is not apprehended as a sequence of positions to be put together, but as a continuous flow. The moving of individuals in space, from the street to the inside of a house is also to be considered as a single event. In that perspective, we may affirm with Gibson that when inside the house, the individual is directly perceiving the surface layout on the outside.

19. Ibid., p. 33.

20. Ibid., pp. 33/34.

As we saw earlier on, Gibson (1950) talks about two basic types of surfaces: those parallel to the line of sight (contributing to distance perception), and those perpendicular to the line of sight.

I propose to build up on the above formulation, by adopting another notion also advocated by Gibson (in his 1966 book), namely that of the interrelatedness of perceptual systems (and senses).

That idea has been put forward by a number of authors, appearing most powerfully in accounts about blind people, such M. H. Hill's *Bond to the Environment: Towards a Phenomenology of Sightlessness*:

Neala reported that an alley sounds different than a street even when there is no traffic.²¹

Irene and Laura both expressed their abilities to 'feel' room dimensions, while Susan spoke of 'sensing' a door.²²

Reflecting on these accounts, that author adds:

Locating a stair may be done by hearing, by feeling, or even by smelling the freshness of the air from the door to which the stairs might lead. The tendency to grasp one verb over another appears to be more from habit than from the actual encounter... Susan... describing her approach to a staircase... explained: 'You can hear the steps', or, 'You can just sense them', or again, 'I could tell that the steps were coming up because it kind of echoed when you walked in that direction'.²³

The way I propose to explore the idea of interconnectedness between senses, in the elaboration of a description of surface layout, is in the reinforcement of the notion of immediacy of our interaction

21.Hill, M.H., 'Bound to the Environment: Towards a Phenomenology of Sightlessness', in D. Seamon and R. Mugerauer's Dwelling, Place and Environment (Dordrecht: Martinus Nijhoff Publishers, 1985), p. 102.

22.Ibid., p. 103.

23.Ibid., p. 104.

with the environment. In that perspective, I propose that the sight of a surface layout is already an interaction, in the sense that it is conditioning a certain inclination by the observer, causing her/him to move in a certain pattern. The sight of a surface (let us say a coarse surface, which affords cutting and hurting) is not much different from the touching of such a surface, inasmuch as an inclination towards the environment is concerned. It could be said that the sight of a surface is the preamble of a physical contact with it. To be sure, such a physical contact needs not be actualised; the individual is given an opportunity to negotiate an alternative gesture. Nevertheless, the awareness of the surface is a fact, and as such, conditions the pattern of interaction between individual and surface.

Whereas, the course of the event is not determined it is suggested (afforded) by the surface, i.e. the bodily contact needs not take place for us to acknowledge the suggestion of the event, inasmuch as the alternative patterns of interaction are contained in it.

In that way, we move in the direction of conceiving the relation between seeing and touching as interconnected interactions in the same event, i.e. the haptic mode of interaction is in that perspective an unfolding of the visual mode, through movement in three-dimensional space and development in time.

With the transition from one mode of interaction into the other, there are, to be sure, changes in the sense of territoriality, which are worth commenting upon. The sight of a thing at a distance characterises a condition of protection and independence from what is

seen.²⁴ To be sure, such a feeling is also accompanied by a sense of lack of definition and obscureness, for the same reasons. This idea becomes clearer as we bring in the aspect of gaining knowledge about the world around us. If an individual visually perceives something and is in doubt that this something is the case, such an individual is likely to be confused. If asked about this something, such an individual may be unsure about her/his answer, unless she/he is given the opportunity to check out that something is the case. In most cases this checking out does not consist of looking harder, or listening carefully, but of actually changing the territorial intercourse with the thing in question, by the individual removing the distance that separates her/him from the thing, and achieving bodily contact. After that experience the individual may say that the thing is there because 'I have touched it'.

We seem to have an increasing confidence in a thing's existence, as such a thing gets closer to us. As it becomes closer, it penetrates our personal territory, possibly leading to discomfort, and insecurity. Things that lie at a great distance from us, on the other hand, are more obscure and less defined, but also less threatening.

By looking at the interconnectedness between senses, for instance, through the idea that visual interaction is a preamble to bodily contact, we are given, on the one hand, an alternative to the problem of distance perception, traditionally approached through the

24.Aspects such as aerial perspective, as well as the fuzziness of layouts lying at a distance will contribute for such a feeling. What is far is rarely bright or vivid, rather, it assumes a pastel coloration, dimly reflecting the light that falls upon it.

formulation of cues for distance perception.²⁵ On the other hand, in the lines of the idea that the environment may be described in terms of surface layouts, we build up on the notion that distance is already given by the texture gradient of surfaces parallel to the line of sight.

Let us give continuity to this elaboration on the description of surface layouts based on the interconnectedness between perceptual systems and senses, by addressing issues other than distance perception.

I may initially address the condition of horizontality and verticality, as these are special cases.²⁶ The description put forward by Gibson is quite useful here.

With Gibson, I propose that a horizontal surface affords support or moving on the top of it. And I emphasise that such an affordance is a function of the position of the observer; e.g. if there is an abyss between the observer and the perceived surface (superficial discontinuity), or if there is a pronounced discrepancy between the level on which the observer stands, and that of the perceived surface, the surface in question does not afford walking or standing on, rather, it affords unreachability or something the like.

25. For detailed information about the traditional list of cues for distance perception see Gibson (1950), op.cit., p. 71.

26. The gravitational force affects human beings living on earth equally constraining in a very characteristic way their patterns of movement. The relation of normality is an undeniable fact, which is, for instance, at the basis of structural solutions employed in the erection of buildings, notably in vertical self-supporting walls. It would be interesting to explore the relationship between normality and the popular use of the right angle in the production of artefacts, such as the gridiron system in town planning. Can such artefacts be seen as an analogy of the relation of normality, which went through a process of geometric transformation (translation around the vertical axis)?

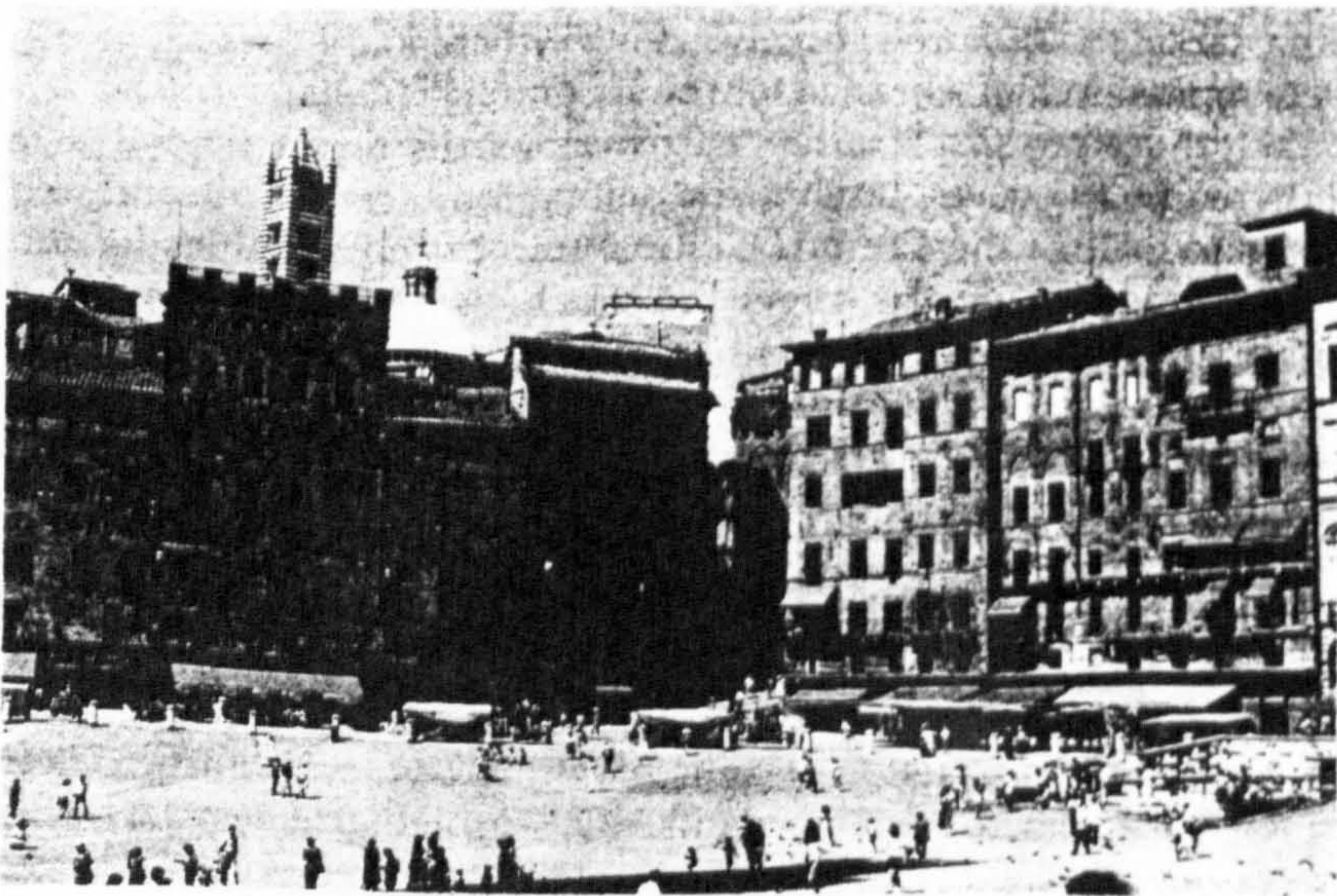
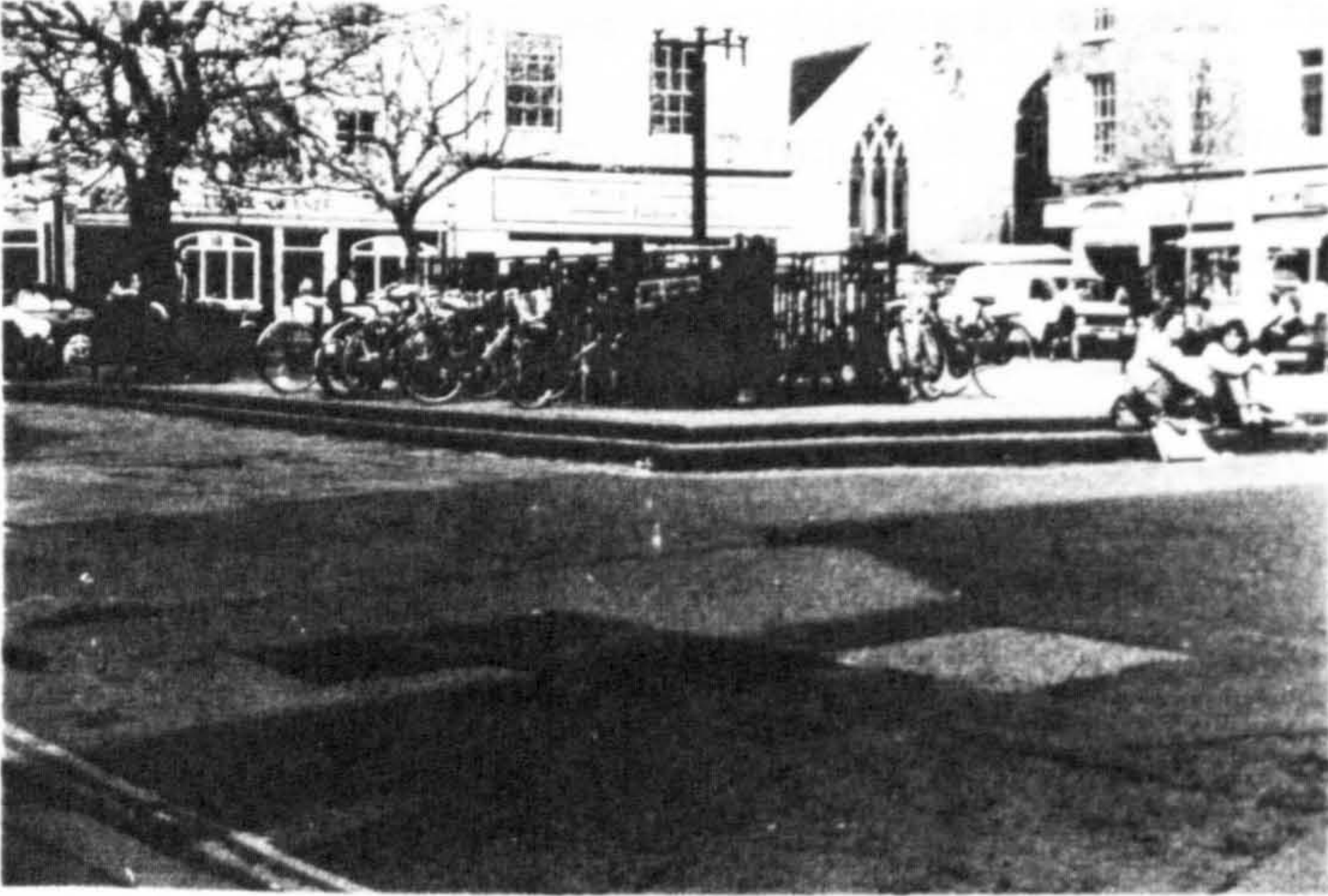


Fig.2.11 - St. Sampson's Square (York). Source: author.

Fig.2.12 - Piazza del Campo (Sienna). Source: Broadbent, 1990.

A vertical surface, as Gibson puts it, bars the movement of the observer in a certain direction, or affords shelter.

To further a description of surface layouts, having in mind urban design tasks, I would characterise two instances:

A - Changes in the relation of normality.

B - Variations of angles formed between frontal (notably vertical) surfaces and the observer's line of sight.

Changes in the Relation of Normality

Changes in the relation of normality produce changes in the patterns of interaction between user and surface layout, pronouncedly different from that where the layout is composed by horizontal and vertical surfaces only. This may be illustrated by variations in the inclination of the pavement. A sloping surface, differently from a horizontal one, is not only characterised by it affording standing or walking on, it also implies an increase or decrease in the effort the user has to invest in order to perform movements.

A ramp or flight of steps, in front of a building, puts such a building in a position of dominance in relation to its surroundings. The user is invited to put an extra effort to reach the building in question (fig.2.10). Such a relationship of dominance was well known by architectural writers and practitioners of the past; such as Vitruvius, who tells us:

For the temples, the sites for those of the gods under whose particular protection the state is thought to rest and for Jupiter, Juno, and Minerva, should be on the very highest point commanding a view of the greater part of the city.²⁷

27. Vitruvius, The Ten Books on Architecture, translated by M.H. Morgan (New York: Dover, 1960), p. 31.

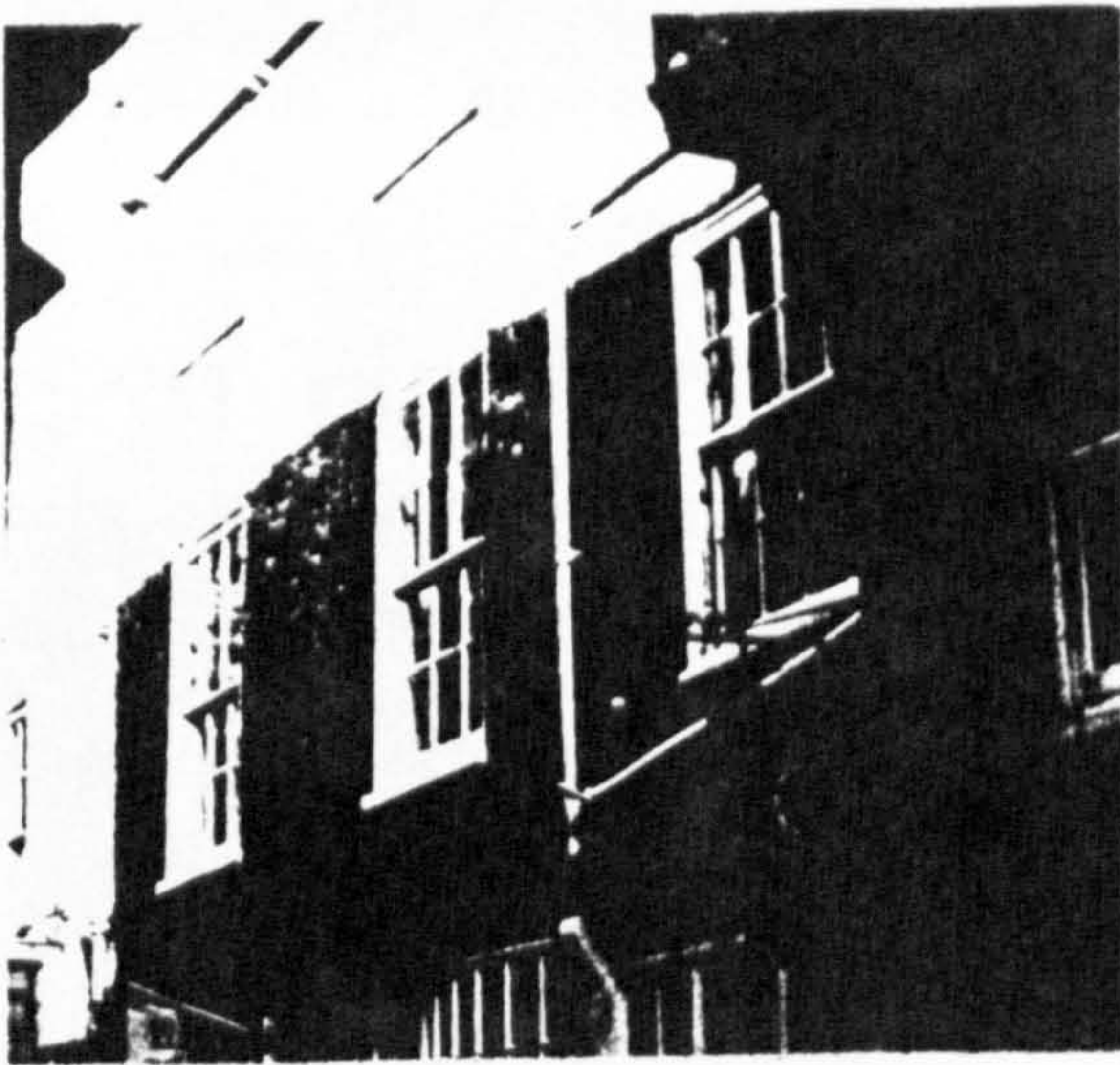
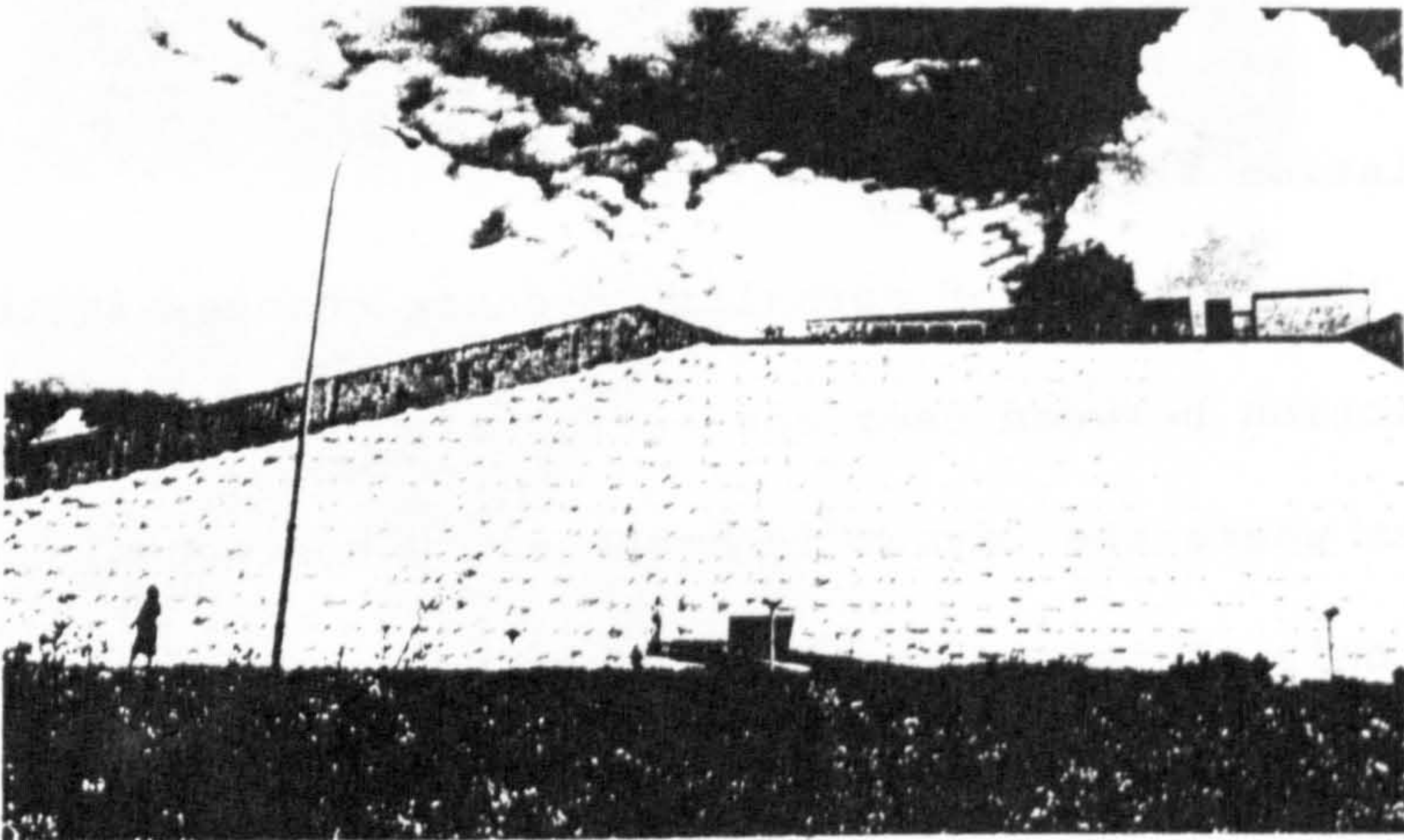
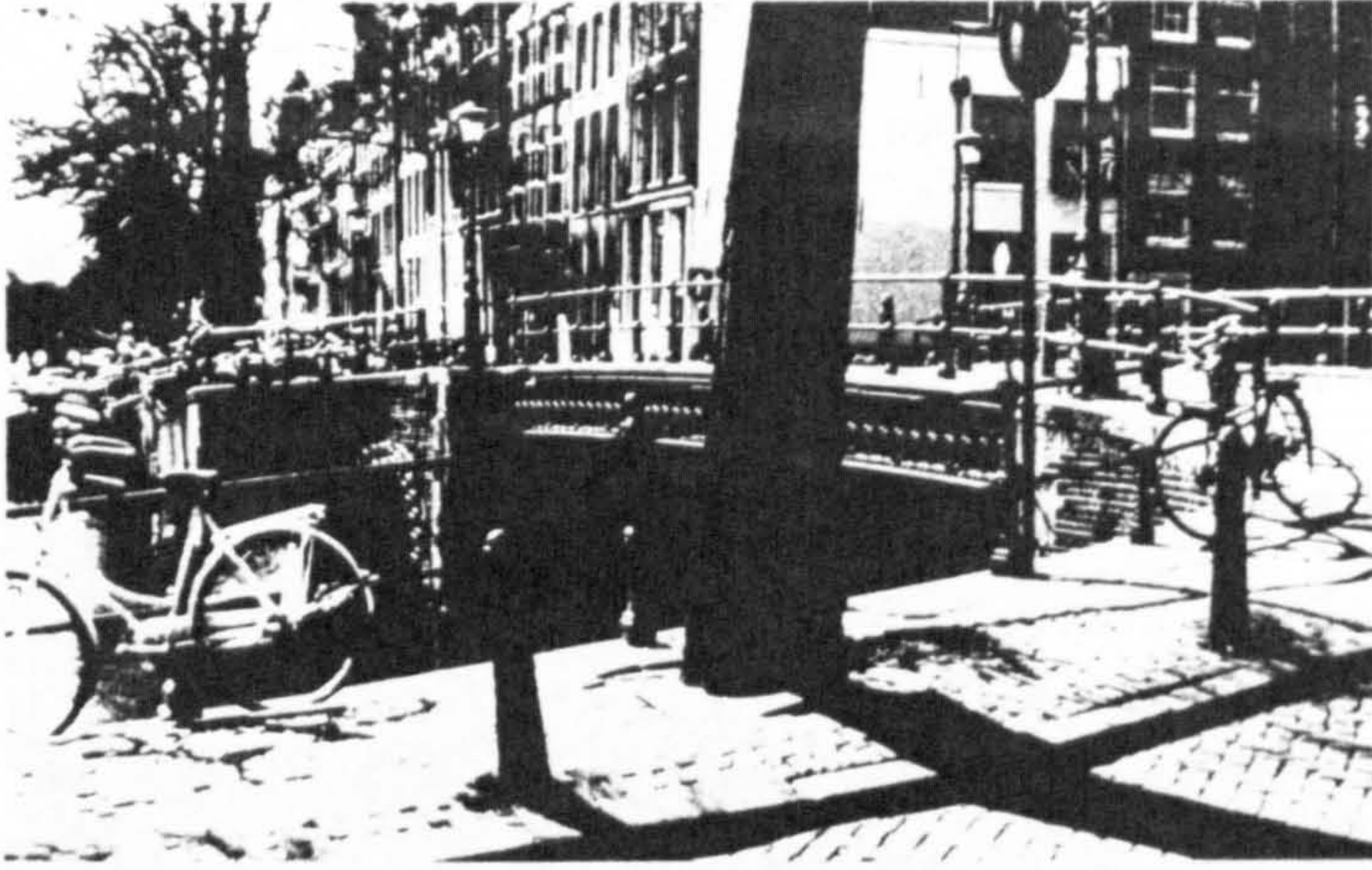


Fig.2.13 - Amsterdam (pavement). Source: author.

Fig.2.14 - National Theatre (Brasilia). Source: GDF, 1986.

Fig.2.15 - The Shambles (York). Source: author.

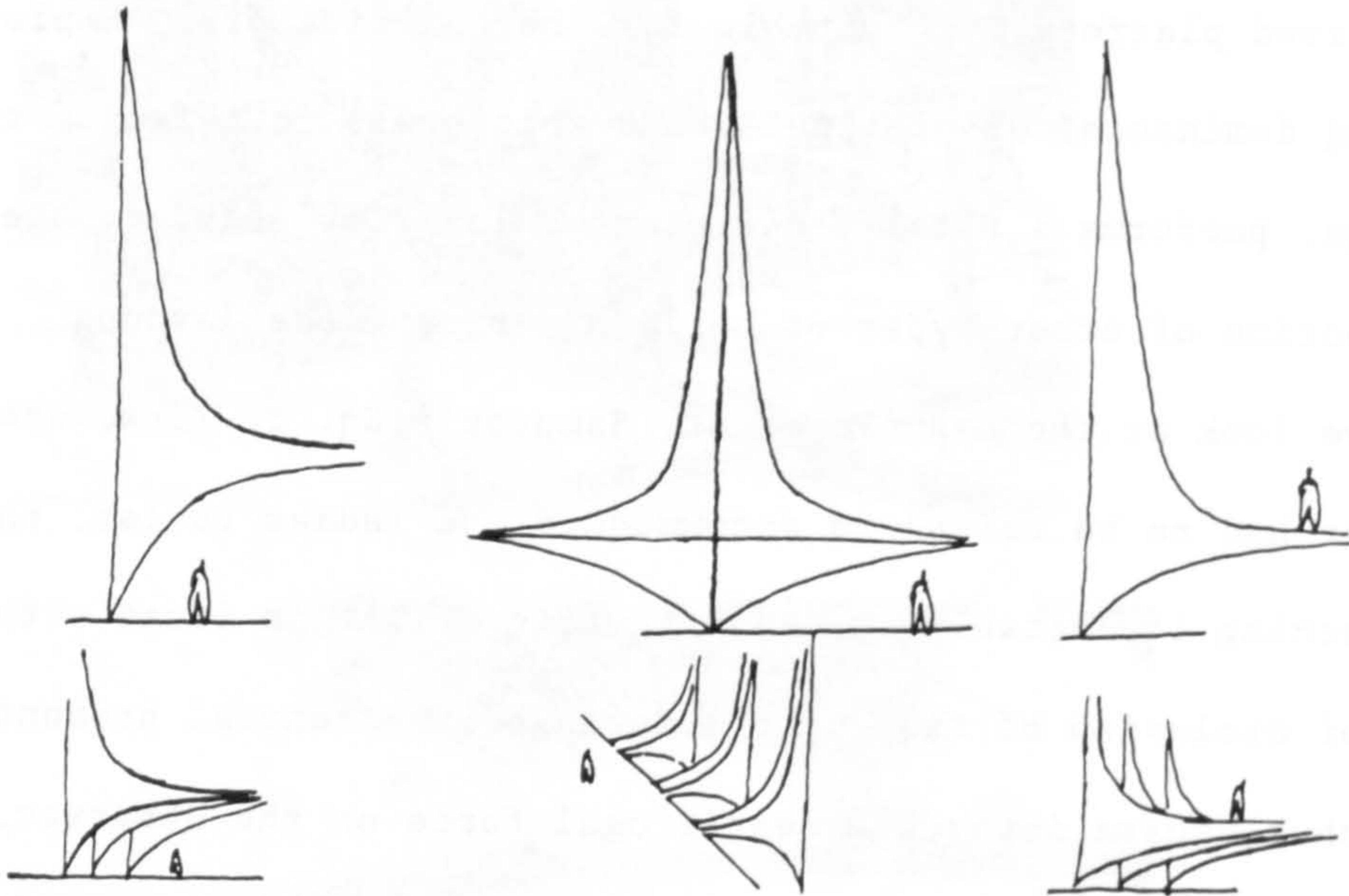
Fig.2.16 - Pendentine domes. Source: Richards, 1984.

A raised platform, if suitable for the building of a temple - by it affording dominance, discontinuity and uniqueness in relation to its surroundings, performs a totally different role if selected as the site for the erection of other types of buildings or surface layouts.

If we look at the example of St. Sampson's Sq. in York, where the pavement had to be raised to accommodate the ladies toilet, the user approaching it, notably by Davygate (fig.2.11), is faced with a condition of exclusion of the square. Through its 'central promontory' layout, such a square imposes a centrifugal force on the observer, like an up side down dish disperses liquid poured on it. We shall be able to have a better appreciation of the implications of such a layout, when talking about squares. For the time being, I may contrast the above example with that of the Piazza del Campo in Sienna, which presents a concave 'dish' like pavement layout. Through the point of view of the approaching observer, the Piazza del Campo produces an attracting motion, easing down the effort of movement, and effecting a centripetal pull on such an observer (fig.2.12).

A flat pavement constantly levelled throughout an entire settlement, presents a continuous effect upon the observer. As far as such a layout component is concerned, there are minimal changes in the pattern of interaction with the observer. Such a flat pavement produces little acceleration, little centrifugal pull on users, it refuses to celebrate monuments by not raising them to the sky.

Some cities like Amsterdam developed on a ground of the kind described above, but thanks to its many channels, its pavement refuses to conform to a flat pattern, causing the observer to move up and down, across its arched bridges, and provoking discontinuities in its many



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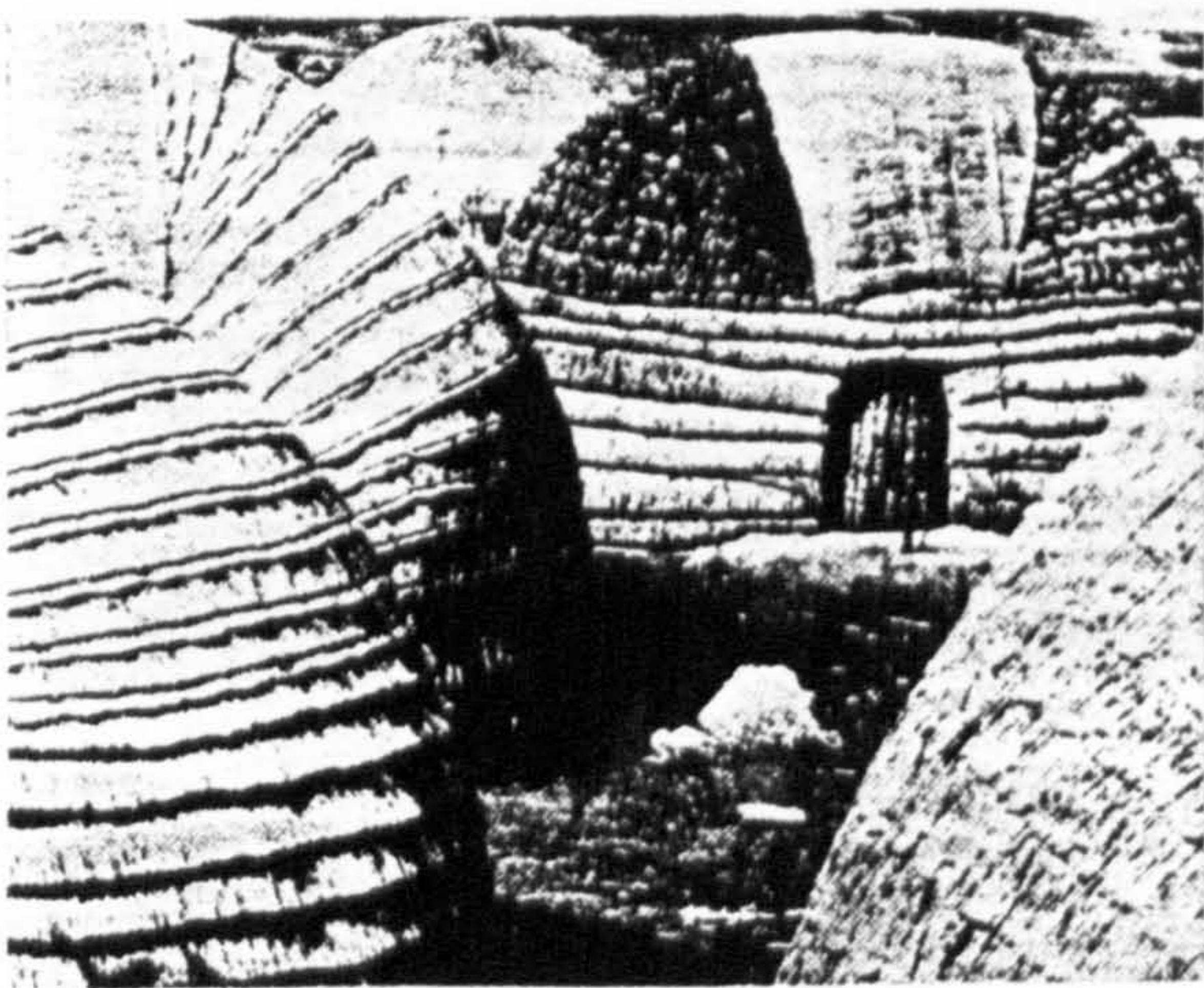
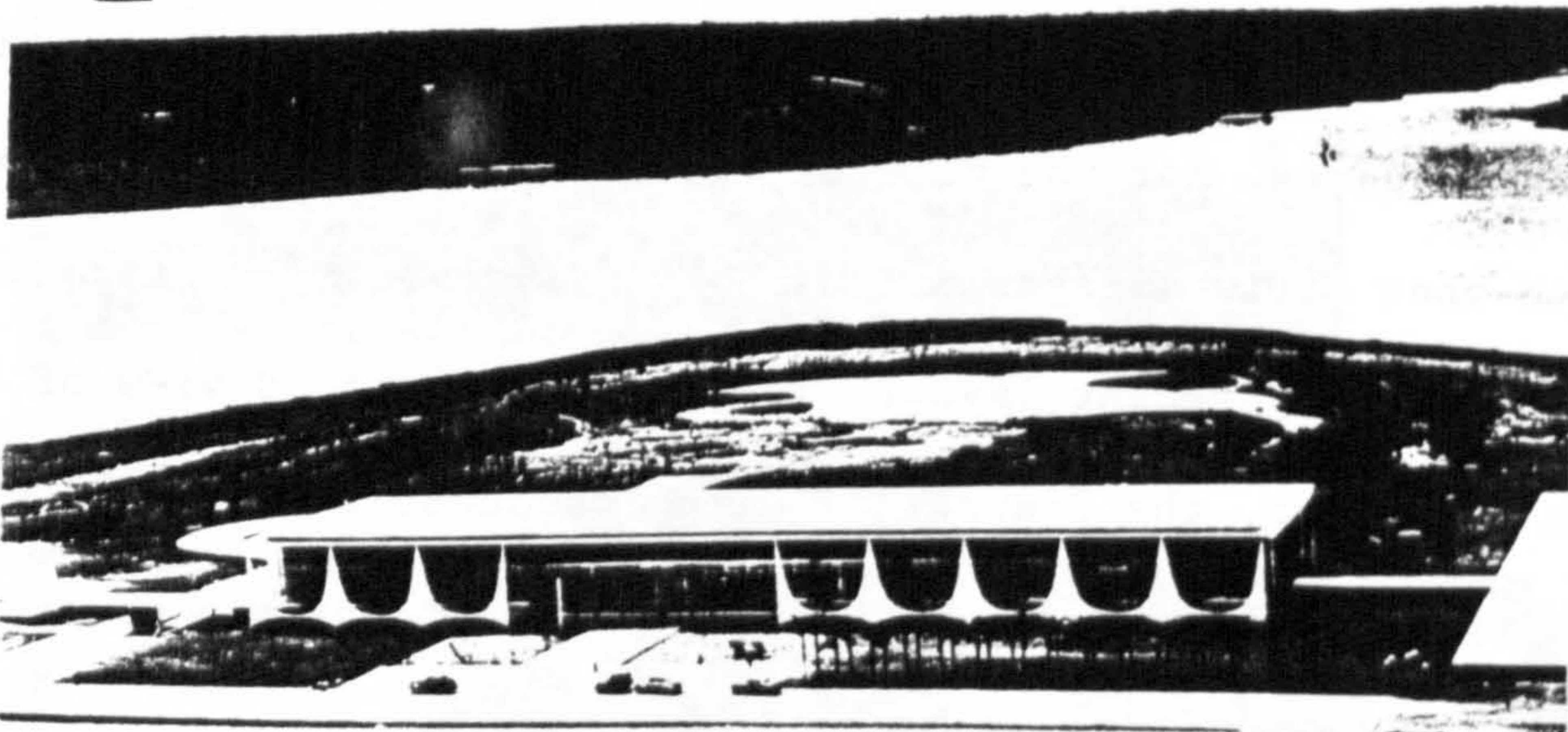


Fig.2.17 - Alvorada Palace. Source: GDF, 1986.

Fig.2.18 - Zulu village. Source: Denyer, 1978.

interfaces with the water (fig.2.13).

Let us further explore surface inclinations in relation to the level ground. As Gibson pointed out, the pattern of interaction between observer and an inclined surface, or slope, very much depends on the angle such surface forms with the level ground, besides depending on its texture.²⁸ In cases where the angle between the surface and the level ground is small (say less than 30 degrees), the surface affords walking on, as we saw in the above examples.

When the angles are very pronounced, tending to the vertical, then another pattern of interaction is specified. If the layout tends to a canyon shape, a new relation with the sky is suggested, quite different from that of the traditional street. In general terms, the observer is more exposed to atmospheric changes, therefore less protected from climatic intemperances (fig.2.14).

If the surface inclines inwardly, the opposite condition arises. Such is the case of the shambles in York, where the space of the street isolated itself from the sky above, allowing little penetration of natural light (fig.2.15).

Another variation in the relation of normality occurs when a vertical surface bends sideways, or maybe downwards (forming a curve). In the latter, the deflection from the vertical plane is not contained in a momentary gesture, it is rather embodied in a continuous movement of the surface, such a movement may be regular in the case of the sphere (fig.2.16), or varied as in the case of paraboloid shapes (fig.2.17) or irregular domes of Zulu houses (fig.2.18).

Inclined surfaces are important components in the history of

28.Gibson, op.cit., (1979), p. 37.

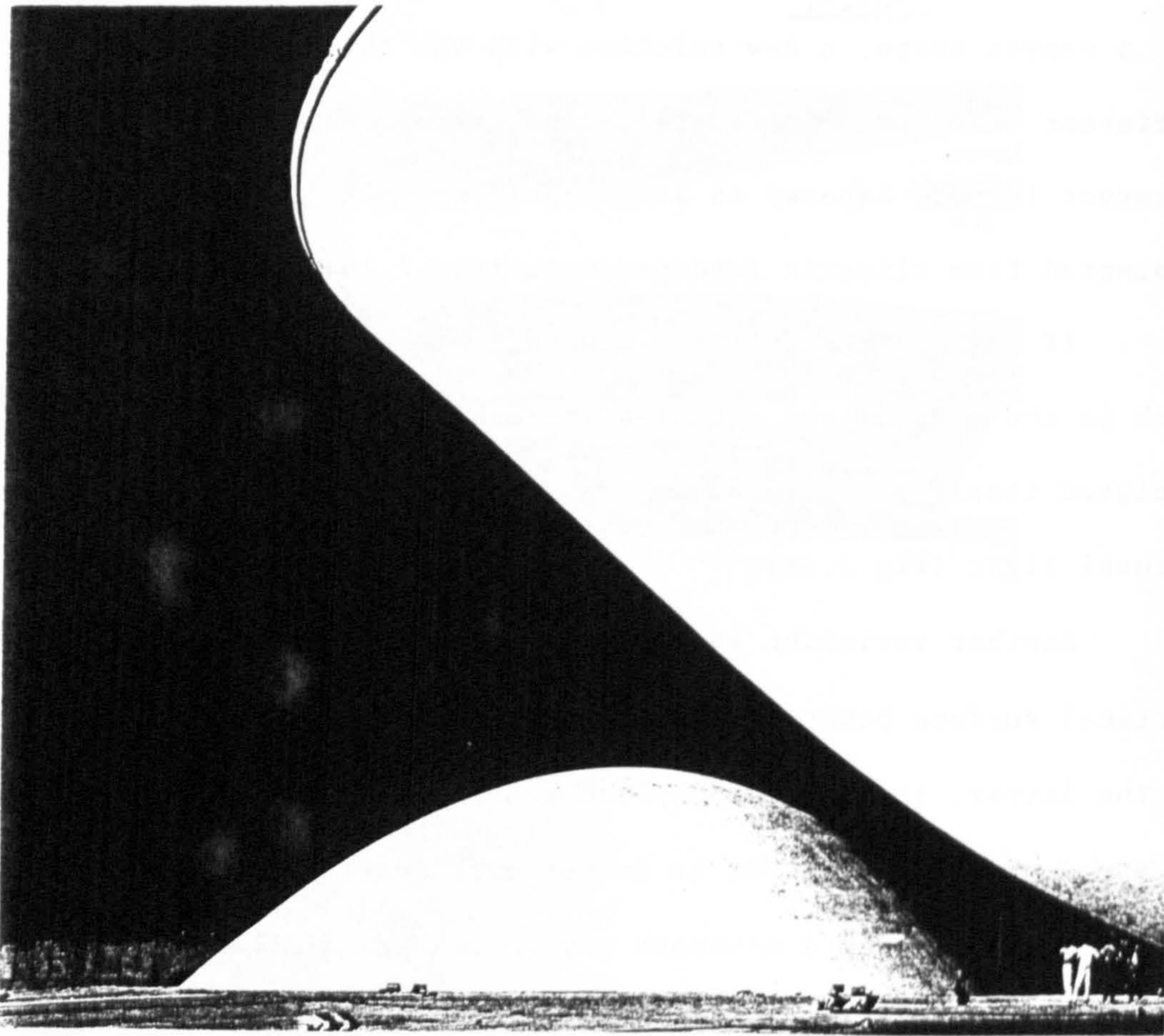
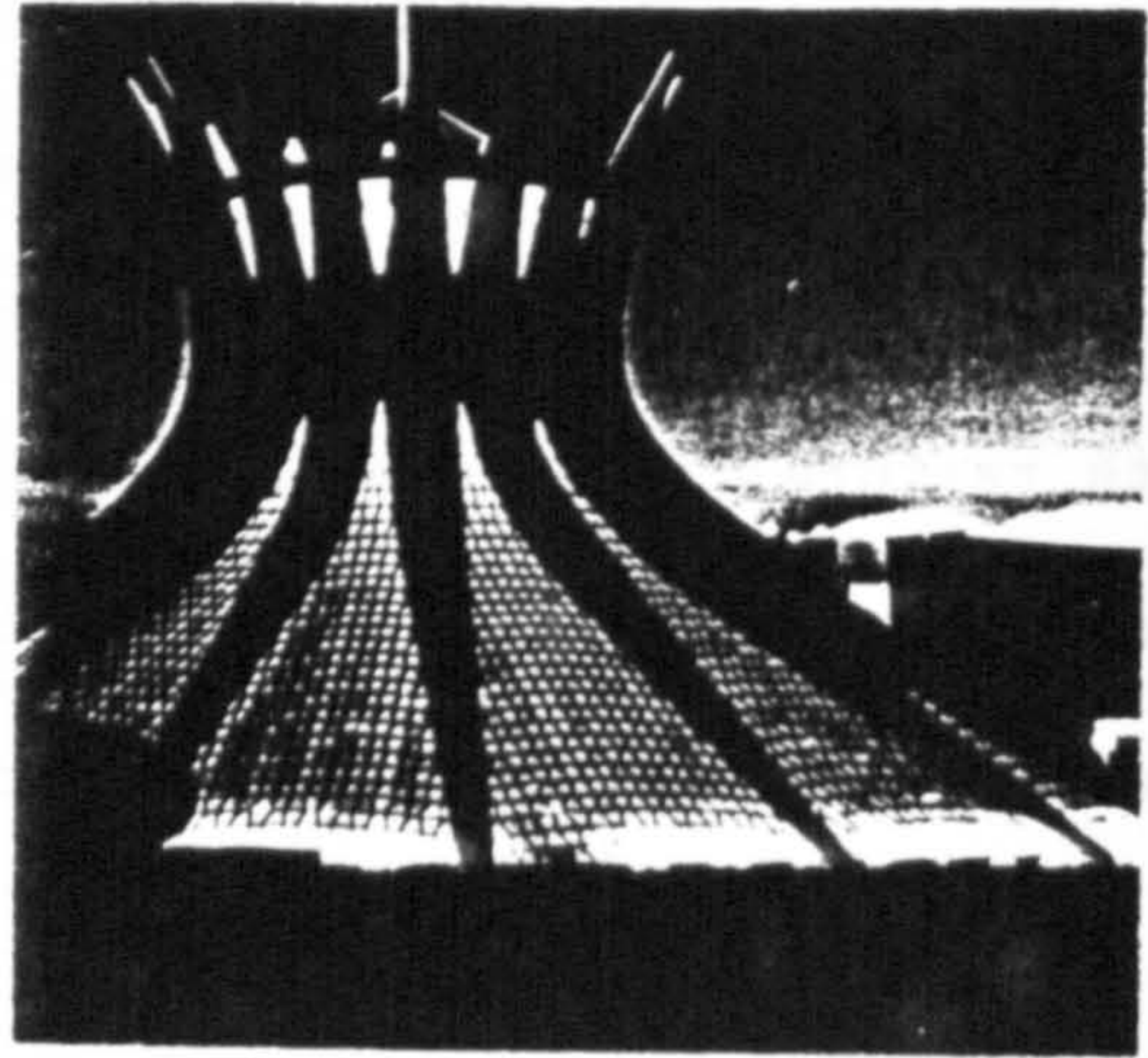


Fig.2.19 - Teotihuacan (pyramid). Source: Meyer, 1973.

Fig.2.20 - Brasilia Cathedral. Source: GDF, 1986.

Fig.2.21 - Brasilia Congress building. Source: GDF, 1986.

monumental buildings, as illustrated by the pyramids in Egypt and Teotihuacan (fig.2.19). Curved surfaces appear in the visionary projects of Ledoux and Boulee; and gain further popularity with Modernism, through the experiments with new materials such as reinforced concrete, and iron. Monumental buildings in Brasilia, such as the cathedral (fig.2.20), and the two hemispherical volumes that compose the Congress complex (fig.2.21), are well known examples of modern use of curved surfaces.

Monumental buildings of these types, displaying their structural ingenuity in challenge to the gravitational law, clearly contrast from the layout of vertical self-supporting walls of the urban fabric that surrounds them. Such a feature contributes for monuments' uniqueness, and their dominant role in the cityscape.

Variation of Angle between Surfaces and the Line of Sight

I should start talking about these angle variations by remarking that the observer's line of sight is oriented in the same direction as the observer's trajectory of movement, given the fact that one tends to keep the head and body facing in the same direction, moving towards the front.²⁹

The idea of vision as a preamble to bodily contact may be used to argue that the sight of an inclined surface, such as the one shown in fig.2.22, produces a change in the pattern of movement of the observer, causing her/him to move sideways. The surface 'reflects' the

29. In the case of motorised circulation where the passenger is looking to the side, it must be observed that 'passengeriness' implies in a passive attitude by the individual as far as the movement of the vehicle is concerned, unlike 'driveness' which requires an active involvement with such a movement.

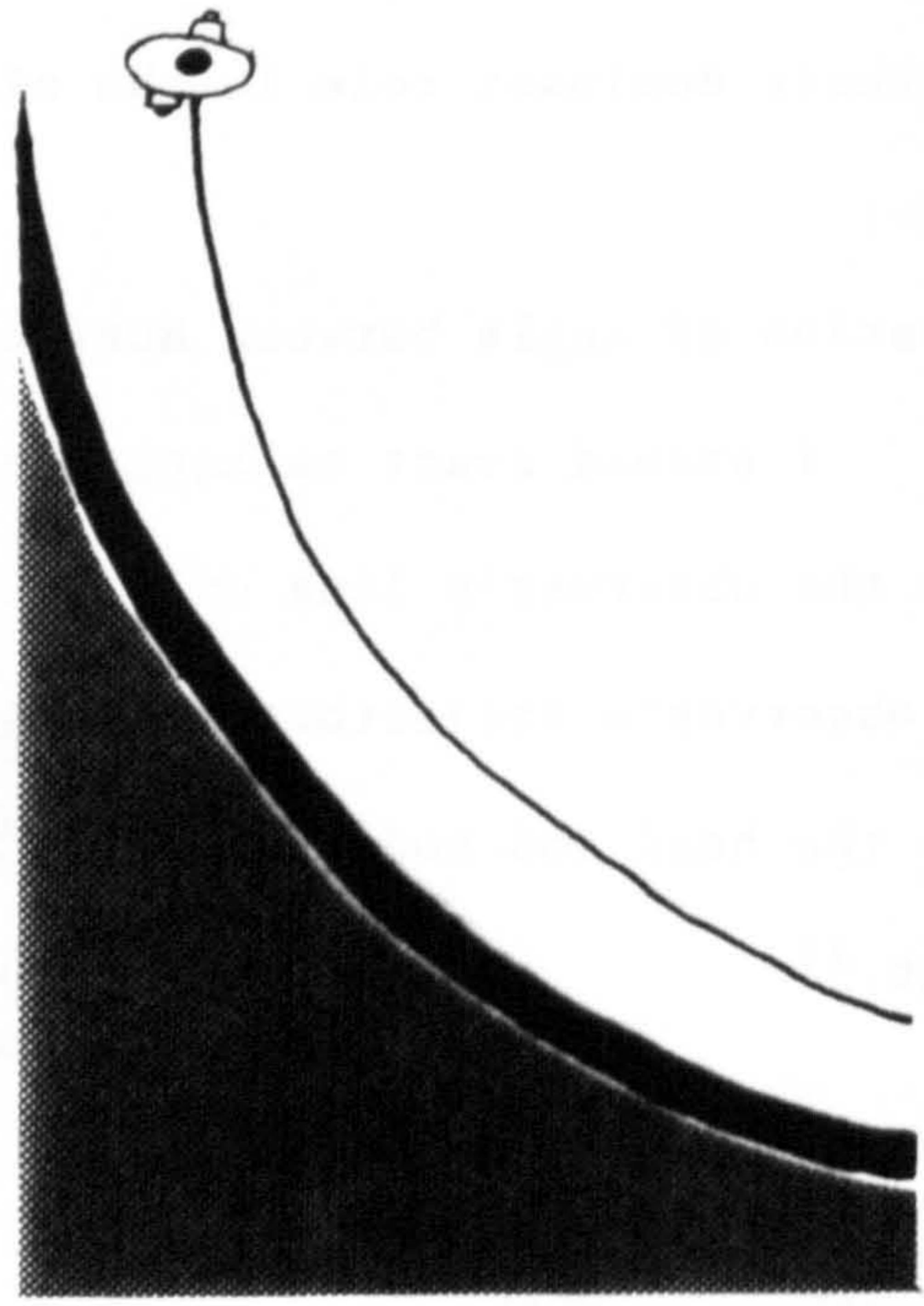
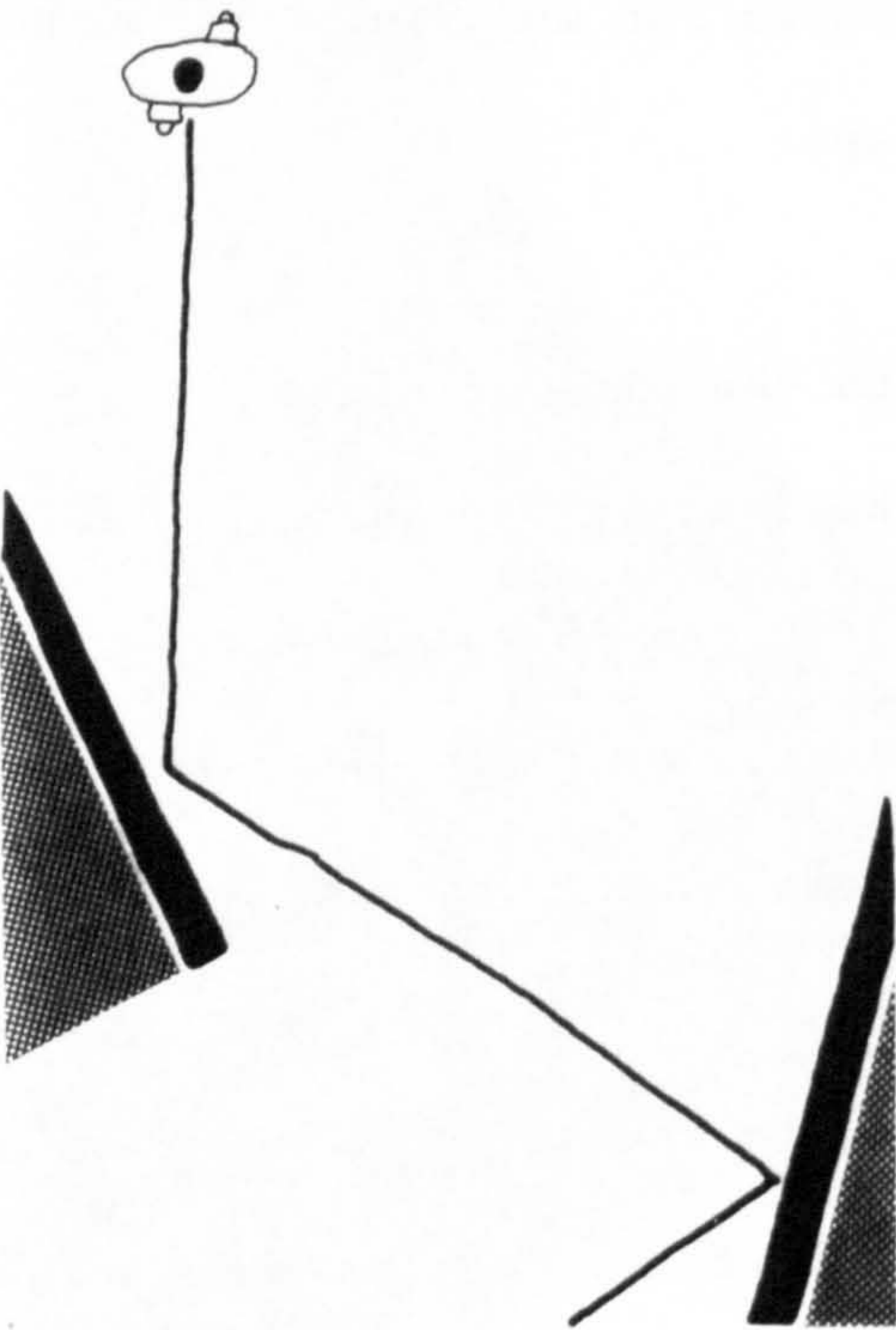
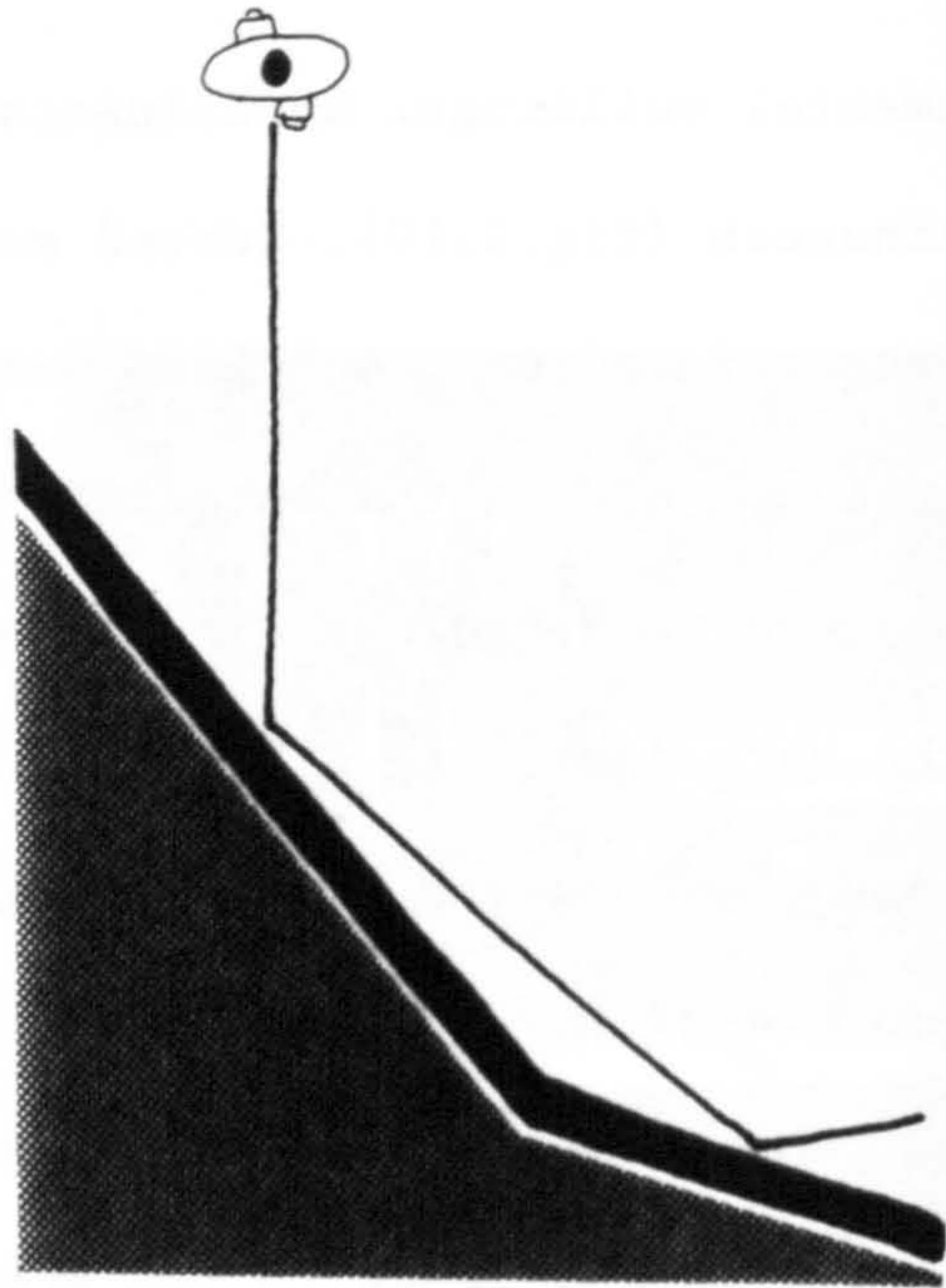
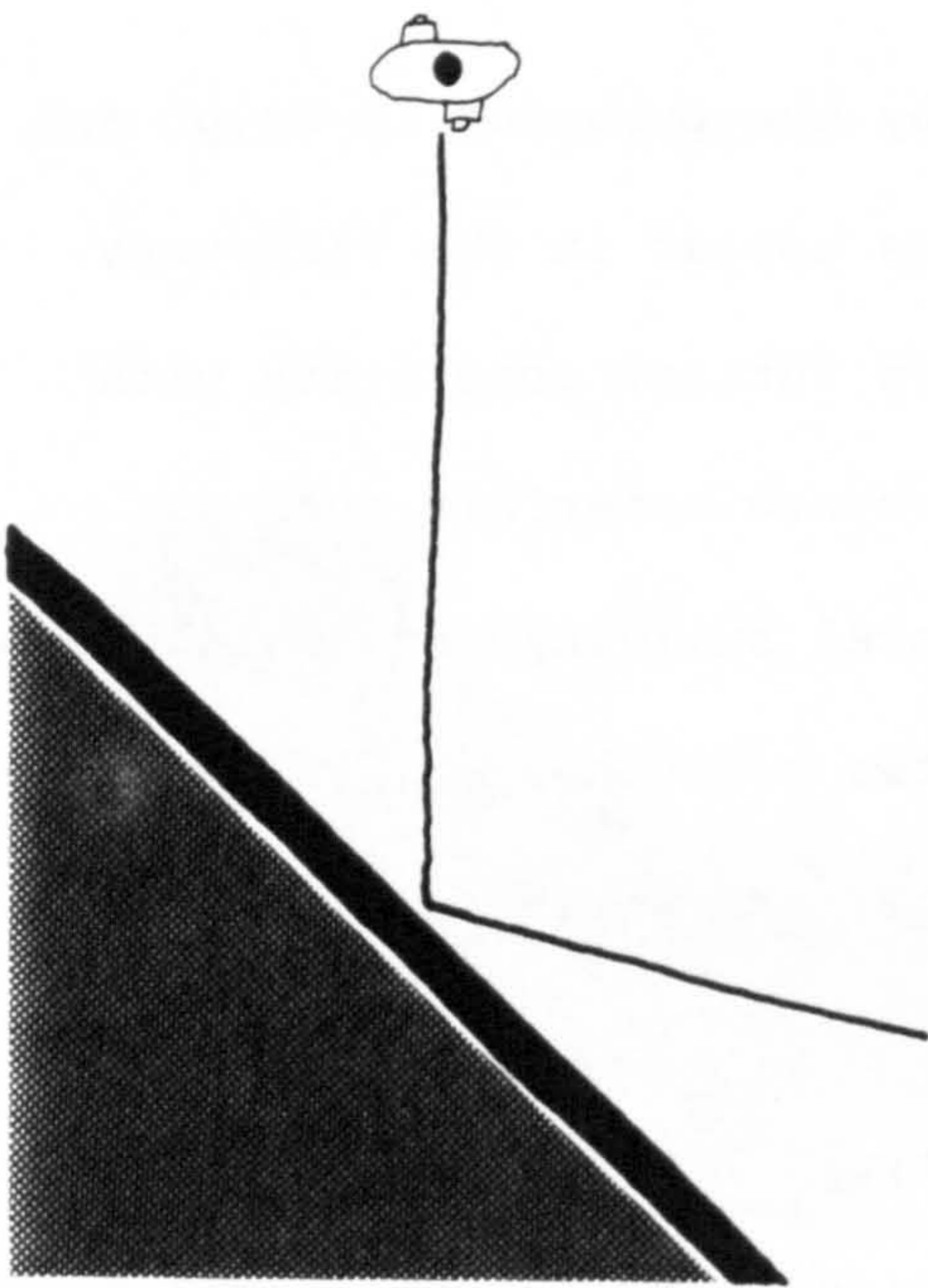


Fig.2.22 - Inclined surface. Source: author.

Fig.2.23 - Surfaces oriented to the same side. Source: author.

Fig.2.24 - Surfaces facing opposite directions. Source: author.

Fig.2.25 - Curved surfaces. Source: author, & Zucker, 1959.

observer, as a polished surface would reflect a light ray, changing her/his trajectory, and projecting her/him in space in a new interface with the layout.

To be sure, such a surface is not the only acting element, it is part of a layout comprising other inclinations, that may accentuate a change in trajectory (fig.2.23), or balance it in the opposite direction (fig.2.24). And as we get more complex in our surface layout, playing with different inclinations, we end up with configurations similar to those of the vernacular fabric, where the surface layout is constantly varying.

(The variation of an angle in relation to the line of sight may not be abrupt, as previously illustrated, occurring also by the gradual bending of a surface to form a curved pattern (e.g. Bath crescents) fig.2.25).

As we start describing patterns of surface layouts, such as the those of the vernacular urban fabric, there are a number of aspects that emerge; aspects such as the frequency³⁰ of transitions in the surface, provoked by environmental features such as edges, corners, etc..

The relevance of the frequency of transitions to us, lies in it bearing a direct relationship to the frequency of movement of an observer. To the extent a layout presents more transitions, e.g. a crooked street (fig.2.26), it will increase the complexity of the optic structure, increasing the rate of interaction with the environment. The discontinuities in the environment are, as it were, compressed in space, and subtle movements by the observer will lead to dramatic

30.Note that the term frequency implies an environment in relation to an observer.

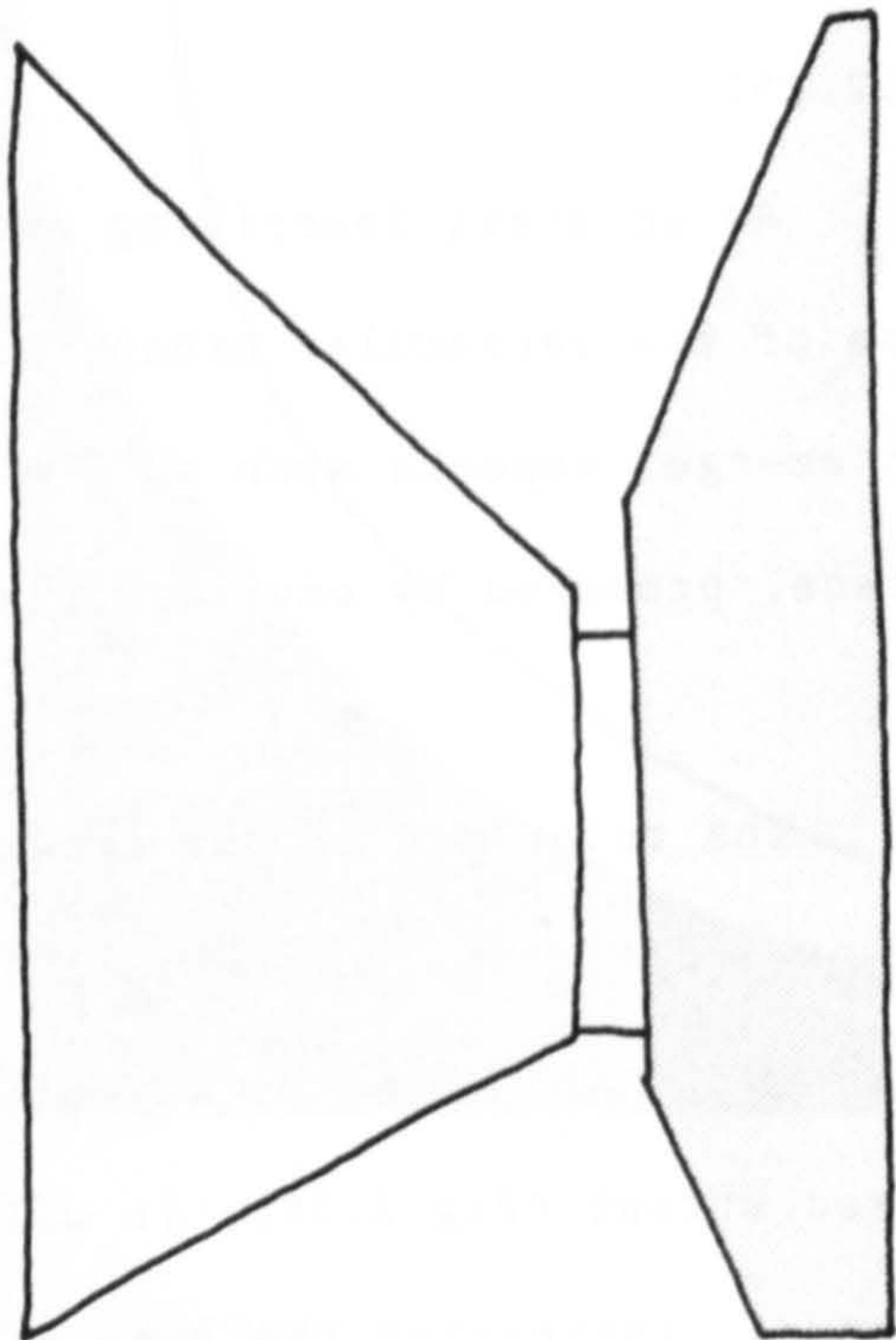
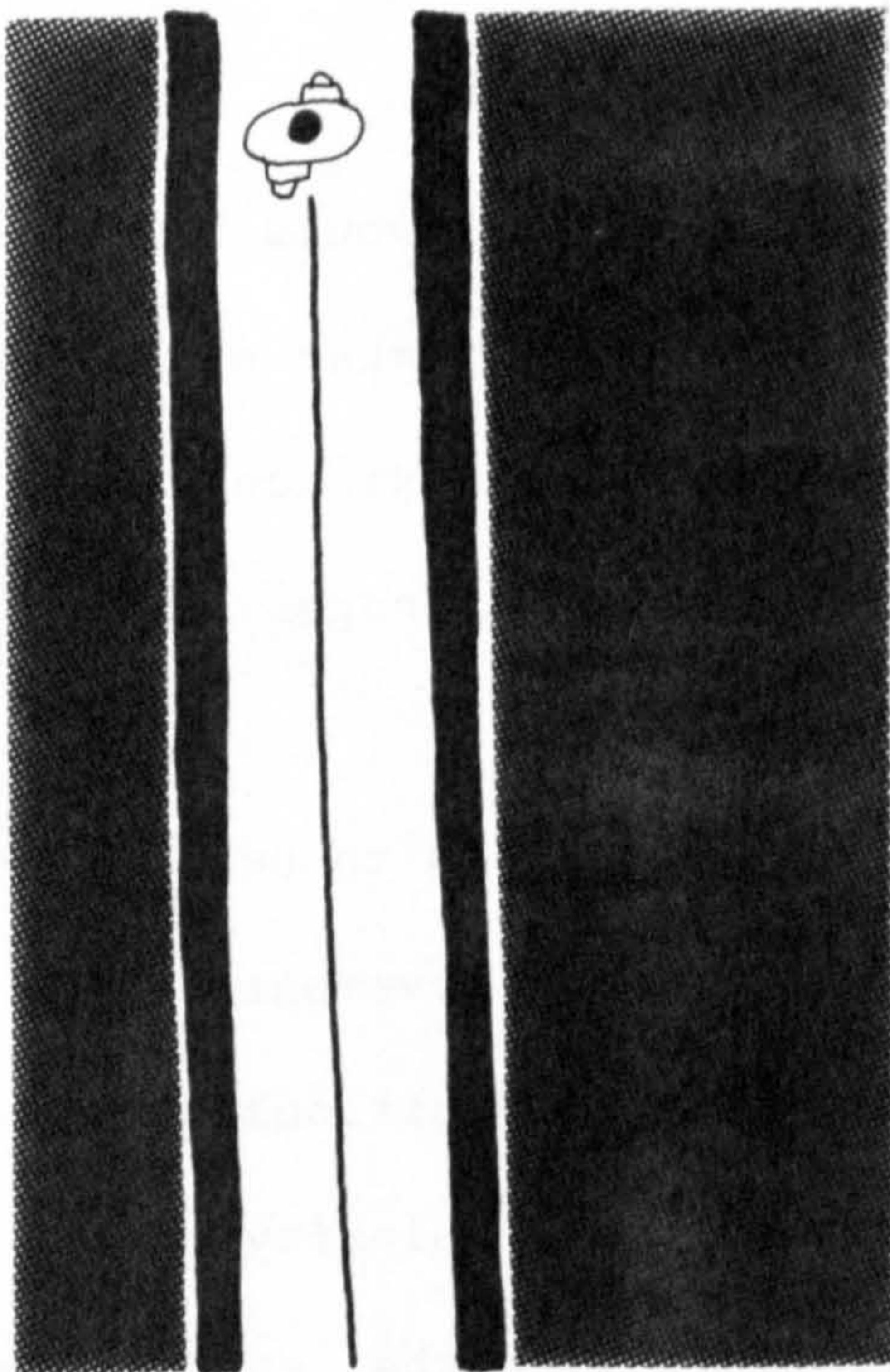
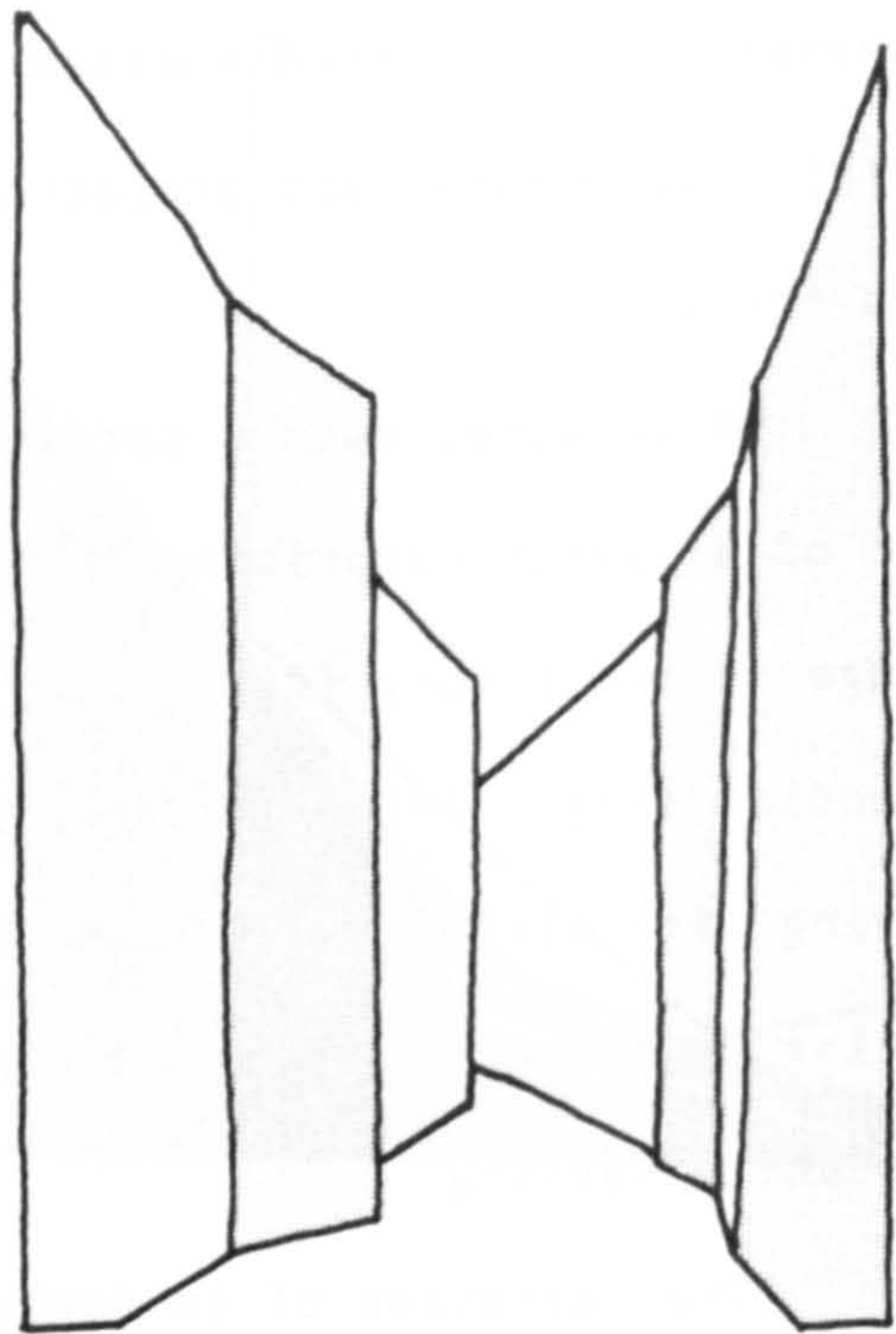
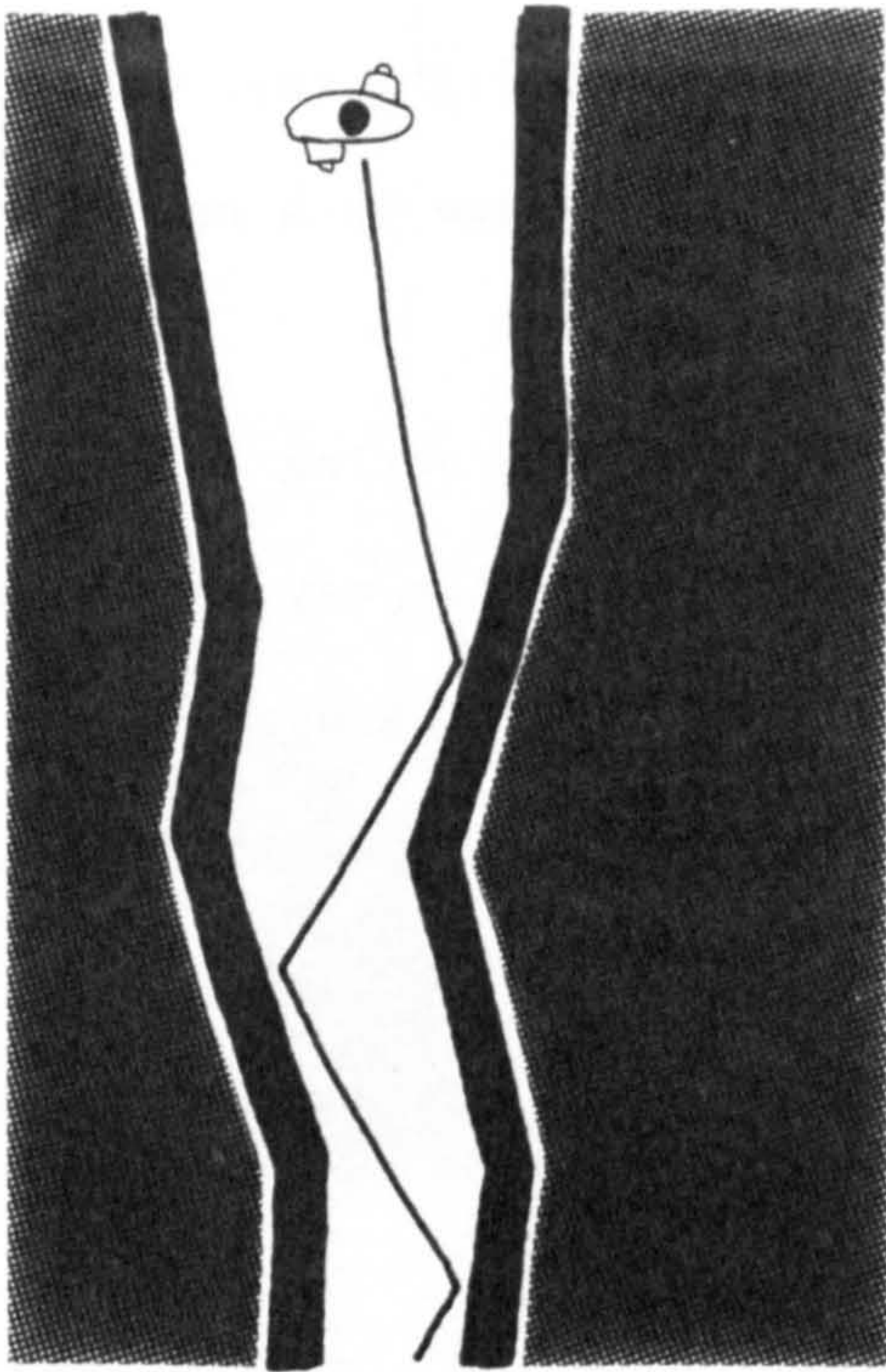


Fig.2.26 - Crooked street (plan). Source: author.

Fig.2.27 - Rectilinear street. Source: author.

changes in the optic array. Compare, for instance, the layout of the crooked street in fig. with the rectilinear layout in fig.2.27. In the latter case, as an observer moves there happen minimal changes in the structure of the ambient optic array. What we have is much less complexity of structure than in the former pattern, suggesting a lower speed of interaction with the environment.

As we talk about frequency of transitions, we realise the limitations of the diagrammatic representations (notably in the form of plans) presented so far, inasmuch as they convey information only about articulations between vertical surfaces (or corners and edges in the vertical plane), omitting features such as shadowing, changes of texture and materials, etc.. Moreover, they do not provide information about variations in relation to the vertical plane, such as the layout of roofs, or height of facades - as a cross-section does (fig.2.28).

This leads me to reaffirm that the above formulations on surface layout are not to be taken as a comprehensive account, but as a starting point to the problem of description of the built environment; which will eventually lead us to look at case studies with particular urban spaces.

Before introducing these case studies, I shall talk in general terms about the urban environment.

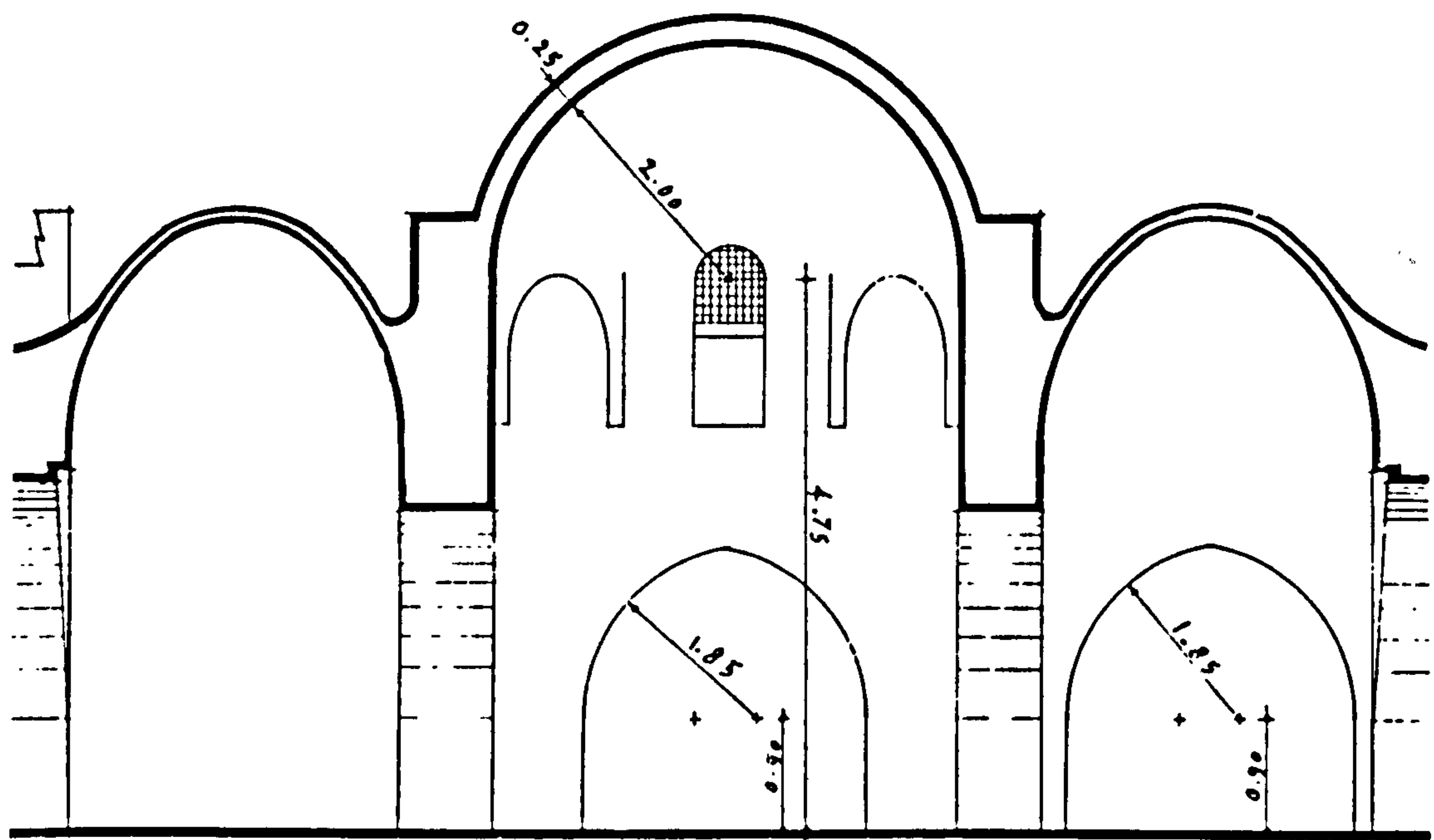


Fig.2.28 - Cross-section (representation). Source: Richards, 1984.

THE URBAN ENVIRONMENT

The urban scene, notably the traditional city (e.g. medieval settlements) is punctuated by moments of celebration, where there is a focus to the urban life, these are places to remind, there are notable buildings, there are monuments. It is not only from the terminology we use to refer to them - monument comes from monumentum (memorial), from monere, meaning to remind - that we get an indication of the way of being that pervades these buildings; their physical form, and the processes of production are also clear statements about their focal importance.

Monuments are generally the product of extensive elaboration: they are preceded by carefully drawn representations, ranging from plans to fine details, reduced models, and so forth.

Being to a large extent the product of intentions individuals direct towards the world, monuments clearly express in their architectural form specific perspectives to the world, particular ways of people viewing themselves in relation to the universe, dominant trends of thought, and so forth. These perspectives and trends are manifested in the various monumental styles, such as Renaissance, Baroque, Neo-classic, among others. The exuberance of Baroque forms, for instance, reflect the dynamic conception, and pluralistic view of the world of the XVII and XVIII centuries: 'Infinite space has infinite

potentiality, and in this infinite potentiality may be praised an infinite act of existence'.³¹

The connection between styles and intentionality is echoed in the writings of art historians, such as Woelfflin (1950), who tells us:

It is greatly to the interest of the historian of style first and foremost to recognise what mode of imaginative process he has before him in each individual case... It goes without saying that the mode of imaginative beholding is no outward thing, but is also of decisive importance for the content of the imagination, and so far the history of these concepts also belongs to the history of mind.³²

EXPLICIT PLANNED INTERVENTIONS

I shall refer to the mode of intervention underlying the production of monuments by the term explicit planned interventions: 'explicit', inasmuch as the characteristics of the planned object are stated. Such characteristics are generally expressed, as mentioned previously, through the use of representations of various types: these may be drawings, plans, perspectives, reduced models, or any other type of description - perhaps an oral account of how the spaces should be articulated.

It should be recalled at this stage, that the expression of planned explicit interventions in the form of monuments (with their particular styles) amidst an urban fabric, is a characteristic of the 'traditional' city. If we now shift to 'modern' urban environments, we realise that the realm of explicit planned interventions has

31. Giordano Bruno (1584), quoted by Norberg-Schulz, C., Baroque Architecture (Milan: Electra Editrice, 1979), p. 8.

32. Woelfflin, H., Principles of Art History. The Problem of the Development of Style in later Art, translated by M. D. Hottinger (New York: Dover, 1950), p. vii.

increasingly expanded to incorporate non-monumental buildings in the urban fabric, housing estates, and not rare, entire cities (as attested by Brasilia, and Chandighargh, among others). The expansion of the universe of explicit planned interventions certainly has a number of important consequences to the urban environment, which I shall not, in this dissertation, comment upon.

The relevant observation, at this point, is that explicit planned interventions have not only been traditionally used in the production of monuments, but also of other buildings in the urban fabric: it is known of the use of representations (e.g. reduced models in clay) and other kinds of descriptions to prefigure non-monumental buildings (e.g. dwellings) since prehistoric times.

If the house is relatively complex, then the builder will more than likely sketch out the plan and any other details primarily for his own use...³³

As the reader may have noticed, we are now referring to the so-called 'vernacular architecture'. In fact, in general terms, vernacular dwellings are partially the product of explicit planned interventions, and partially the product of non-explicit planned interventions.

NON-EXPLICIT PLANNED INTERVENTIONS

Non-explicit planned interventions are the second type of planned intervention that interest us here. Such interventions, although not involving the use of representations or descriptions designed to make explicit characteristics of buildings, are

33.Hakim, B. S., Arabic-Islamic Cities (London: KPI, 1986), p. 113.

nevertheless preceded by a mental prefiguration of such buildings. Vernacular dwellings express this type of intervention inasmuch as they generally exist as models in the heads of dwellers and builders. These models, called 'types' by Rapoport, have been apprehended by the members of a community through the tradition that has been transmitted to them. Such 'types', as we saw above, are not the only planned components in vernacular production, they are combined with oral descriptions, representations, etc. (i.e. explicit planning devices).

When a tradesman builds a farmhouse for a peasant, they both know the type in question, the form or model, and even the materials. What remains to be determined are the specifics - family requirements... size...³⁴

Explicit or non-explicit, planned interventions are the outcome of a mental exercise performed by, or the intentions of, an individual (see Appendix 2). The world we perceive, however, is not only meaningful to the extent to which we mentally represent it. The non-planned spaces that appear as planned buildings are erected, for instance, are also meaningful, and have a direct impact on the way people act in space.

Through that perspective, we say that the production and transformation of the urban environment cannot be conceived as a random affair, but ought to be approached in terms of ways of being in the world. Every human action needs to be understood as a certain way of being in the world. I may not see any particular meaning in swinging my arms as I walk, or describing a logarithmic spiral as I retract one of my fingers; but these 'patterns of action' are not meaningless. They

34. Rapoport, A., House Form and Culture (New Jersey: Prentice-Hall, 1969), p. 4.

are rather the result of the way humans have interacted with the environment throughout billions of years; years of mutual shaping, where human beings adapted to their environment, and conversely the environment changed to accommodate human beings. It is like the interaction between my feet and a new pair of shoes (my feet hurt and layers of shin harden as they shape the leather).

In fact, not all movement performed by a human being is related, or mapped back to a set of intentions. It may be argued that if one wishes so, one may consciously control every single movement of her/his body. Nevertheless, such a condition is not representative of the way humans are in the world: at the same time that I perform intentional movements with my body, there are a series of other movements that are not related to a set of intentions. When walking to work, for instance, I find that although my intention is 'getting there' (surrounded by a number of satellite intentions, which may be present right from the start of my journey, or which may be articulated as I walk), I perform a series of other movements, such as swinging my arms, or retracting my fingers, or crossing the road to walk on the opposite sidewalk, that are not the outcome of intentions I direct towards the world (though I may perform them intentionally if I want to). Nevertheless, every movement I make is somehow affecting my environment, just as the environment causes me to move in certain ways that escape the realm of my intentionality. Through the unfolding of this continuous interaction, whatever my degree of awareness of its various facets, I am changing the environment as I am being shaped by it. I am contributing through my very walking to the permanence or transformation of it. A simple illustration is the pathways formed by people walking across grass patches in Brasília (fig.3.1).

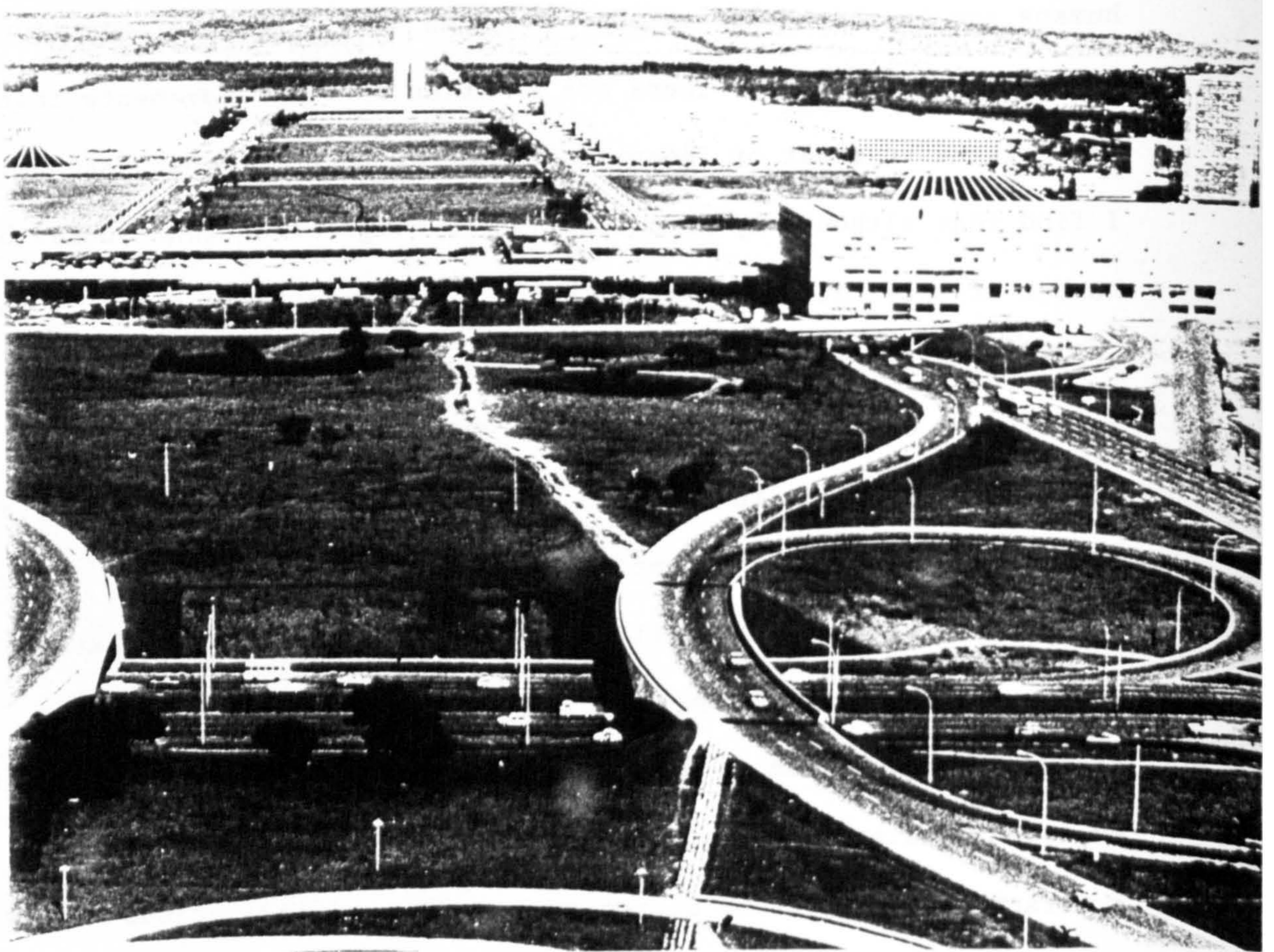


Fig.3.1 - Pathways of grass patches (Brasilia). Source: Edicard (postcard).

The acknowledgement of that dimension of our relationship with the world leads us to characterise a level of intervention in the urban environment that is not mapped back to a set of intentions generated by individuals: non-planned interventions.

NON-PLANNED INTERVENTIONS

In that realm of things that surround objects of our planned interventions, we find a non-planned dimension of human intervention in the urban environment. To assert the existence of a level of intervention that is non-planned, nevertheless, does not mean to say that there is a type of action from individuals in their environment that is non-intentional; but that not all movements humans perform (as part of an action) are underpinned by a set of intentions, or that, beyond the objects we direct our intentions to, as part of our acting in the world, such an acting cannot stop intervening on things that have not been defined as objects by us in first place. We affirm, in that perspective, that human action in the world does not only yield objects we have intended to produce, but that it also generates by-products, as it were, that tell us important things about our relationship with the environment. In the same way, we may say that no intervention in the urban environment is totally planned (see Appendix 2 for a detailed discussion about objectivity, intentionality, and the term thing).

Let us now approach non-planned interventions through the perspective that, although representing a level of our relationship with the environment which is distinct from planned interventions, it appears in concomitance with the latter, i.e. both interventions are the product of a single event. At the very moment a dweller erects a



Fig.3.2 - Delos (harbour). Source: Benevolo, 1980.

building (planned intervention) in the landscape, she/he is causing the surrounding space to change. This is clearly observed in the case where a series of dwellings (planned interventions) are being built along a pathway, there is an empty space - the street (non-planned intervention), that is gradually shaped as the dwellings occur.

One of the best examples of non-planned interventions is, no doubt the vernacular fabric. The vernacular fabric is here precisely defined as the interstitial spaces that gradually appear as buildings are erected in the vernacular city. Being shaped in time, through the intervention of a variety of individuals, the vernacular fabric cannot be preceded by a prefiguration (fig.3.2).

By referring to the vernacular fabric as non-planned interventions, we are here associating non-planned interventions to spaces that occur between buildings (as is the case of the street and the square), however, this is not always the case: i.e. space itself can be characterised as an object. We observe, in fact, that space has increasingly been the object of planned interventions: a proposal for a housing scheme involves not only defining the layout of individual dwellings, but also of the spaces between the various units, i.e. streets, squares, and so forth. The same applies at the larger scale to the case of planned cities (such as Brasilia). But what 'space' are we talking about, when we refer to 'modern' planned interventions? In most cases, it is 'Euclidean space' the object of these interventions. This means that space as a thing which is experienced by people, is reduced to an schematic system of co-ordinates, where the primary concern is about distances, measurements, etc.

The space which interests us here is not the space prefigured in the heads of individuals, but that space which takes shape through a

process of continuous interventions in the built environment. Although not being (generally) the outcome of a planned intervention, the space of the vernacular fabric is a thing with its own way of being, and is intrinsically meaningful to us.

The Vernacular Fabric

We saw earlier on the example of pathways shaped across lawns in Brasilia; we shall start meditating upon this example to talk in more detail about the vernacular fabric. The act of shaping pathways on the ground is, like other human activities, related to sets of intentions of a number of individual. A special observation, however, needs to be made, namely that the intentions of individuals, in this particular case, is 'getting from here to there', the pathway itself extrapolates such intentions; rather, it is the result of the contributions of a variety of individuals over a period of time. In that way, such a pathway is considered as a genuine non-planned intervention.

The emphasis, here, on pathways relates to the importance they have in the formation of urban spaces.³⁵ The colonial settlement of Ouro Preto in Brazil, for instance reveals the important role of pathways in the process of formation of urban spaces.³⁶

By talking about pathways, I do not mean to say that initial pathways will precisely dictate the form settlements will eventually assume, nor do I mean to neglect other important features in the

35. Some authors such as Sharp (1946), referring to specific settlements, question whether pathways have conditioned the configuration of urban spaces, or whether, the layout of buildings have preceded the formation of such pathways.

36. A more detailed description of Ouro Preto will be given in Chapter 4, which is exclusively devoted to it.

formation of vernacular settlements, what I propose instead, is that pathways are powerful components in shaping vernacular environments, and that they are not the result of planned interventions. Together with pathways, there certainly are other non-planned components that have a role in the formation of vernacular settlements, such as the fact that individuals tend to express their individuality in their dwellings: through the orientation of these dwellings in relation to the street (which is variable), the arrangements of materials, the height of the roofs, etc.. These non-planned components have a decisive role to play in the configuration of urban settlements, and they happen not only in the formation of vernacular settlements, but are also present in the way we daily interact with our cities (be they traditional or modern) when we move from here to there, going to work, shopping, or simply wandering about. It is my contention that we cannot achieve a full understanding of our relationship with the urban environment if we are not able to appreciate these non-planned components, and appreciate them for what they are, i.e. a specific way of being in the world.

This way of being in the world has precisely to do with the way humans move in space, the way they go from here to there, the way they come forward in a community; that is, as individuals, who distinguish themselves from other humans around them. We are, in that fashion, supplied with an extra dimension in our approach, that will prevent us from viewing the urban environment through a functionalist eye, which reduces urban spaces to receptacles of a number of activities, like a machine, which fulfils a certain task. Through such a functionalist perspective, streets are conceived as arteries of communication, as mechanical objects to take people from here to there. The functional

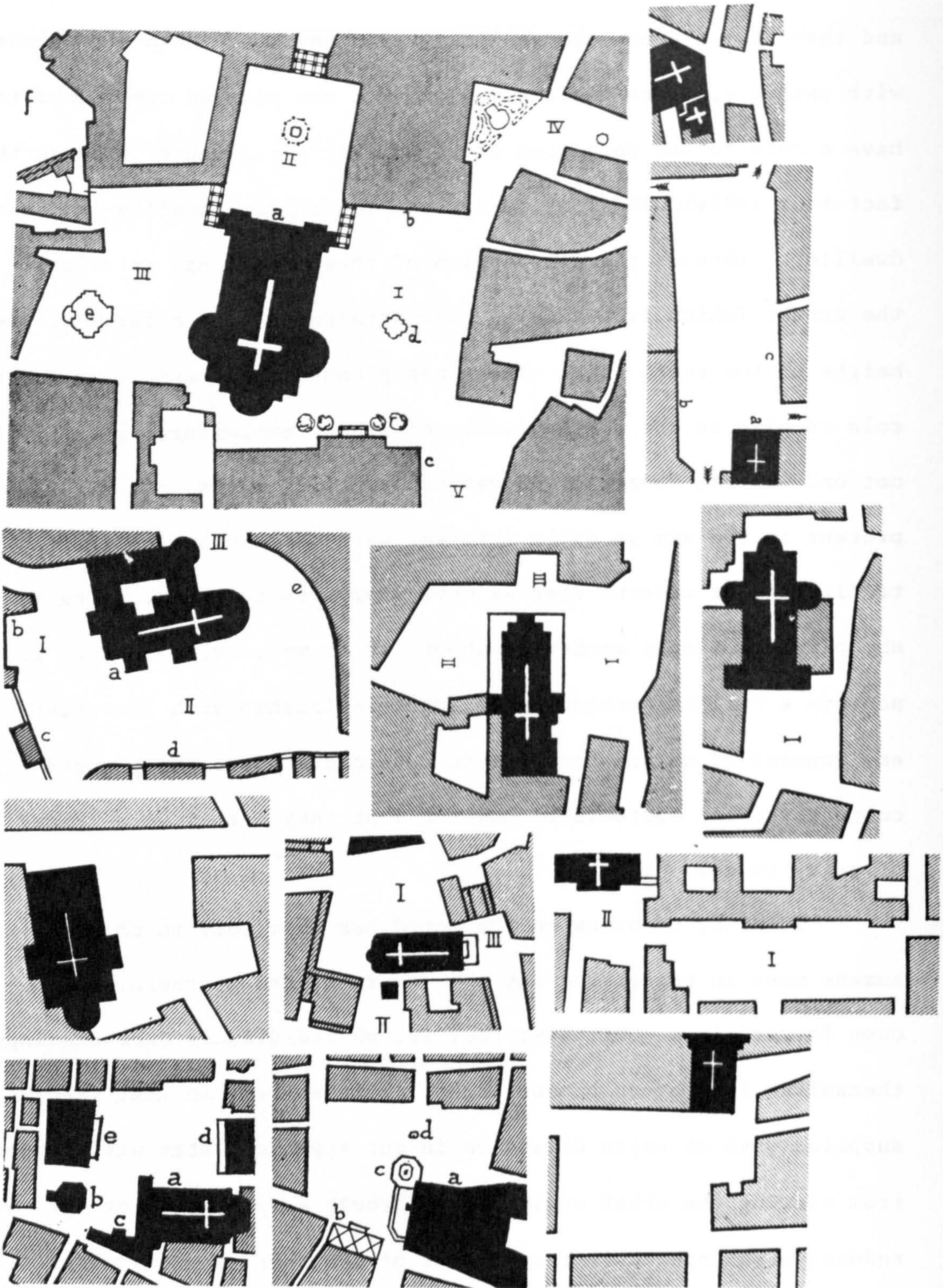


Fig.3.3 - The convex layouts of squares. Source: Sitte, 1965, & Zucker, 1959.

street is emptied of that dimension which tells us about how the 'going from here to there' unfolds. As a functional structure, the street loses its ties with a way of being in the world, that pervades the very going from here to there. Such a way of being in the world, however, can be read in the vernacular fabric in its urban form, in the organic configuration of its streets, in the multi-oriented surfaces that enclose its spaces, in the heights of the volumes that define it; such a way of being is related to the creation of paths, by a number of individuals over a period of time, to the erection of buildings with individual characteristics along side these paths, to the variation of flow along these paths, revealing places where people stop, so that the buildings recede to provide the necessary space, containing sections of articulations with other parts, slowing down at moments to form large enclosed spaces for the concentration of people.

Let us focus on the three features mentioned in the end of the above paragraph, namely, the erection of buildings along pathways, articulations between pathways, and enclosed urban spaces. The suggestion is that such features are at the root of important urban locations in the urban environment, giving rise respectively to streets, articulations, and squares.

I start by talking about squares, inasmuch as these impersonate the climax of the gathering activity, and convergent movement, which I propose with authors such as Vitruvius, Alberti, and Alexander, among others, to be the primary characteristic of the city.

Squares

If one visualises streets as rivers, channelling the stream of human communication - which means much more than mere technical "traffic" - then the square

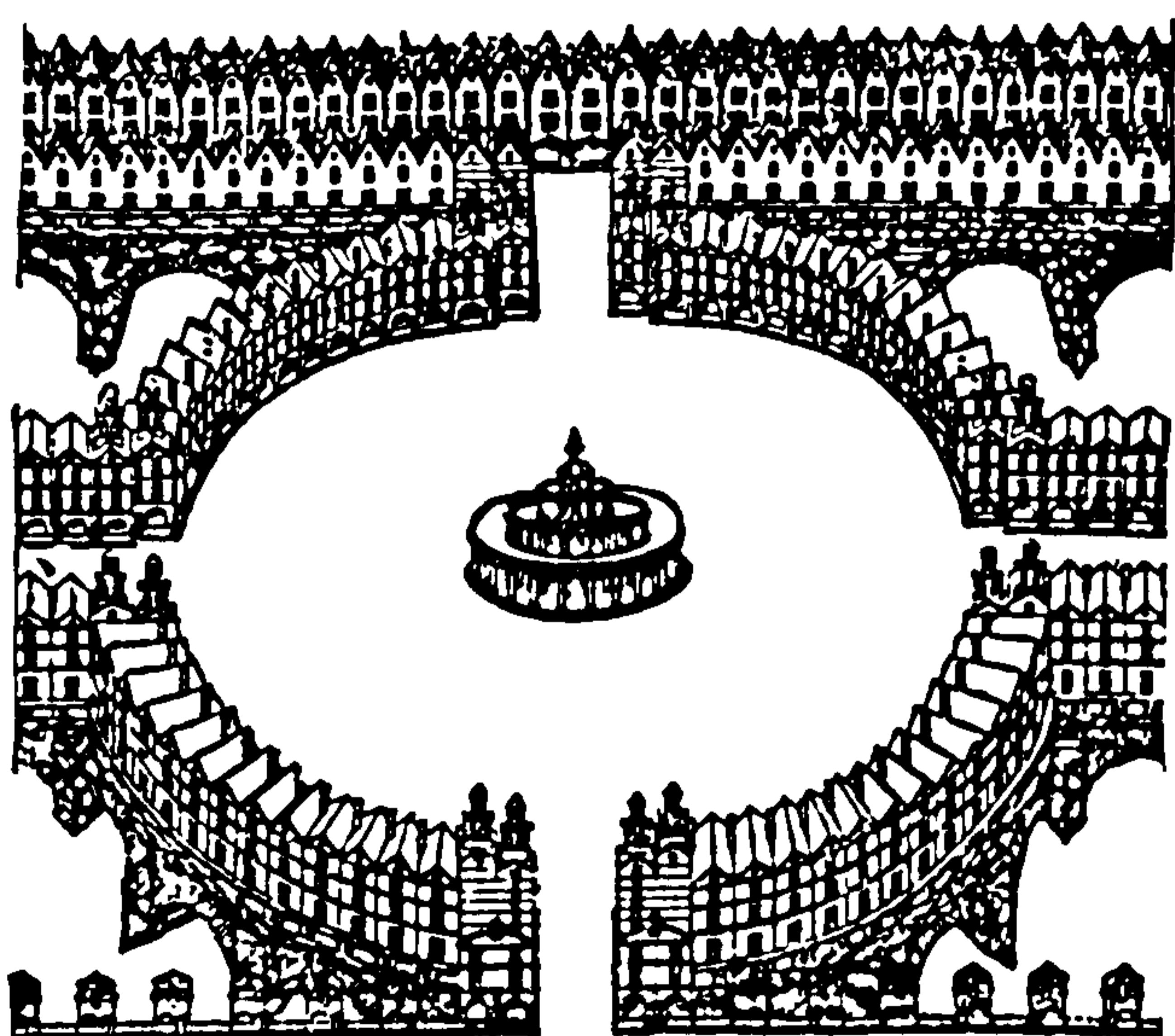
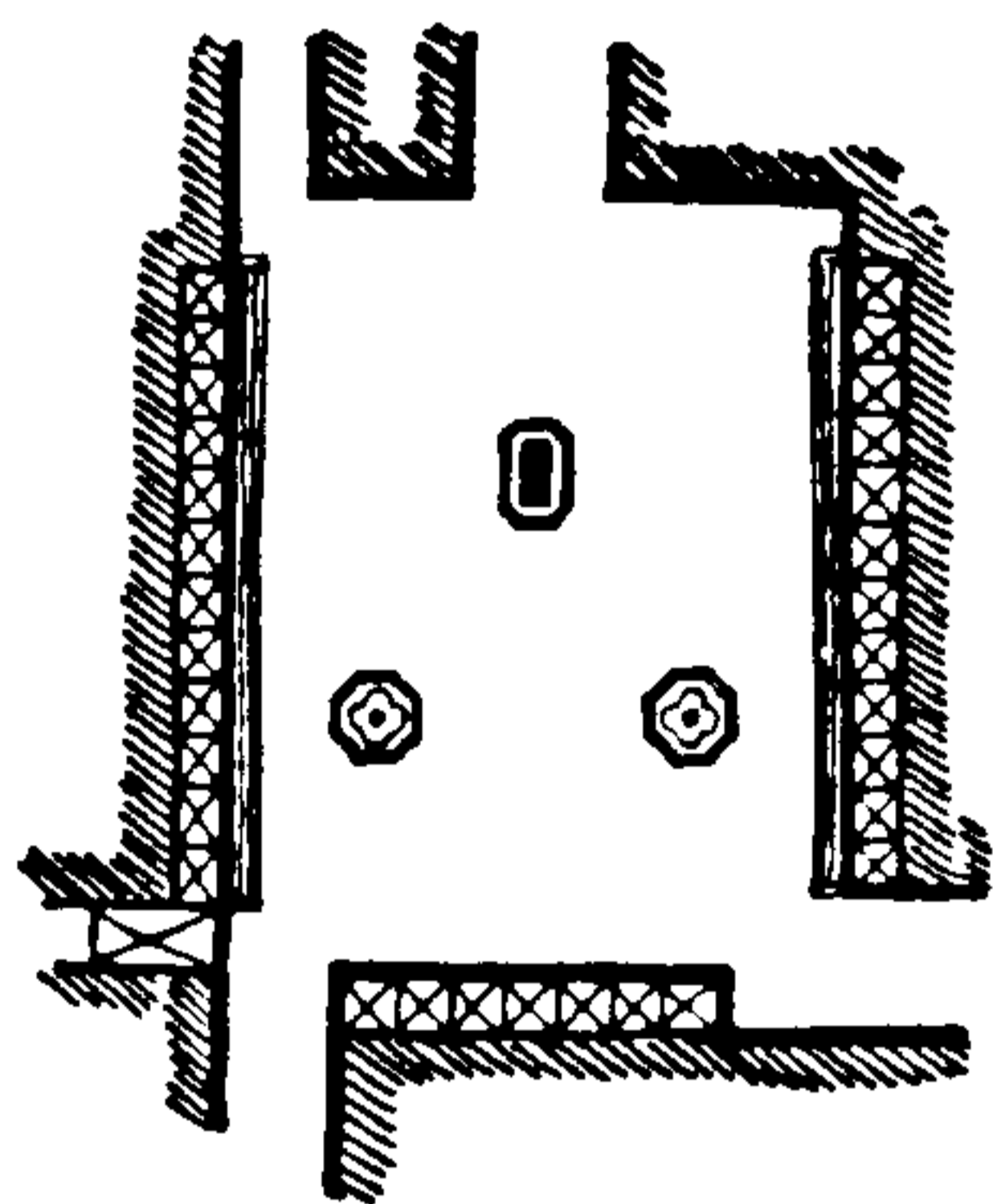
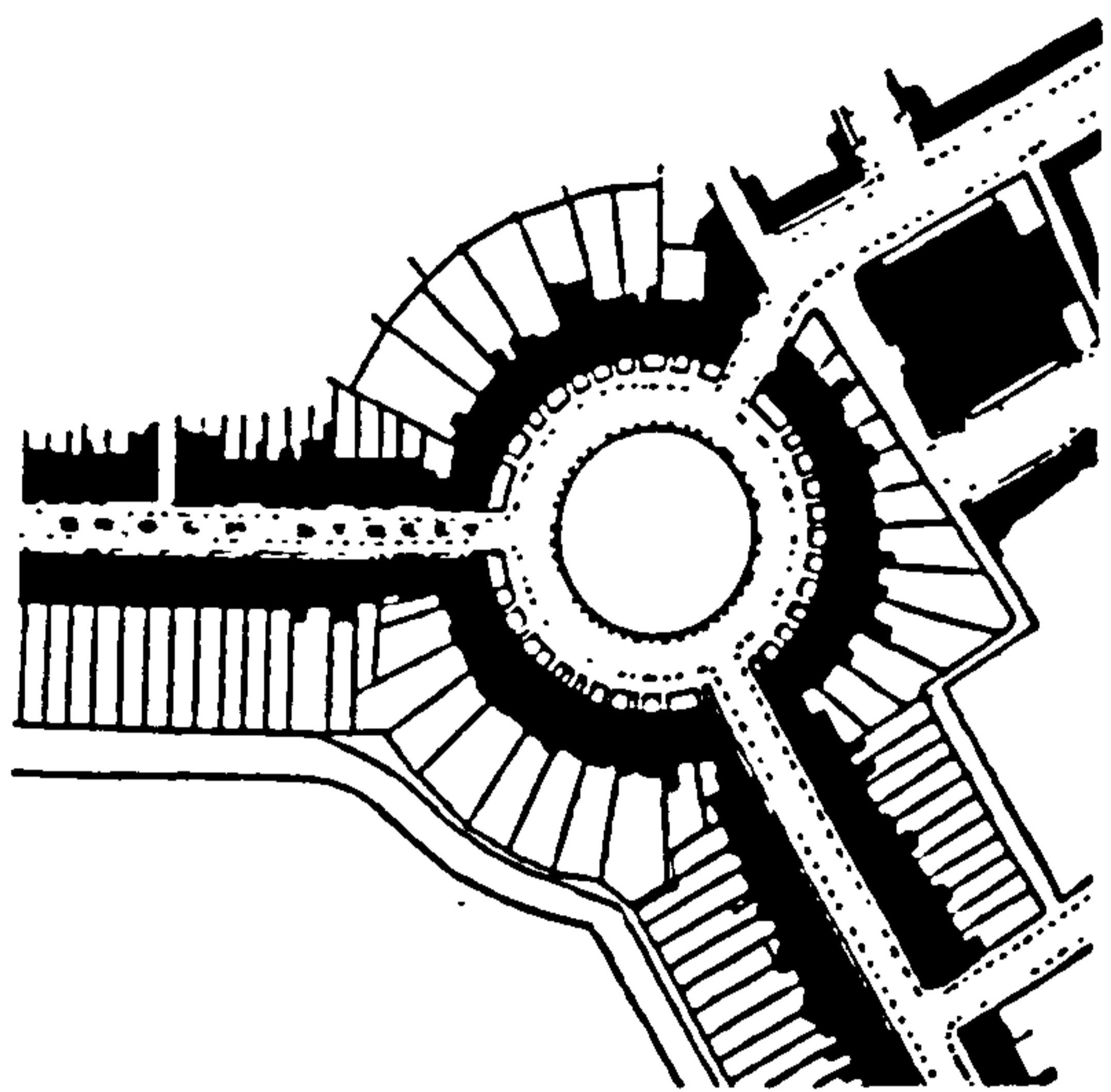


Fig.3.4 - Planned Squares. Source: Zucker, 1959.

represents a natural or artificial lake.³⁷

Essential to the understanding of the square as a location is this flowing into an expanded space, where a linear movement slows down, and begins to spiral, in the fashion of the water of a river flowing into a lake.

The slowing down and spiralling of the flow is indissoluble from the morphology of the square, where buildings recede to form an expanded, convex, enclosed space. When we look at squares formed through a vernacular process, we shall come across a great variety of convex irregular shapes (fig.3.3).

On the other hand, the space of the square can also be the product of planned interventions; and in this case, they tend to assume regular layouts such as rectangular, circular, or elliptic (fig.3.4).³⁸

Streets

Streets, as we saw earlier on, are characterised by the act of going from here to there, which is a linear gesture, like the flow of a river.

Such a linear movement, however, is hardly ever a straight line, when it is a non-planned act. If we come back to the example of pathways, once more, and refer to their role in the formation of streets, we may observe that at the very act of shaping a pathway, there are negotiations by individuals, who may find a big rock on their way, or maybe a tree, that cause them to divert from their original

37. Zucker, P., Town and Square (New York, etc.: Columbia U.P., 1966), p. 2.

38. For an interesting and detailed account about the history, and types of square, see Zucker, op.cit.

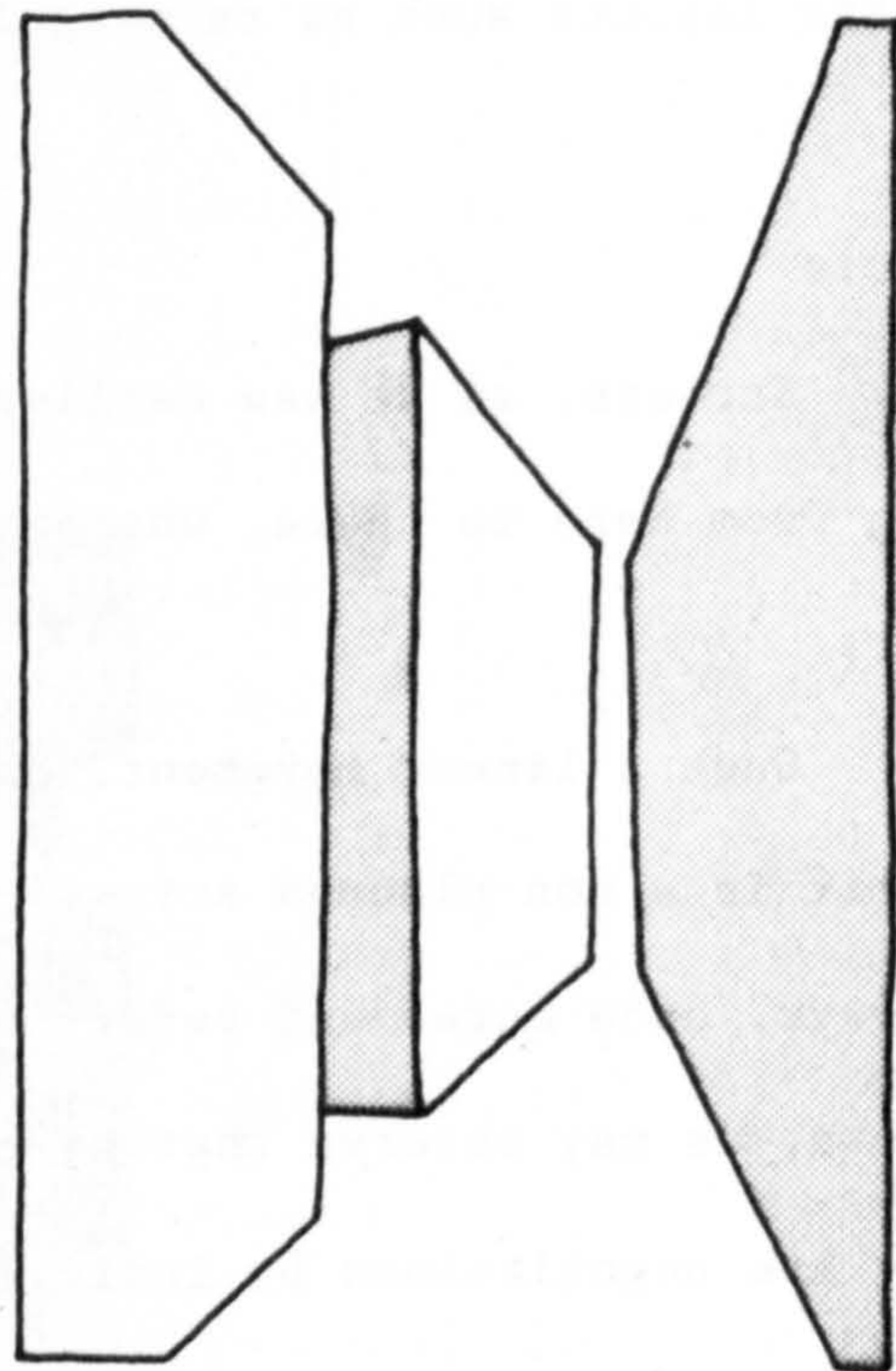
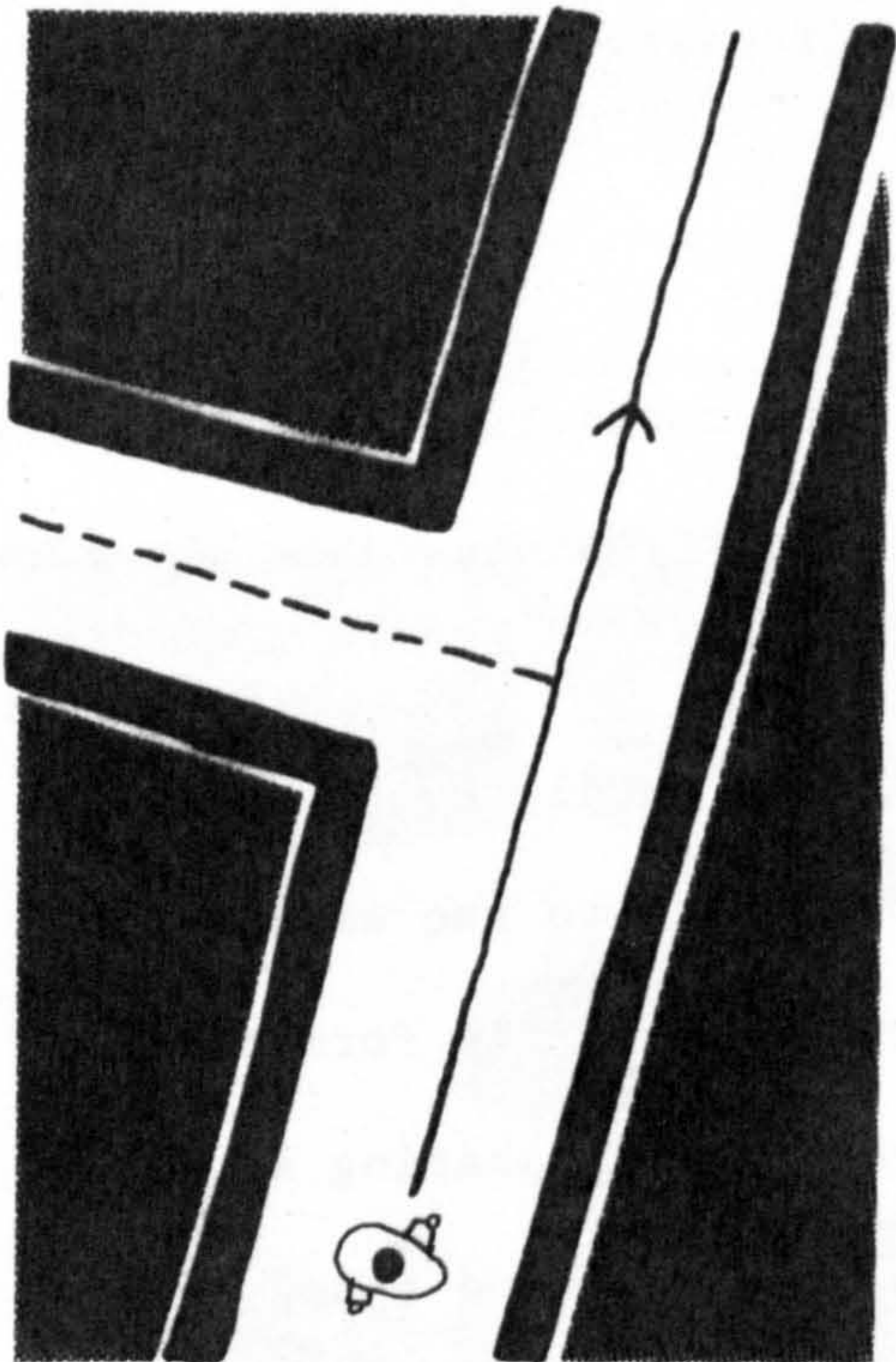
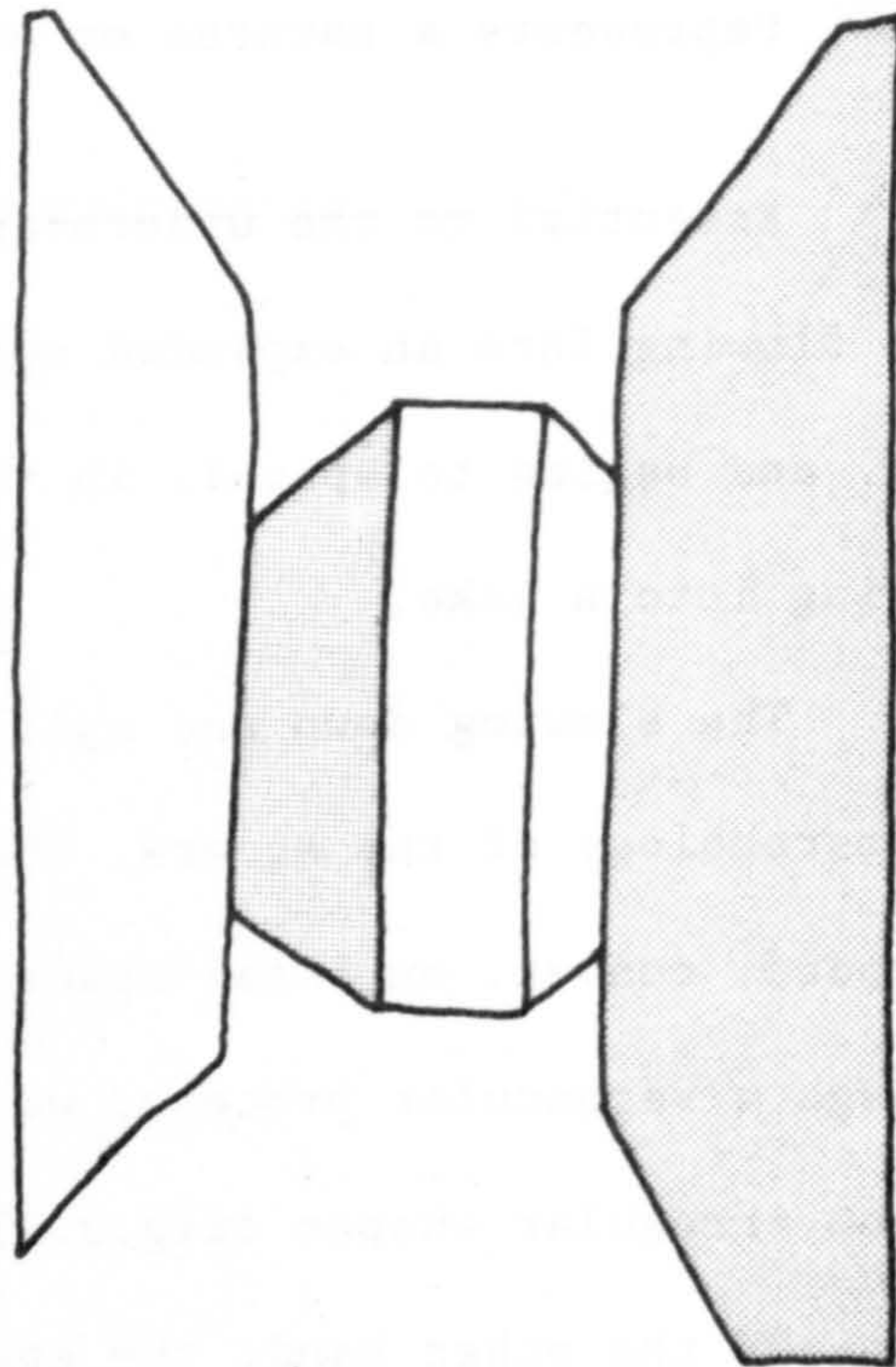
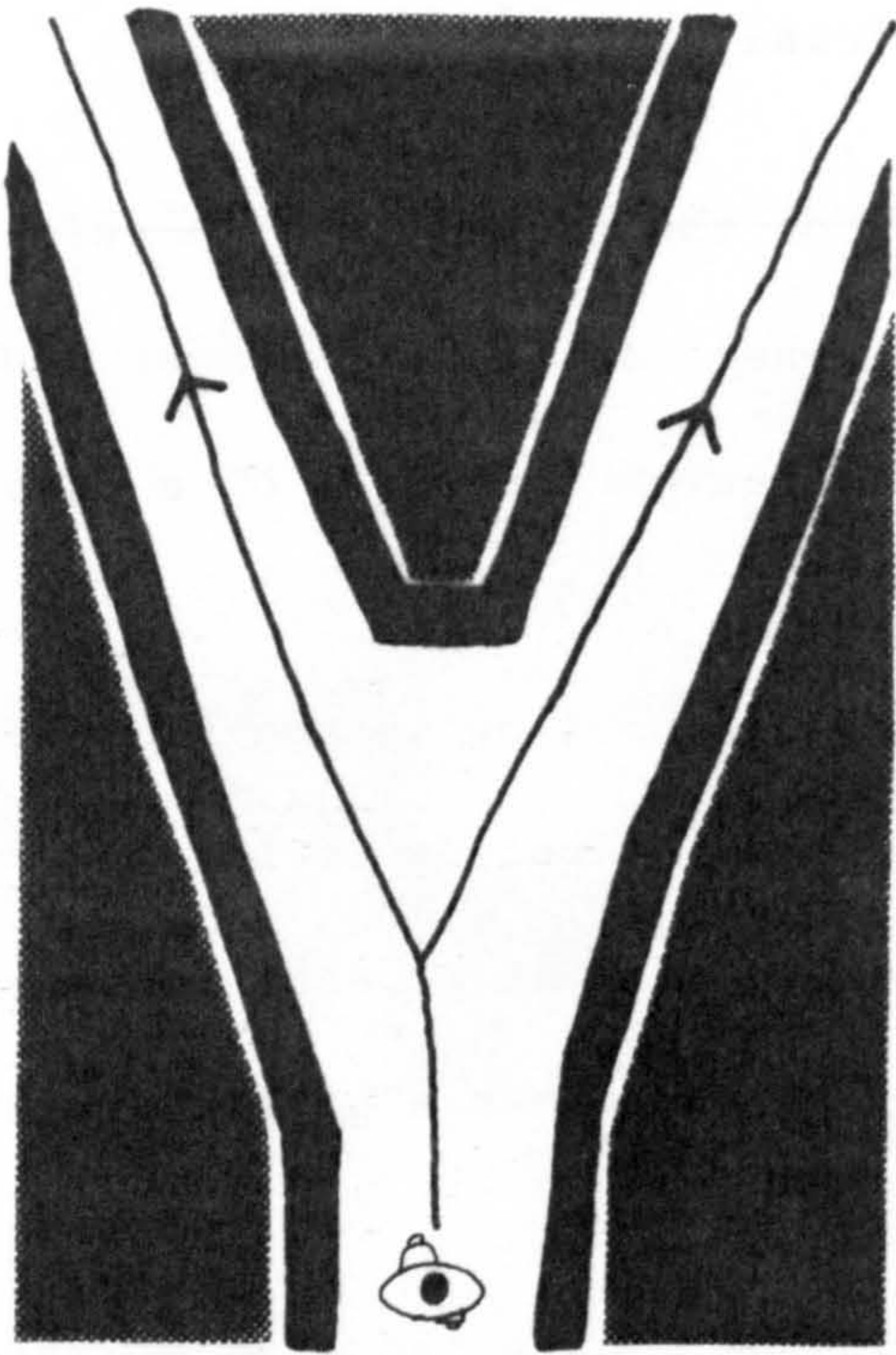


Fig.3.5 - 'Y' connection. Source: author.

Fig.3.6 - 'T' connection. Source: author.

trajectory. To be sure, there will be also adaptations to topographic constraints of the terrain, causing people to follow a contour, or to deviate to cross a river at a more convenient location.

The straight street appears in the history of settlements, from ancient Greek colonial settlements right through to Modern times. In this case there has been no negotiation (or maybe little) with natural environmental features, rather, the street lands on a terrain and imposes itself, as the coloniser imposes his culture upon the colonised, or as authorities, such as Haussman, impose order onto a 'disordered' society.

Articulations

Articulations, as thresholds from one location to another, are in themselves a location. They characterise the opening of new vistas, as a surface appears from behind an occluding edge. Because of that, we may refer to articulations as affording an alteration in the pattern of movement to the observer.

If a street divides in two, such a change implies a choice, maybe a diversion off the initial pattern of movement (fig.3.5), maybe a confirmation of such a pattern (fig.3.6). Also, according to the inclination of the frontal surface (meaning the surface towards which the observer walks) in relation to the line of sight of the observer, a predominant direction of movement may be afforded; thus implying a hierarchy in the network of streets. In other words, if the surface inclines towards the left, a movement to the left is afforded, and so forth (fig.3.7).

If a street connects with a square, the change in the pattern of movement suggests a slowing down of the observer. Now, it is important

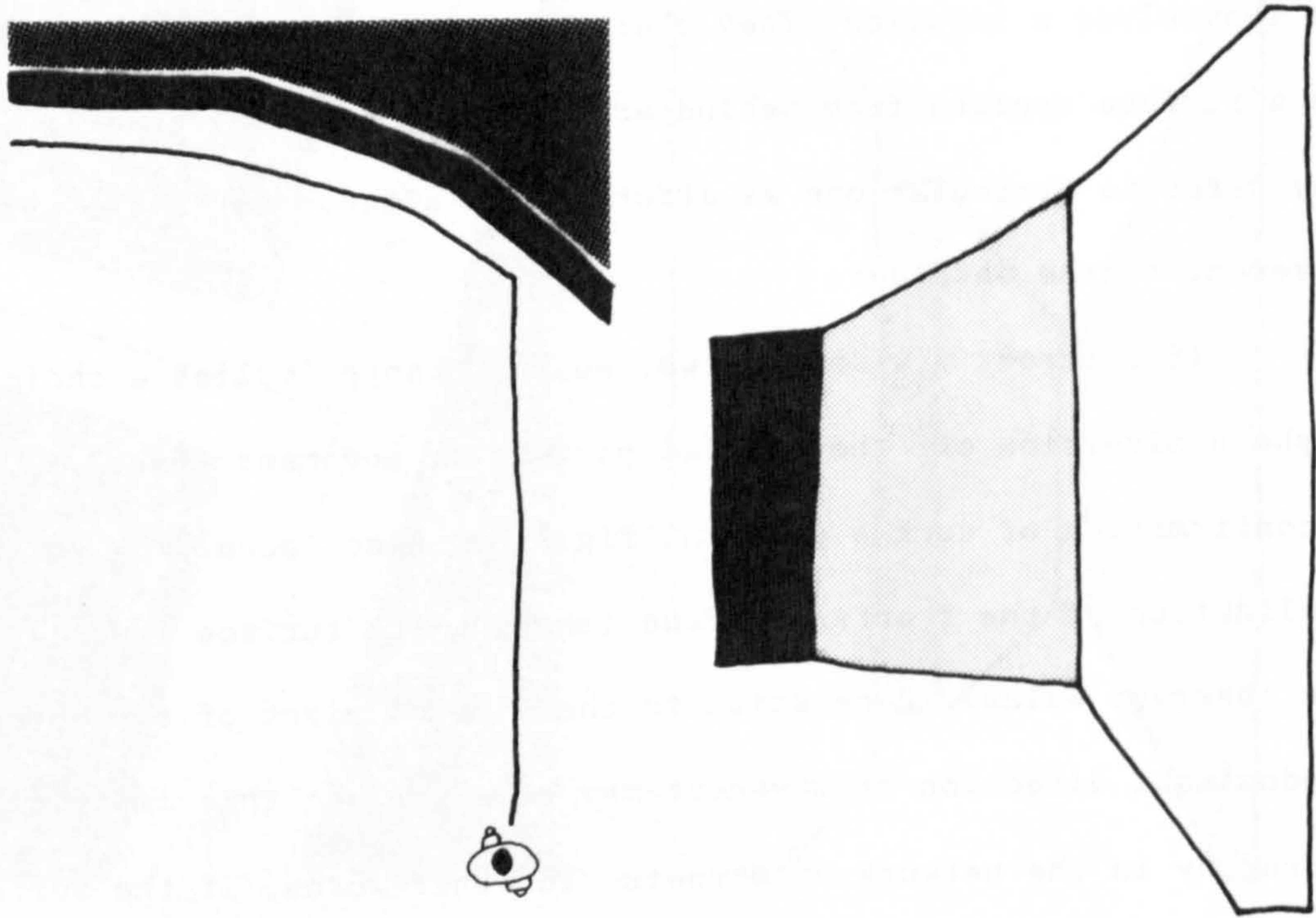


Fig.3.7 - Inclined surface in a conection. Source: author.

to stress that such experiences are immediately suggested by the surface layout. In that way, from the street, the observer already perceives a change in the pattern of movement (and we could say that she/he also perceives the layout of the square to different extents) according to the discontinuities in the surface layout (edges, corners, etc.). These observations seem to meet Zucker's words, when he says that 'the square dictates the flux of life not only within its own confines but also through the adjacent streets for which it forms a quasi estuary.'³⁹

I shall now bring this general description of locations to a close, and use it to look at a number of case studies.

The idea is to contrast a number of vernacular settlements, produced in widely diverse socio-cultural contexts, identifying ecological relationships in them, by referring to the environmental description put forward here, notably in relation to the above described locations. The analysis that follows focuses on the relation between patterns of movements by people and surface layouts.

Before moving on to talk about the case studies, I would like to say something about the method used to approach them.

METHOD

In order to talk about the methodology employed here, I shall refer to some considerations presented by D. Seamon (1987). That author starts his exposition about 'Phenomenological methods and environment-behaviour research' by contrasting it with the method generally applied in 'positivist social science':

39. Zucker, op.cit., p. 2.

Unlike the positivist social scientist, who has the tools of logic, research design, and statistical methods to assure clarity, objectivity, and verifiability, the phenomenologist has only the dedicated wish to see thoughtfully and fully: 'For the phenomenologist, to see implies a relationship in which what is seen is opened up to the viewer through the viewer's opening up to what is seen' (Brenneman, Yarian, & Olson, 1982, p. 4).⁴⁰

To promote such a way of seeing, D. Seamon tells us, the main vehicle is *intuitive insight*⁴¹. In other words, the study of an environment hinges on the experience of the researcher. It is his/her experience, in the first place that will determine how such an environment is to be approached. On the other hand, the experience of other people may appear in association with the experience of the researcher, providing what D. Seamon calls *intersubjective corroboration*.

Now, as the researcher focuses on her/his experience of an environment, she/he moves away from mental preconceptions, attempting to grasp the environment in its nature. The researcher, as it were, lets her/his interaction with the environment happen; and at the same time observes it. As the researcher does so, she/he elaborates a description of the environment (which she/he may subsequently compare with the descriptions of other people for subjective corroboration).

In the case studies that follow, a pre-eminent role has been given to my own experience and description of the urban environments concerned (through words, and drawings as in the case of Ouro Preto). Such descriptions were sometimes compared with the descriptions put

40. Seamon, D., 'Phenomenology and Environment-Behaviour Research', in E.H. Zube, and G.T. Moore's (eds.) Advances in Environment, Behavior, and Design, Volume 1 (New York & London: Plenum Press, 1987), 3-27, p. 7.

41. Ibid..

forward by other authors. To be sure, they will undergo the scrutiny of the reader, who will compare my insights with her/his own (if not in relation to the particular case studies presented here, maybe in relation to settlements that present common features to those).

Apart from describing, I analyse the layout of spaces in relation to the movement of people. Such a movement of people is studied through the formation of pathways, and the transformation of spaces - most clearly revealed in the case of the shantytown (Chapter 3) - where maps were overlaid, and layouts were compared.

On the other hand, in the case of older settlements such as Ouro Preto (Chapter 4), and York (Chapter 5), I referred, by and large, to the history of those settlements in order to gain insight into the transformation they underwent. Special attention was given to planned interventions and their impact onto the vernacular urban fabric in the case of York.

SHANTYTOWNS

Downtown Nairobi is beautiful, with its tall buildings, modern architecture and flowering trees... Four miles from the downtown area, along the sides of the Mathare River, live some 10,000 to 20,000 urban squatters. The area... is ugly. The houses, crammed together in an apparently haphazard fashion dictated by the uneven terrain of the valley's walls, are built of mud and wattle and have roofs made of cardboard, flattened-out tin cans, or even sheet metal. A visitor entering the area is struck by the lack of social services; the roads are makeshift, garbage is piled high in open areas, and children play in the dust...¹

It may seem odd to propose, as this dissertation does, the shantytown as a positive contribution to the understanding of our relationship with the environment; when accounts about this subject, most often highlight its negative features, as does the one above. As Peter Lloyd puts it, if we are not invited to question the accuracy of statements such as the ones contained in the above fragment, nor doubt the fact that the unsanitary conditions depicted by it lead to a greater incidence of disease; we must remind ourselves that accounts such as those come from the mouth of (affluent) western observers with particular cultural patterns, to be sure, different from those of the people who live in the shantytown.

Such a western observer, heir of the rationalist tradition (that

1. Peattie, L.R., quoted by Lloyd, P., Slums of Hope? Shantytowns of the Third World (Manchester: Manchester University Press, 1979), p. 17.

was described earlier on), brought up and educated in an 'ordered' urban environment, of polished surfaces, glowing textures, 'tall buildings', 'modern architecture', and 'flowering trees', is likely not to identify her/himself with the scenery provided by the shantytown, which tends to present quite opposite characteristics, namely: rough textures, uneven edges, irregular volumes, dusty streets, and unsanitary conditions.

If we follow Lloyds' suggestion, and look instead among the shantytown dwellers for an opinion of their squatter settlement, the perspective we get is likely to be quite different. Those dwellers' views of their settlement need to be weighted not in relation to the urban environment of modern cities, but against the rural habitat from which they migrated. Also, in their interface with the new urban environment, such migrants may stress the sense of solidarity and cohesion experienced within the small community provided by the shantytown settlement, 'contrasting adversely with the anonymity seen in the planned housing estates.'²

The feelings of shantytown dwellers in relation to their settlement may often lead them to express the wish to remain in their neighbourhood, when faced with the opportunity of moving into a planned housing estate. They may complain about lack of services, such as water supply, or schools for their children. Their choice, however is for these services to be fitted in the spatial structure already existent.³

These facts seem to indicate that shantytown dwellers, in many

2.Lloyd, op.cit., p. 18.

3.The survey carried out by the SHIS (governmental body in charge with the provision of low cost housing) in the shantytown of Paranoa, has shown exactly that. I shall refer to it in more detail shortly.

cases, are able to effect patterns of appropriation upon their environment, i.e. they are able to relate to the spaces of the shantytown as places with particular meaning to them, places that are unique, places that express homeliness, places which they are not prepared to let go easily. There seems to be an element of success in the relationship between squatters and their shantytowns. Such a condition of success is not taken for granted in this dissertation, it is rather taken with great interest, even more if we consider that such a successful relationship happens in such precarious environments.

Of particular interest here is the fact that the formation of shantytowns involves a process of non-planned intervention (which I argue to present similarities to that of vernacular settlements, as we will see in a future chapter), being a convenient subject for the study of the relationship between person and environment proposed by the present work.⁴

SHANTYTOWN - THE URBAN PHENOMENON

This section is about the shantytown as an urban phenomenon with some general characteristics that permeate specific manifestations in different countries and regions.

I shall talk about instances and constraints that lead to the formation of such settlements, and the processes of development that

4. I should make it clear at this stage that this is not an apology of the shantytown settlement. And I should repeat the observation that appears in the UNCHS 1982 survey that: 'it must not be forgotten that by far the greatest number of squatter dwellings, even though they satisfy an immediate and crude need for shelter, are quite unfit for human habitation.

United Nations Centre for Human Settlements (Habitat), Survey of Slum and Squatter Settlements (Dublin: Tycooly International Publishing Limited, 1982), p. 131.

follow, illustrating them with some examples from around the world.

Instances and Constraints

Shantytowns are generally related to a process of cityward migration. People coming from rural areas, with no place to settle, and limited financial conditions, occupy land (private or public) in or near urban centres. These migrants tend to settle as near as they possibly can to services (water supply, education, and transport, among others) and working places provided by the city.

Such an occupation is often considered illegal by the authorities, who are not always willing to co-operate with the squatters' housing needs.⁵ The above state of affairs, as the (1982) UNCHS survey on shantytowns and slums points out, is often the case:

In some instances, particularly in Latin America and North Africa, where squatter settlements have been in existence longest, Governments have undertaken programmes aimed at improving living conditions (United Nations, 1971). In other countries the presence of squatter settlements has simply been ignored. In the vast majority of cases, however, squatter settlements are regarded as anomalous or pathological phenomena which ought to be suppressed or removed.⁶

Such a scenario of poverty, migration, and illegality, lead to a number of characteristics, specific to the shantytown settlement, which I shall deal with individually.

5. In some cases an alternative for housing is offered which is far too remote from working places, and/or with limited services, and/or with renting (or transport fares) that squatters cannot afford, to be of any appeal to them.

6. UNCHS, op.cit., p. 4.



Fig.4.1 - Brazil (and its states)

CHARACTERISTICS OF SHANTYTOWNS

Limited Land

The land available to squatters is generally marginal land. The idea of marginal land refers to those areas that have remained marginal to the process of formal urbanisation; areas that for some reason or other were excluded from such a process.

The simplest case of marginal land is that of areas peripheral to urban centres, where as a result of radial growth, the land close to the city centre has been occupied, leaving non built areas at its periphery.

In actual terms, however, urban growth is more likely to present a number of discontinuities, maybe green areas, or 'green fingers' (i.e. penetration of country areas into the urban fabric), etc.. To be sure, the topography plays an important role in the formation of these 'voids' and 'pockets' into the urban fabric.

A good example of constraints affecting the growth of the city, causing the formation of voids in the fabric (which become available for squatting) is that of Rio de Janeiro, which squeezes in between a dramatic landscape of hills and rocky formations. Developers in that case have carefully avoided the occupation of hills, which are too steep and present unstable conditions, for the erection of buildings. In these hills, a number of 'favelas' developed, meeting the requirements of squatters to be near the working places and services provided by the city. It needs to be pointed out, however, that shanties are often washed down the hills in periods of intensive rain.

In Salvador, the capital of Bahia (further north of Rio) (fig.4.1), where there was no marginal land as such, squatters occupied the marshes, developing a more elaborate structure to raise their

dwellings above the flooded area.

Brasilia, on the other hand, with its green areas, open spaces, and incipient development, allows many more possibilities for squatters, who would, otherwise, be put on orbit in one of the satellite cities.

Whatever the condition is, marginal land tends to be limited. It tends to fit in the interstitial spaces of the fabric, in the left over gaps. Otherwise, if the squatter settlement has more space around it, there may yet be an intervention by the authorities, in the sense of controlling its growth.

This limitation of available land has a direct impact on the pattern of occupation of the squatter settlement. One such impact is the division of plots in the shantytown, which is described by the afore mentioned UNCHS survey:

In many cases, plots are defined as a result of mutual agreements between neighbours and are therefore determined largely by the date of the occupants' arrival at the settlement site. More recent arrivals have to do with smaller plots on which they can built only modest houses compared to those of the more established inhabitants.⁷

Such a limitation of land will also affect the internal spaces of the dwellings:

Households in squatter settlements usually occupy not more than two rooms, and structures are correspondingly small.⁸

As the above fragments testify, the occupation of limited land

7.Ibid., p. 126.

8.Ibid..

by an increasing number of people leads to a fast process of 'densification'. The process of densification, as the 1982 UNCHS survey tells us is an important aspect in the development of shantytowns:

Squatter settlements grow either through expansion or through increases in the density in a limited area. Slums cannot usually expand because the surrounding urban land is already used. They grow only through the addition of shanties on vacant plots and roof tops or through the conversion of buildings to rooming houses. All of this results in densification, which generally leads to appalling overcrowding and pressure on services.⁹

Such a quick process of densification, is a feature of particular interest to the present dissertation, not because it leads to 'appalling overcrowding and pressure on services', but inasmuch as it leads to the formation of urban spaces, monitorable, and observable over a short period of time. As houses cram together, as a result of the lack of space to expand in, voids are quickly occupied and what is left is a defined space for circulation, accessibility and gathering (fig.4.2).

Limited Building Materials and Techniques

The limitation of building materials and techniques is a direct outcome of the poverty of squatters. Such a limitation is generally translated into the employment of non-standard elements of construction. By non-standard elements, I mean things that would not usually be used in standard construction (e.g. flattened-out tin cans, or cardboard) (fig.4.3), or standard materials used in an unusual or decayed state [e.g. corrugated fibre cement sheets (usually a roofing material) used to make lateral walls], or maybe rustic materials (e.g.

9.Ibid., p. 22.



Fig.4.3 - Building materials in shantytowns. Source: AR, 1985.

tree trunks, or stones).

To be sure, non-standard components many times appear in combination with standard ones (used in a standard manner). In Brasilia for instance, it is common place to find shanties covered with corrugated fibre cement sheets (The only building component that the squatter tends to buy).

I should, at this stage, present the point made by the 1982 UNCHS survey, in relation to the over enthusiastic attitude that authors may adopt in relation of this use of unconventional material, in the sense that:

The ingenuity and imagination of squatters and other occupants of large or tiny portions of uncontrolled urban land - the 'marginal' urban dwellers - in solving their own shelter problem under unfavourable and hostile conditions have often been praised. However, it is clear that, given existing legal conditions regarding land tenure, these individual and collective efforts to erect shelter within the urban environment are bound to lead to substandard, illegal or at best non-conventional structures.¹⁰

The employment of non-standard materials, however, through the point of view of this dissertation, which is interested in the formation of spaces, may be seen as a positive aspect, very much because it does not impose a pre-established arrangement and use. They rather call for improvisation, requiring that the user establishes a dialogue with the material, attempting to grasp what such a material affords, and how it may be combined in the production of a shelter.

Another important thing to be said is the flexibility that permeates the process of construction and transformation of buildings made with non-standard materials, i.e. because such materials are light

10.Ibid., p. 130.

(being manipulable by non-mechanised labour) and their connections are fragile and precarious, the houses that present them are subjected to a dynamic pattern of transformation, leading to quick accommodation of spatial arrangements to people's patterns of movement.¹¹

The other aspect of interest here, is that limited materials and techniques may also be translated in quantitative terms. In that case, the limited condition presents a frustration in the process of planning a house. Brandão (1982) illustrates that by referring to the shantytown of Paranoa (in Brasilia):

To squat, there needs to be some complicity of a relative or friend, already living in the area. In some cases, everything is arranged by correspondence. The fellow arrives from the North-east (of Brazil) and finds the area for the construction of the house already defined. In this case, the friend or kin will have gathered the necessary material, which in fact limits the dimensions and quality of the house. The material available, and not 'all the material required', is collected for the construction of a 'designed' house... which is then upgraded.¹²

Limited Time for Construction

The political pressure upon squatters, the authorities' disapproval, are the main limiting factors on the time frame for the construction of a shanty. Illustrating such a state of affairs, again with reference to the case of Paranoa, Brandão writes:

11.The 1982 UNCHS survey about squatter settlements relates the low durability of materials employed in shanties to insecure tenure conditions: 'Since most squatter inhabitants live under insecure tenure conditions, it is not surprising that their building materials are usually of limited durability, thus reflecting the low priority attached to investment in a dwelling under such circumstances.' UNCHS, op.cit., p. 131.

12.Brandão, A. B., Morar e Viver, Master Degree thesis submitted at the University of Brasilia, 1982. Translated from the Portuguese by this author. P. 141.

The majority (of people) built their own houses, this lasts on average around one to three days. It must be quick, as a governmental inspection may be under way in the area.¹³

Such a speed of occupation, added to the previously mentioned constraints, of limited access to land, and material, contributes to the overshadowing of planned components and the immediacy of the interface between dwellers and their environment.

This state of affairs provides a most convenient condition for the study of general processes of production and transformation of spaces, such as the formation of pathways, that interests me here.

It should be observed, on the other hand, that such a flexible and dynamic condition (accentuated in comparison to vernacular settlements) may impose further limitations on the identification of permanences in the fabric, as elements that reflect enduring and appropriate patterns of interaction.

THE FORMATION OF URBAN SPACES

The formation of urban spaces in shantytowns, similarly to that of vernacular settlements, bears a direct relationship to people's patterns of movement in space, and reflects an immediate interface between individual and environment. Such a formation may be described in terms of the gradual creation of pathways as people continuously move along certain routes. This formation of pathways initially causes the soil to assume a differentiated surface; namely a surface that has been compressed by the people walking on it - the beaten track - and that surface that hasn't. The former generally takes the form of

13.Ibid..

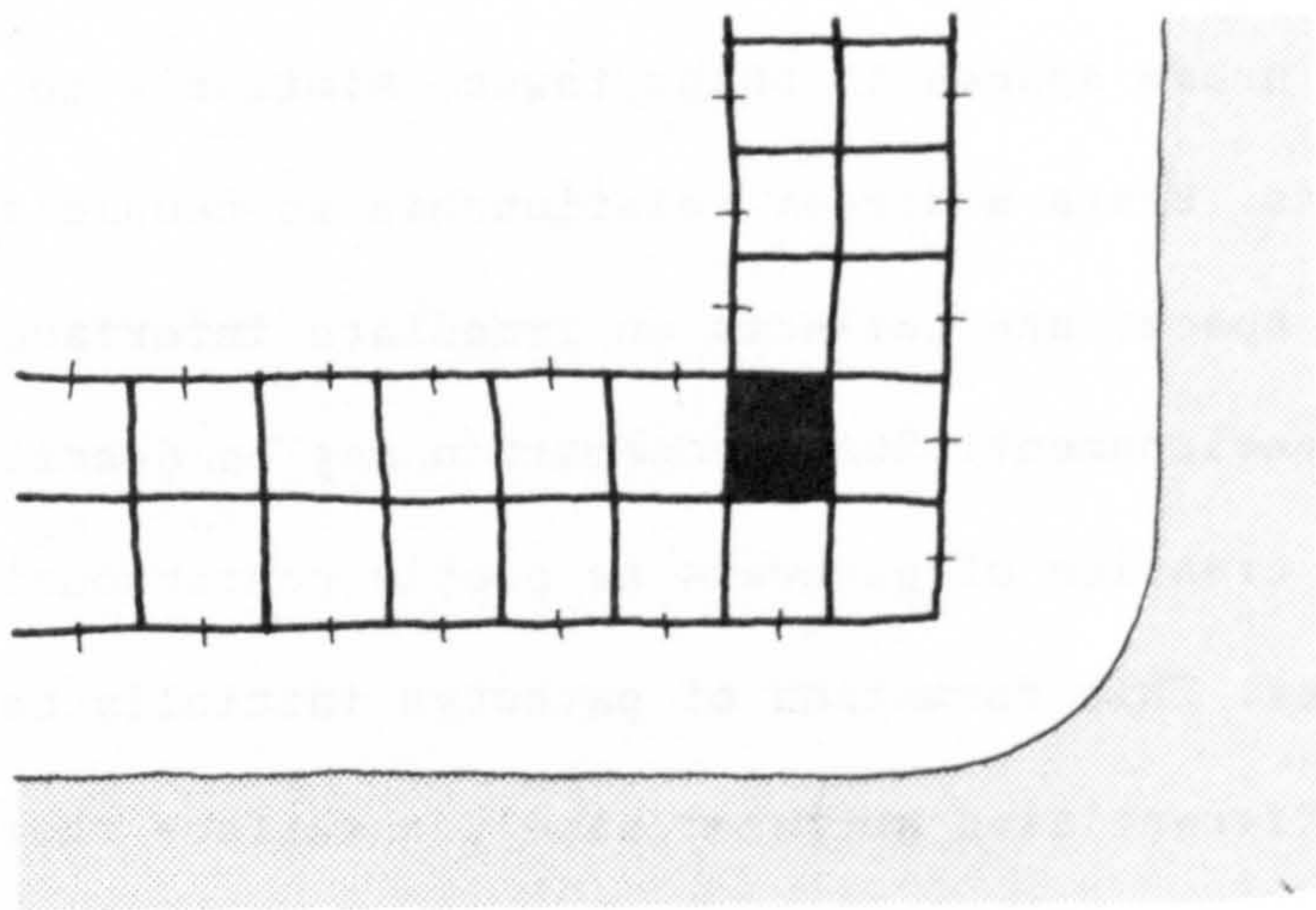


Fig.4.4 - Parachuttist plot. Source: author

exposed earth, whilst the latter remains covered by vegetation.

The next step is the erection of a dwelling along the pathway.. Why along the pathway? Simply for reasons of accessibility.

The so-called 'housing plot for parachutist' is one of these urban design 'solutions', or rather 'mistakes', that appear in the naive proposals of architectural students, who for a moment, overlooked the fact that one needs to have access to her/his house from the ground level. The parachutist plot, by being totally surrounded by other plots, is accessible only from above (hence the label) (fig.4.4). Such an extreme arrangement illustrates the importance of accessibility of plots.

A third arrangement, one may argue, would be to have the dwelling set back from the pathway. If such a distance is too long, however, there will be the need for the creation of another pathway to link to the previous network.

The importance of pathways in the formation of squatter settlements, their relation to accessibility and their reflection of people's patterns of movement is acknowledged elsewhere:

The network of roads, paths, walkways and public spaces in a squatter settlement develops gradually as the settlement grows and the need for public circulation and access increases. Open spaces between buildings gradually develop into a loose system of public lanes, preventing further construction.¹⁴

Rumelihisarustu in Istanbul is a squatter settlement situated on a hillside, with roads and walkways passing through the site either perpendicular to or parallel with the slopes. The pattern that has emerged is a natural result of people's movements.¹⁵

14.UNCHS, op.cit., p. 164.

15.Ibid.. p. 166.

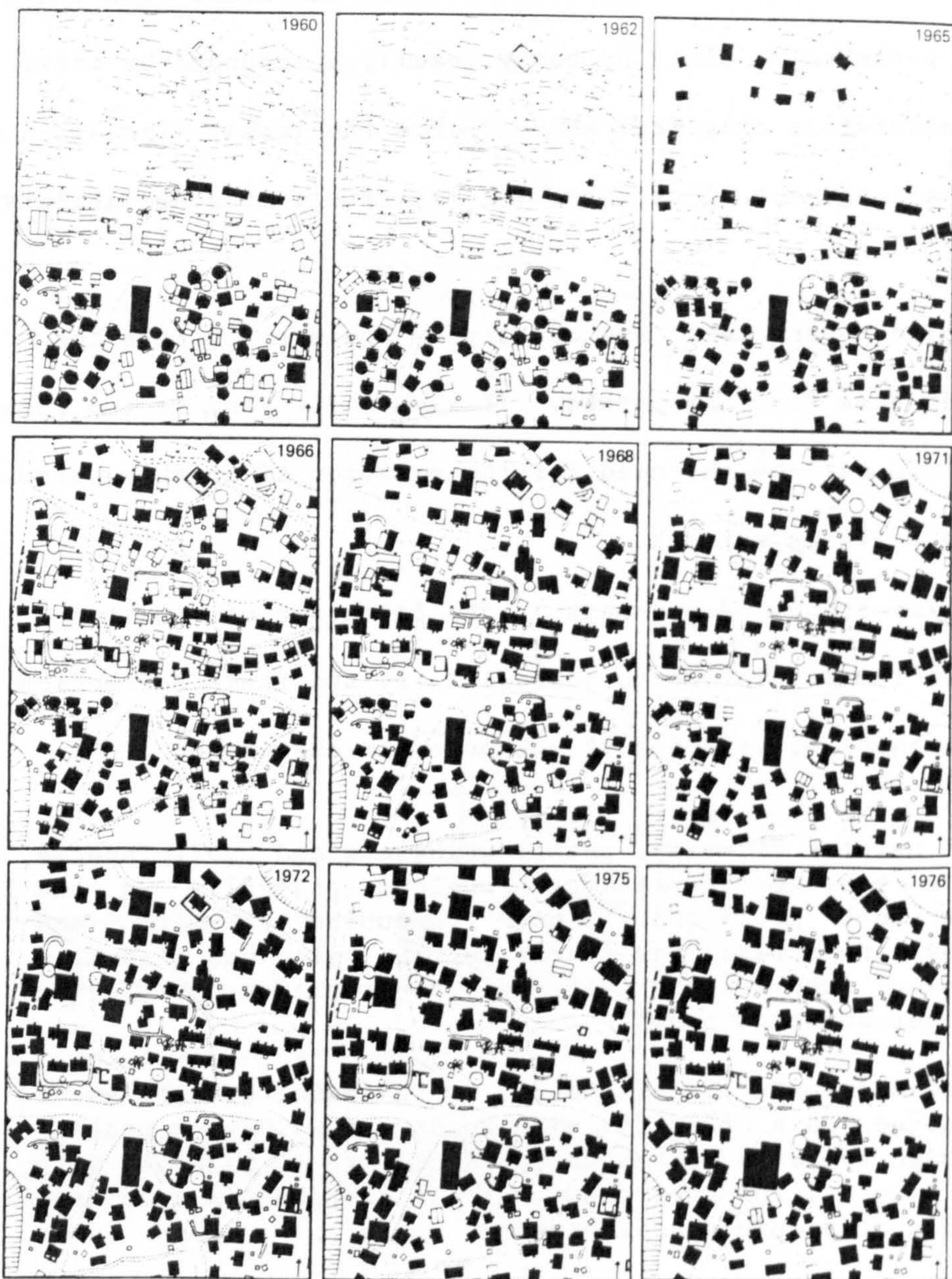


Fig.4.5 - George (Lusaka). Source: Schlyter, 1979.

Other studies, such as the Schlyter and Schlyter survey of the development of 'George', a squatter settlement in Zambia, although centering its description and analysis around particular cultural patterns, such as the clustering of houses into groups (with their entrances facing each other), and the absence of plot limits, clearly reveal the importance of pathways in the formation of the shantytown (fig.4.5).

I now study in more detail the formation of pathways and their relevance to the process of spatial production in squatter settlements, by referring to the case of Paranoa in Brasilia. But first, I describe the general development of shantytowns in Brazil, to help us understand the case of Paranoa, the attitude of authorities towards it, and so forth.

THE GROWTH OF SHANTYTOWNS IN BRAZIL

... streets could not be distinguished, in their place there were daedal, despairing, extremely narrow alleys, hardly dividing the chaotic mingling of huts casually made, with their fronts facing all directions, and ridges oriented to all sides, as if everything had been deliriously constructed, in one night, by a hoard of insanes. (Euclides da Cunha)¹⁶

The above account appears in the celebrated epic 'Sertões' (1902), which tells about the social upheaval conducted by the spiritual leader Antonio Conselheiro, at the end of the nineteenth century. This passage describes the settlement of 'Canudos' (in Bahia) (fig.4.6) which is responsible, according to certain authors, for the

16.Quoted by Bandão, op.cit., p. 42.



Fig.4.6 - Canudos. Source: Ciencia Hoje, 1989.

coining of the term favela.¹⁷

By the end of the nineteenth century, the process of urbanisation in Brazil, and with it, cityward migration, intensifies.

...By the end of the (nineteenth) century the crops of coffee in the Centre-south region expands, notably in the north-east of São Paulo (estate), dictating the decadence of the 'Paraiba Valley' (a rural area), in Rio de Janeiro. It is certainly possible to relate the fast decadence of coffee crops in the 'Paraiba Valley' with the process of squatting (favelamento) of Rio de Janeiro.¹⁸

By 1906 the first 'favelas' of Rio de Janeiro are already established, as well as shanty clusters (called mocambos) in Recife (North-east of Brazil), and incipient squatter settlements in Salvador.¹⁹ Already at that time, these settlements were notorious for their poverty, 'disorderly' pattern, and deterioration.²⁰

Through the twentieth century, the process of urbanisation in Brazil intensifies, characterising a massive event, with certain peaks, such as the 1950 - 60 period, which presents an average annual growth of 5.7%.²¹

17.Brandão tells us that 'the term 'favela'... that refers to the cluster of poor dwellings hanging off the hills of Rio de Janeiro, overlooking the banks of polluted rivers in São Paulo, equilibrating on the marshes of Salvador, or sticking out of Amazonian 'igarapés', has its origins in Canudos, in Conselheiro's village. In that place there abounded plants called 'faveleiras' (Cnidocolus Phyllanthus), and the area was already known as 'Favela''. The term was then brought to Rio de Janeiro.

Brandão, op.cit., p. 42.

18.Brandão, op.cit., translated by this author, p. 45.

19.Ibid..

20.Ibid..

21.Ibid..

Although the data is contradictory (depending on who carried out the survey), one may get a rough picture of the growth of shantytowns in urban centres like Rio de Janeiro in that period.

The official census tells us that there existed in 1948 105 favelas totalling 34,567 dwellings, where 138,837 people lived (17% of the population) in Rio de Janeiro (then the Federal District). The official census of 1950 talks about the existence of 59 favelas, with 44,000 shanties and 169,305 dwellers.²²

The figures provided by the SNFA (Yellow Fever National Aid), on the other hand, reveal the existence of 89,600 shanties with 340,000 dwellers (in 1949). The figures by the same Institution for 1954 show that the previous numbers had risen to 91,500 shanties with 500,000 squatters.²³

In 1970, the urban population of the country was 52 million, that is 55,9% of the total population. There were 351 cities and districts with a population over 20 thousand inhabitants, where 70,6% of the urban population was concentrated.²⁴ In the same year, the number of dwellings considered 'rustic', amounted to 4 million, representing 24,5% of the total. In 1976 this percentage fell to 22,6% and the absolute figure was 4,9 million.

I haven't got the figures for the eighties, but it may be said that with the maintenance of the pattern of increase of the urban population, and the fact that governmental efforts have played a minor role in providing housing for the poor, it is likely that the number of

22.Ibid.. p.78.

23.Ibid..

24.Ibid..

shantytowns has also increased.

If we quickly look at the governmental posture in relation to housing problems in Brazil and the development of shantytowns, we shall find that the pattern of suppression and eradication of squatter settlements, which was effected in the case of Canudos, a hundred years ago, has persisted throughout history. The few cases of shantytown upgrading we have heard of in Brazil, are rather isolated initiatives. The dominant attitude, until recently, was to view shantytowns as pernicious elements in urban centres, that must be eliminated. This is attested by a number of cases such as one of the largest satellite cities in Brasilia, whose particular story is already told by its name, 'Ceilandia' - which stands for Centre for the Eradication of Squatter Settlements (invasions) plus the suffix 'landia' (to give it a touch of urbanity).

But to propose to eliminate squatter settlements, the government needs to offer something instead. This is the function of the 'National Bank for Housing' (BNH). Created in 1964, this bank was part of a policy to provide low cost housing. The role played by the BNH in the provision of housing for the poor, however, has proved to be insignificant. As Brandão tells us:

Between 1970 and 1976 3.6 million new houses for families living on up to five minimum salaries were built. The BNH contributed with 144,673 houses (that is a mere 4% of the total).²⁵ (see table 1)

25. Ibid., p. 122.

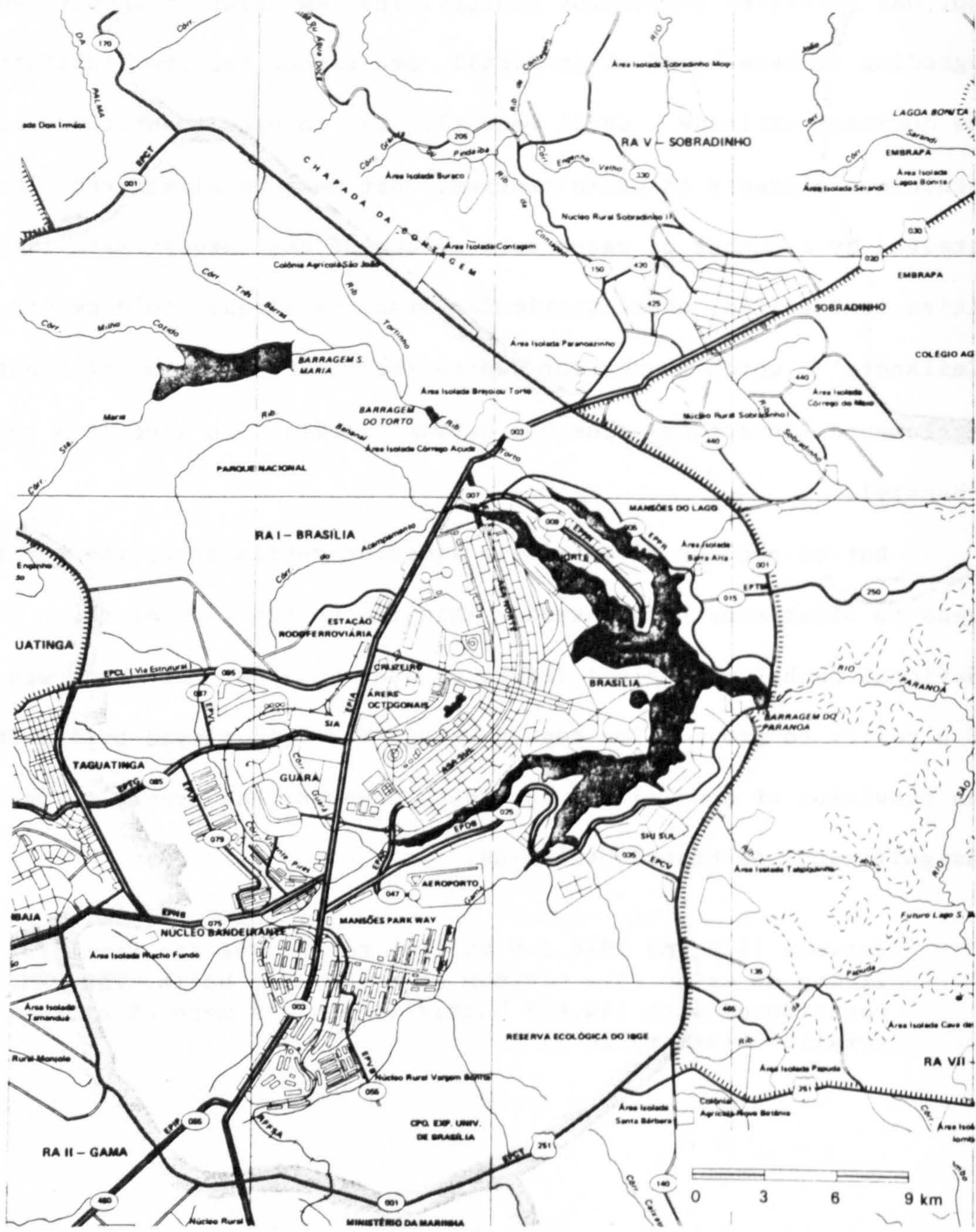


Fig.4.7 - Pilot Plan (Brasilia). Source: CODEPLAN.

TABLE 1
 FIBGE (in Brandão, op.cit.)/1979
 PARTICIPATION OF THE BNH IN THE HOUSING STOCK BUILT IN BRAZIL IN THE
 1970/1976 PERIOD²⁶

Income of House Owners	Dwellings Built	Dwellings Built with BNH resources
From 0 to 5 Minimum Salaries (MS) ²⁷	3.6 million	144,673
More than 5 MS	1.35 million	1,135,415
Total	4.95 million	1,280,088

Let us now look at the particular case of Vila Paranoa in Brasilia.

SQUATTING IN BRASILIA

'From the Aeroplane'

...seen from an aeroplane, it reveals the disorder and incoherence of its distribution to the least experienced eye; for the railroad traveller, excited by the city, it is a painful disillusion!

Le Corbusier (The Athens Charter)

The machine works with regular geometrical forms, perfectly designed. Its components slide smoothly on polished surfaces. Its movements are captured in a single gaze. The irregular shantytown simply did not fit in the machine, it was despised by the Modern Movement, and criticised in the Athens Charter ('une injonction a penser droit').

The modernist machine had a profound impact on the Brazilian

 26.From Brandão, op.cit., p. 122.

27.In an article entitled 'Brazil: How the Right Retained Power' (Z Magazine, March 1990), the minimum salary was estimated as \$60.00 per month.

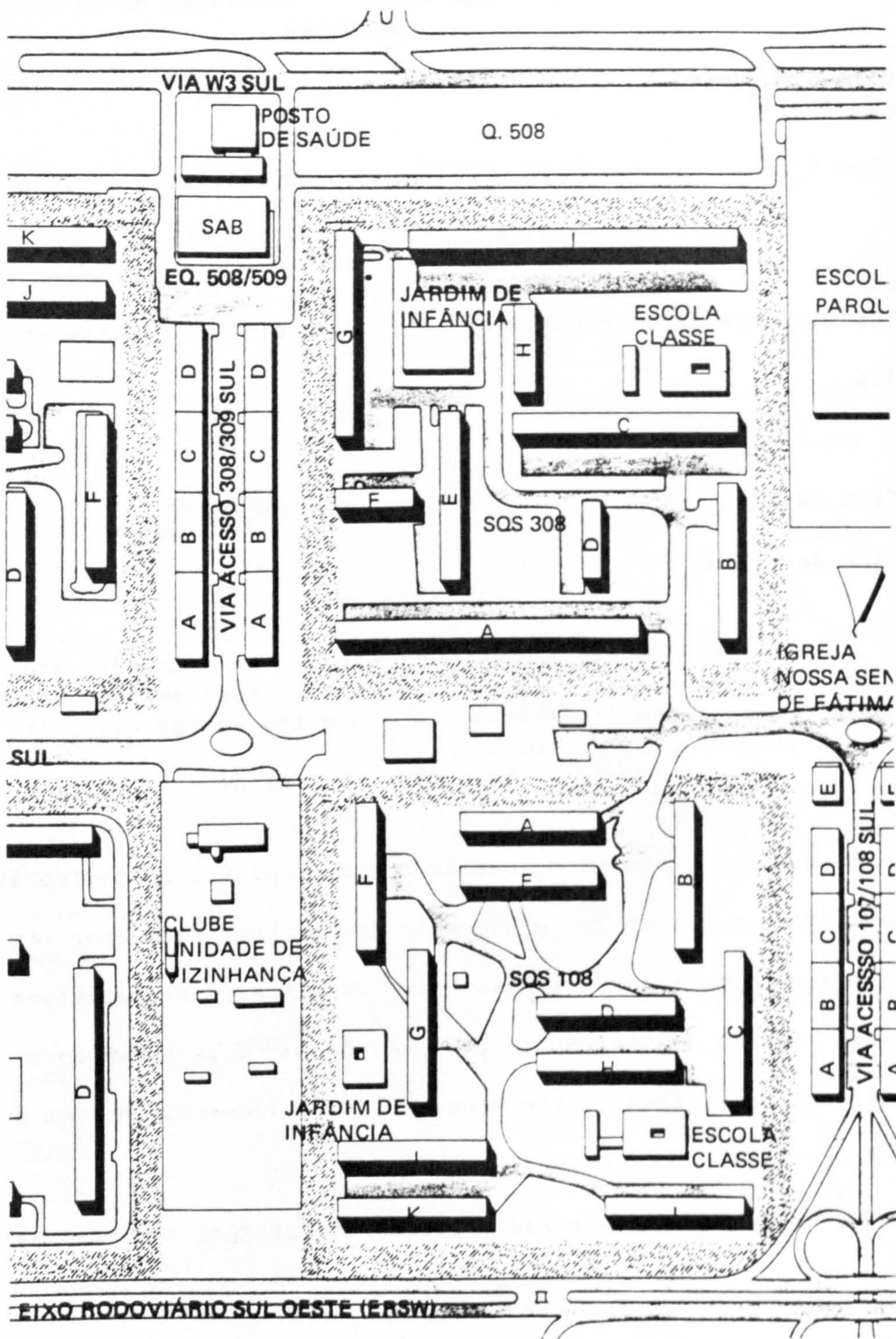


Fig.4.8 - Superquadras (Brasilia). Source: CODEPLAN.

architectural scene, culminating with the design and construction of Brasilia - a capital that embodies the city planning principles laid down in the Athens Charter.

Lucio Costa's plan for Brasilia was born of the 'simple gesture of two axes crossing': a monumental axis and a residential one. The monumental is straight, and the residential is curved, combined, they form a shape that reminds us of an aeroplane - 'the Pilot Plan' (fig.4.7). From that initial design decision, Costa went on to elaborate on how the urban units should be articulated, what impact they would have on users, what social patterns they were supposed to present. The text that explains the project has even a paragraph devoted to low cost housing, which reads as follows:

We must stop the spreading of favelas, both, in the outskirts of the city, and in rural areas... It is the duty of the Company for the Urbanisation of the New Capital to provide, within the proposed scheme, decent accommodation for the whole population.²⁸

But the 'Company for the Urbanisation of the New Capital' did not provide accommodation for the poor, and the ideal of having a multi-social class community, in the 'superquadras' (fig.4.8), where the shop keeper, for instance, would live nearby his shop, did not materialise, not even in the early years of the implementation of the plan. What we saw instead was a growing number of migrants fleeing to the Federal District, without any means of paying the exorbitant rents for accommodation in the Pilot Plan. The natural sequence of events was a centrifugal process, whereby the poor were (and still are) displaced to the periphery, as the increases in land value reached even the more

28. Quoted from Brandão, op.cit., p. 85.

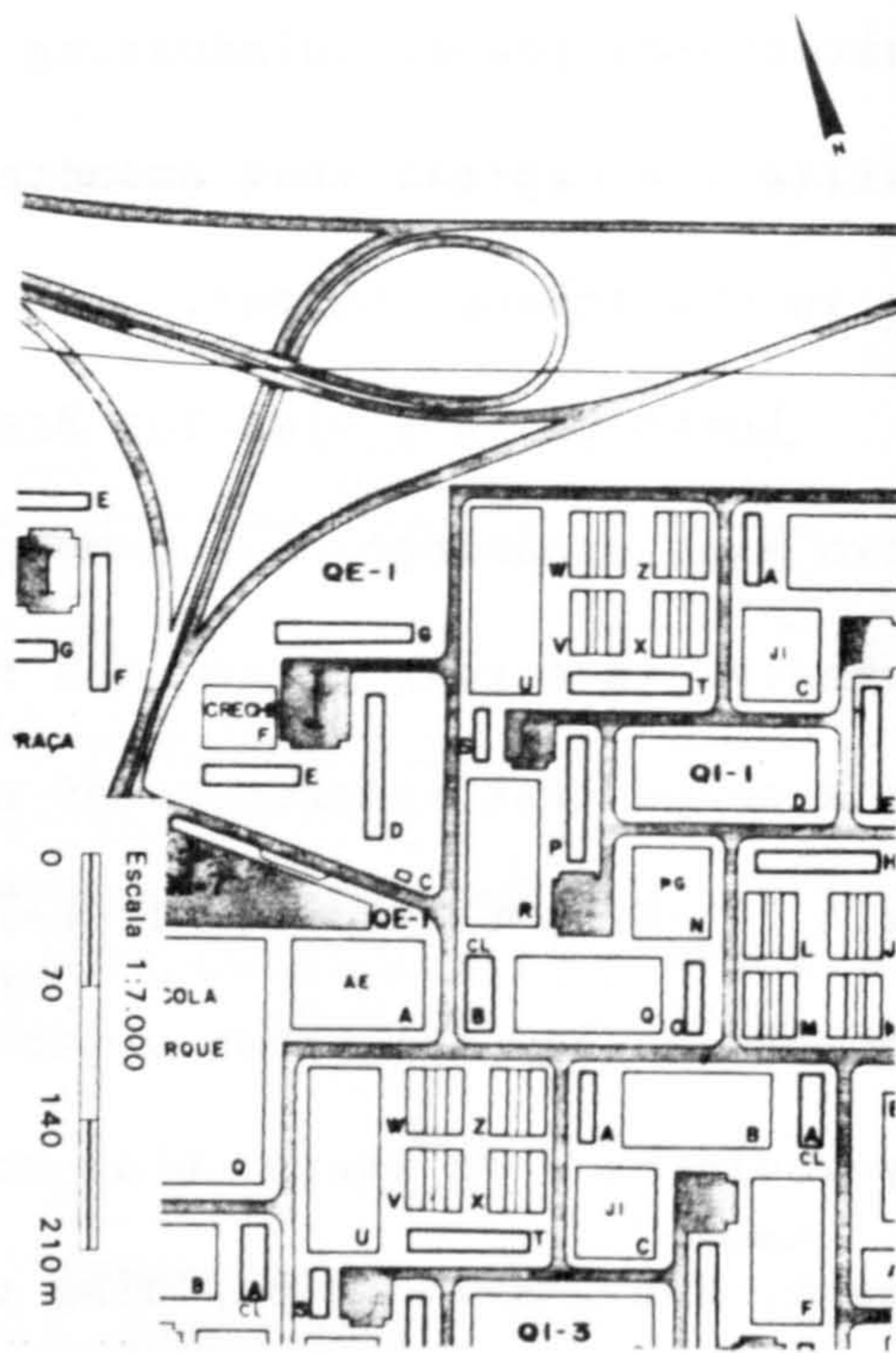


Fig.4.9 (a,b,c,d) - Satellite cities. Source: CODEPLAN.

remote satellite cities of Brasilia (fig.4.9). It became common place for people to live outside the Federal District, squeezing themselves in buses, often for over two hours to get to their work places. And the squatter settlements as one would expect, flourished, whenever they could, offering a precious alternative for those who could not afford the high rents, or could not pay the ever increasing fares of public transport.

By 1975, a study of shantytown settlements in the Federal District revealed the existence of 3,500 shanties, in the Pilot Plan area alone²⁹. Most of these shanties were clustered on the slope of a hill by the Paranoa Lake. Vila Paranoa, as the shantytown became known, with its 2,811 inhabitants was already notorious at that time.³⁰

VILA PARANOIA

An important element in the design proposed by Lucio Costa was an artificial lake, which would provide a leisure site for the future inhabitants, and hopefully ease the dryness of the climate. The creation of such a lake involved the construction of a dam, to contain the waters of Paranoa River. The construction started in 1957, and next to it a camp site for workers was immediately settled. Such a camp was delimited by a fence, with the intention to control illegal expansion. This, however, was no deterrent, and gradually workers, as they got married and lost the right to be in the camp (as well as new comers) started erecting their shanties around the original nucleus, taking advantage of the infrastructure already set up.

29.Ibid.. p. 135.

30.Ibid.. p. 136.



Fig.4.10 - Paranoa: planned/non-planned interface. Source: author.

Fig.4.11 - Paranoa: access road. Source: author.

The shantytown that developed next to the camp sits on the slope of a hill that divides the basin of Paranoa River and that of São Bartolomeu. It is limited by a highway that encircles the Pilot Plan and its surroundings, the so-called 'Contour Highway' (east), the Paranoa dam (south), the Paranoa Lake (south-west), the upper class estate of 'North Mansions' (west), and a reafforested area of eucalyptus (north).

The soil is composed of rock fragments in decomposition, therefore susceptible to erosion, which is already pronounced in certain areas of the settlement.

The vegetation is low and spread out (characteristic of the 'cerrado' wood of the central plateau), intensifying into the so-called 'ciliar' woods as it nears water ways.

The land is owned by three parties. The major share belongs to the Federal District (67,24%), and is controlled by the TERRACAP (a Governmental organisation of the Federal District which deals with planning matters, and land use).

Throughout its 3 decades of existence, the settlement has grown tremendously fast. Figures indicate 126 shanties in the early seventies. Between 1972 and 1974 the population of Paranoa increased by 61%³¹. Between 1974 and 1979 the annual growth was 11%. And the greatest increase happened between 1980 and 1982, when the population tripled, going from 5,100 to approximately 15,000 inhabitants, which represents an annual growth higher than 100%.³²

31. This figure is provided by SHIS (governmental body for housing in Brasilia) in a survey carried out in 1986.

32. Ibid..

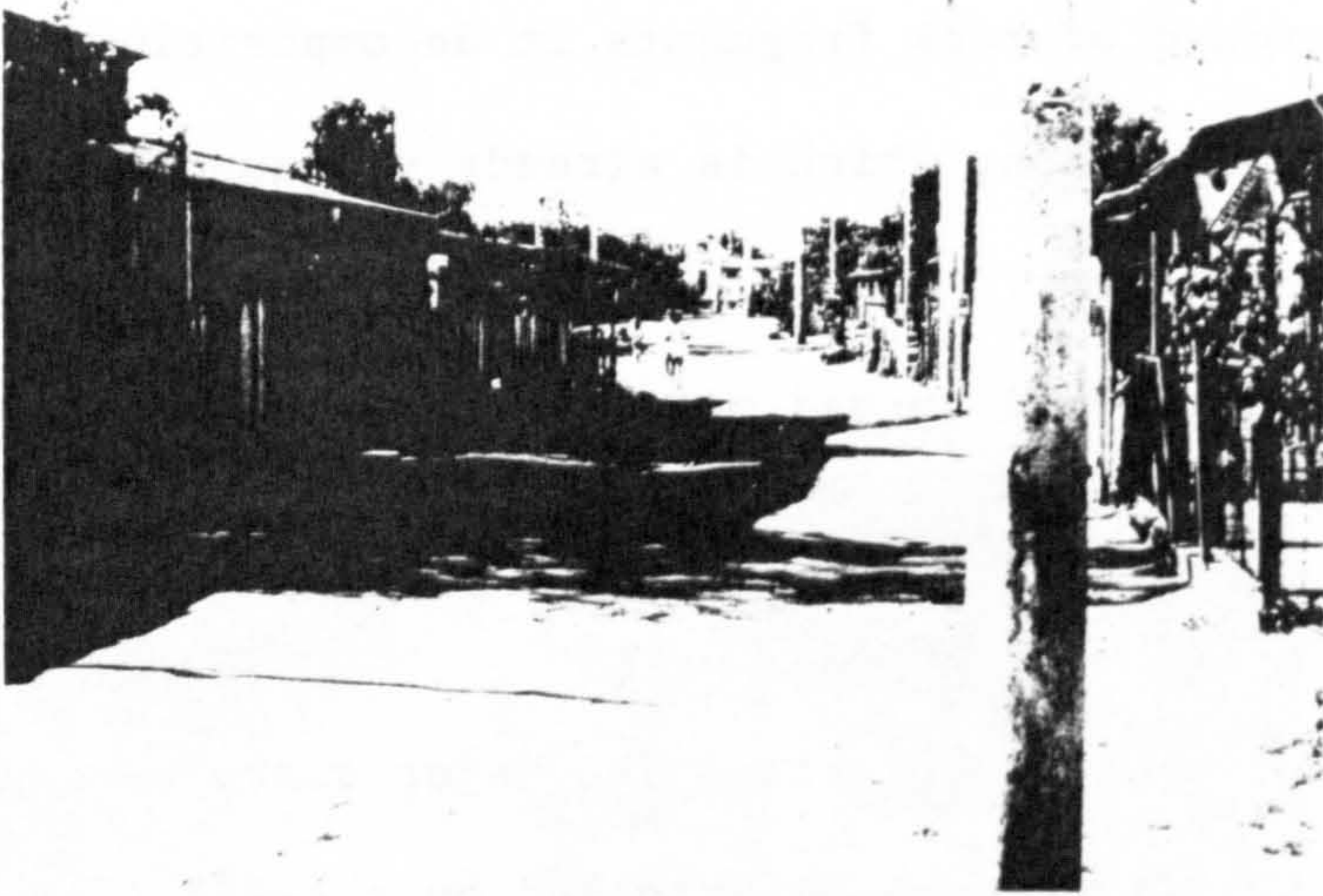


Fig.4.12 - Paranoa: central area (market). Source: author.

Fig.4.13 - Paranoa: area adjacent to centre. Source: author.

Fig.4.14 - Paranoa: greenery within plots. Source: author.

Inhabitants

Migrants came from various regions of Brazil to settle in the Federal District. The majority (60%) were from the north-eastern region (the poorest in Brazil), and approximately 20% were from the central-western region.³³

A detailed survey was carried out by SHIS in 1983. At that time, there were 3,686 families occupying 2,620 shanties approximately. Between the time such a survey was carried out and its publication in 1986, it was estimated that there had been an annual growth of 15% leading to a figure of 5,600 families.³⁴

The majority of the inhabitants of Paranoa 51% had lived in the Federal District for 10 years or more (i.e. they arrived before 1973); and 10.3% came in the very early stages of the construction of the new Capital, in the early sixties (Table 2, Appendix 3).³⁵

The time of residence in the shantytown, on the other hand, was much shorter; the majority moved to Paranoa between 1980 and 1982, when the growth rate of the settlement reached its peak (Table 3, Appendix 3).³⁶

The families are large, over 75% of them have four people (adults and children) or more. Over 57% have five people or more. And over 43% have 6 people or more (Table 4, Appendix 3).

Although half the families occupy a shanty by themselves, the rest have to share with one, two, three and even more other families

33.Brandão, op.cit..

34.SHIS, Vila Paranoa, 1986.

35.Ibid..

36.Ibid..



Fig.4.15 (a,b) - Paranoa: quasi peripheral area. Source: author

Fig.4.16 - Paranoa: peripheral area. Source: author.

(Table 5, Appendix 3).

Over 57% percent of squatters are below the age of 19; 45.3% below the age of 12. Only 10% of the population is above 40 (Table 6, Appendix 3).

The pattern of tenure indicates that 70.8% of the inhabitants own their shanties. 22% of dwellers occupy a shanty which has been lent by a third party (generally a kin) (Table 7, Appendix 3). As Brandão puts it: 'The family ties and neighbourhood relationships between dwellers of Paranoa are very important factors in meeting housing needs. It is very common to count upon the support of relatives in the construction of houses. Alternatively a shanty may be bought from a relative or friend,³⁷ or maybe lent. In fact, the tendency to lend a shanty is more pronounced than renting. Rented houses in Paranoa amount only to 7.1%.

As to considerations about formal education, 6% of inhabitants are illiterate, 47.7% have left school before completing the first degree (0 level), 35 % are still working towards it, and among those squatters there are 9 people attending university, and one graduate (Table 8, Appendix 3).

30% of the population of Paranoa work. At first sight this figure appears to be low, not so much, however, if we consider the age distribution of the population - as we saw earlier on, 45.3% of the population is below the age of 12 . The highest percentage of working persons are employed in private houses (25.2%) (generally as maids or gardeners), 24.5% in building construction and 14% in commercial activities. The majority of these have informal work arrangements with

37.Brandão, op.cit., p. 140.

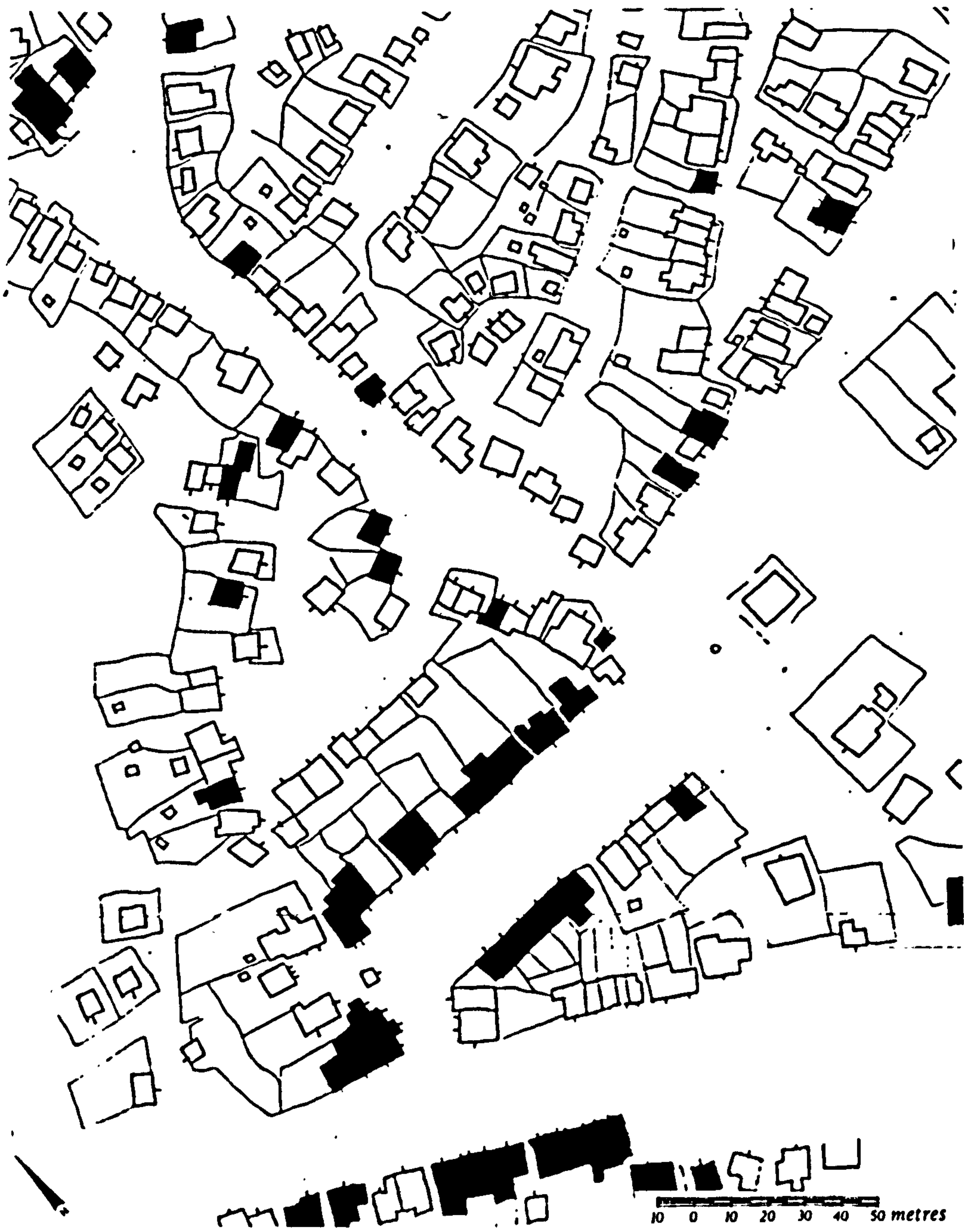


Fig.4.17 - Paranoa: comercial use in the central area. Source: Aciole.

their employers, which contributes to their professional instability (Table 9, Appendix 3).

The working places are mainly concentrated in the neighbouring residential areas; notably in the South Lake (28%), which is an upper class area (20 minutes on the bus from Paranoa) where people can easily afford servants. It is a very recent development, with many detached houses, mansions, and bungalows still in the process of being built. Other main places of work, further away from the shantytown, are the South Wing (of the aeroplane), lying 40 minutes away by bus (17.2%), and the North Wing (13.6%) (30 minutes bus journey). Also, a large portion of people have no particular place of work, inasmuch as they provide services such as plumbing, electrical repairs, etc.³⁸

The income of squatter families in Paranoa, as one would expect, is very low. 50.4% of them have said they get under 2 minimum incomes monthly. 7.2% have reported to have no income whatsoever, being dependent on the support of relatives, friends, or philanthropic organisations to survive.³⁹

To have an idea of what two minimum wages are worth, I shall refer to the research carried out by the DIEESE (Trade Unions' Department of Statistics and Socio-Economical Studies) (May/1990).⁴⁰ Such a research shows that a 'minimum expenditure' with food only, is worth 91.50%⁴¹ of the minimum salary (see Table 10, Appendix 3). The DIEESE's estimate for a salary to attend the basic needs (including

38. Ibid..

39. Ibid..

40. The DIEESE, as its name suggests, is a non-governmental body supported by Trade Unions.

41. DIEESE, Informativo (News Letter) 58, May/1990.



Fig.4.18 (a,b) - Paranoa & Ouro Preto (plans)

food, housing, clothing, and transport) of a family of four individuals is 29,940,00 Cruzeiros (that is 8.15 times the current minimum salary).⁴² For detailed information about the value of the present minimum salary in relation to past ones see Table 11, Appendix 3.

Finally, the survey carried out by SHIS (1983) shows that the majority of the population prefers to stay in the shantytown (Table 12, Appendix 3), and rather than being given a 'standard house' by the BNH, they would prefer to have an improvement in the infrastructure, notably water supply (they have already got electricity) (Table 13, Appendix 3).

To sum up, the population of Vila Paranoa are poor (the majority living on less than 2 minimum wages), and unable to afford high rents (as the above mentioned DIEESE research attests), and therefore inclined to establish themselves as near as possible to their work places (which, as we saw are often not too far from the neighbourhood, and accessible by bus). Such a state of affairs may wrongly give the impression that the inhabitants of Vila Paranoa prefer to stay in the shantytown because of its strategic location. Table 12 however, shows that the situation is quite different: 86% want to stay in the shantytown, and only 2.3% would be interested in staying in a nearby area. This confirms the statement presented earlier on, that shantytowns, like Vila Paranoa, provide an environment where patterns of appropriation may be developed.

The young nature of the population of Vila Paranoa together with the fact that it has recently arrived, further attests to the changeability and dynamism of this shantytown. As newcomers arrive,

42. Ibid..



Fig.4.19 - Paranoa: school and medical centre

further shanties are erected, and the urban spaces are caused to change; as the youth matures and gets married, and has children, further space is required, calling for further interventions.

As we saw from the pattern of occupation of shanties, many of which tend to shelter more than one family, a process of densification is already taking place, having a direct impact on the formation of urban spaces, as I shall identify in the urban analysis.

Urban Description

The first sight of Vila Paranoa is a rather subtle composition of white spots dispersed along the slope of a hill, which still presents many patches of green divided by brown scars caused by erosion.

As we get nearer, the masses of houses become more identifiable, nevertheless, they still behave in tune with the topography, following contours, and negotiating slopes.

We penetrate the settlement through the 'Estrada Parque de Contorno,' which is a high speed road that has gradually been surrounded by the dwellings of the shantytown. If I were ever to use epithets such as chaotic, or uneasy, to talk about Vila Paranoa, I would employ them to describe that particular location. It is the interface between the governmental realm - officially planned, and the illegal settlement - as a result of the continuous contribution of its inhabitants. That is a location of tension between two such tendencies, a tension which has been marked by the death of some inhabitants, run over by some imprudent motorist of the neighbourhood (until the introduction of ramps to slow down the traffic); a tension which is

pathway edges



Fences



Shanties



Fig.4.20 - Elements defining spaces

characterised by the uneasiness⁴³ of the arrangement of buildings, and the lack of integrity⁴⁴ of urban spaces (fig.4.10).

The dust is already felt at that stage, and the black bluish asphalt is already eaten away, in some portions, as the brown earth covers its edges.

The rough materials of the buildings too, already make an appearance, clashing against the homogeneous surface of the paved highway. The pressed wood, painted over at times in bright colours, but already decaying in some places, the fibre cement roofs, the flattened-out tin cans, the advertising displays (given the commercial nature of the location), and a few cars, further colour the atmosphere (fig.4.11).

To penetrate the settlement, one has a number of options. There is a main street which assumes an expanded layout to accommodate the market. Its connection with the highway of access (Estrada Parque), however, does not make such a main character clear.

Once we are in the market street, its importance becomes visible, not only because of its width, but also as its buildings are more consolidated, and as they present mainly a commercial use. The

43. The term uneasiness is used here to characterise space layouts that do not reflect a consistent pattern of movement of users. This may be revealed by the appearance of ruptures in the layout of surfaces, or protuberances that step into the public space making it uncomfortable to move from one end to the other.

44. The term integrity will recur many times in the analysis of spaces presented in this dissertation. It has a similar meaning here to that of uneasiness (with a stronger content). Such a meaning is related to the cohesion of an urban space, to its layout affording a clear-cut pattern of movement (which may be linear, convergent, etc.). An urban space has integrity when its various defining elements (buildings) work together towards the characterisation of a surface layout that affords a definite pattern of movement. An urban space lacks integrity when those elements do not work together, but clash with each other affording ambiguous patterns of movements.

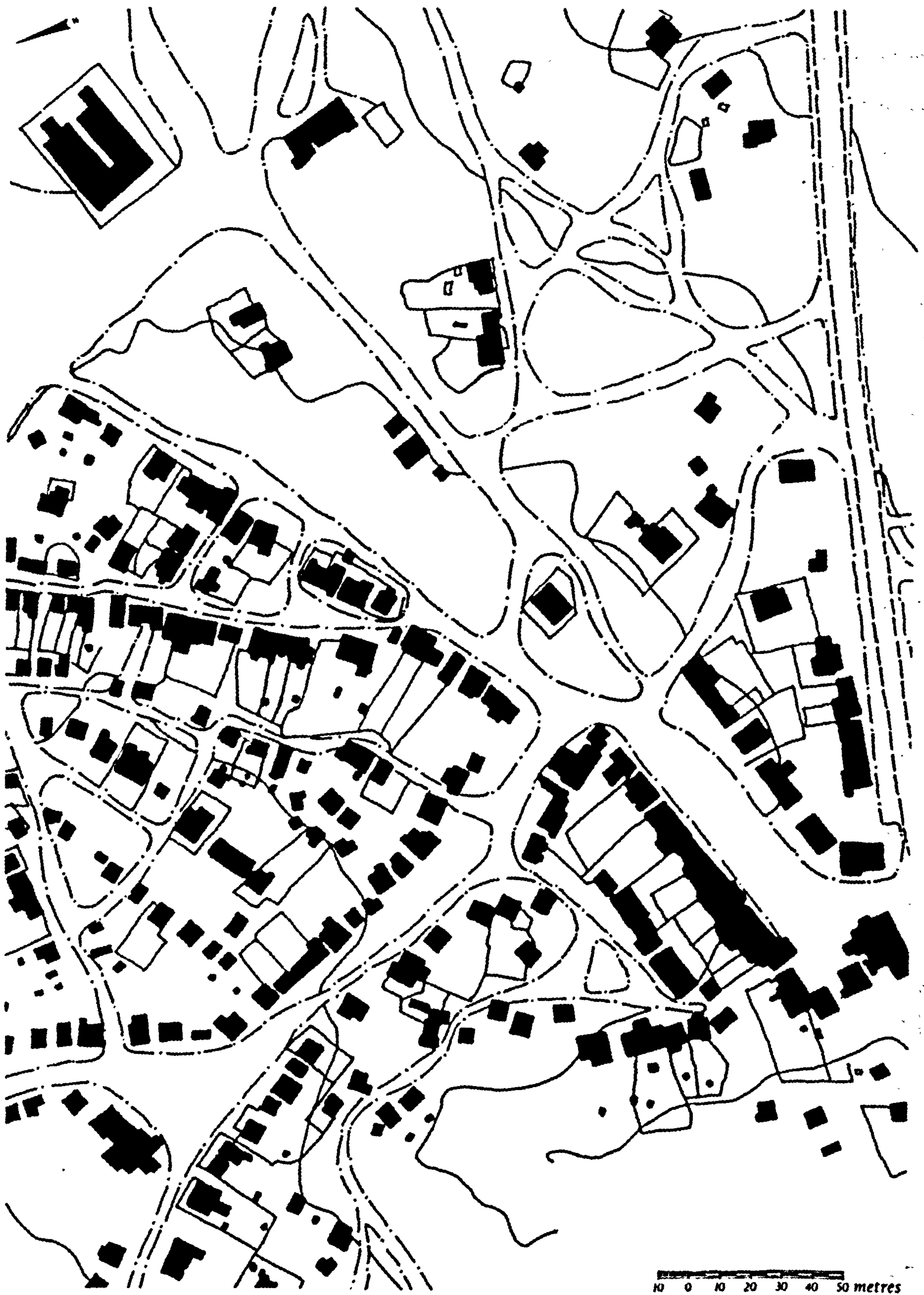


Fig.4.21 - Paranoa: fences (1976 map)

shanties have no fence standing between them and the street, being virtually the sole vertical elements configurating the space. The ground surface of earth goes right to the limits of the shanties (fig.4.12), green patches occurring only occasionally. As pointed out by Brandão (1982), this central area of greater density, sits on the flatter portion of the hill.⁴⁵

As we further penetrate the settlement, moving away from its commercial centre, the scenery gradually changes. Fences now appear as complementary elements in the definition of spaces (fig.4.13).

Greenery becomes more abundant, mainly within the limits of the plots, forming masses that contribute to the delimitation of spaces (fig.4.14).

These areas next to the centre are as dynamic as the centre itself, presenting a variety of space layouts, built masses, and materials; nevertheless they are less consolidated, and more rarefied, given the lower density of people (fig.4.15).

If we move further towards the periphery, we shall observe further rarefication of the fabric. The pathways now are clearly distinguishable in their incipient form, presenting the contrast between the beaten track and the green surrounding area occupied by weeds and bushes. Concomitantly, fences start appearing, helping to give further definition of circulation and non-circulation (in this case private) spaces. The buildings merely punctuate the landscape, giving little clue about the spatial arrangement of pathways (fig.4.16).

Within the limits of the fences, we now clearly notice the

45.Brandão, op.cit..



Fig.4.22 - Paranoa: enclosed frontal spaces (1976)

pattern of more than one shanty in the same plot.

The density of people, and uses of space, vary according to the density of buildings; from a busy pattern, with circulation of cars, retail activities, high flux of people, in the central area, to a more local pattern of use, with kids playing in the streets and housewives talking by their door steps. Some commercial (retail) uses, nevertheless, appear in more peripheral areas (fig.4.17). In fact, retail buildings are dispersed throughout the settlement, appearing in conjunction with residential use.

The urban structure (from main thoroughfares to narrow alleys), and the ways in which it is appropriated (from a pattern of great interchange and rapid circulation, to a neighbourhood relationship) reflect the hierarchical arrangement of the settlement.

Urban Analysis

This urban analysis looks at the process of formation of urban spaces, comparing the various layouts such spaces have assumed in time.

The emphasis of the present analysis will be on the formation of pathways, and their contribution to the structuring of such urban spaces. This will lead me to talk, among other things, about some of the locations presented earlier on (streets, squares, and connections).

Some preliminary considerations are nevertheless necessary, given the particular nature of the development of Paranoa. Such considerations mainly affect communal buildings (like the schools, and the medical centre) and public communal spaces for gathering (squares) towards which such communal buildings would open to.

Given the tight control effected by the authorities, which categorically forbade that so-called permanent buildings of brick or

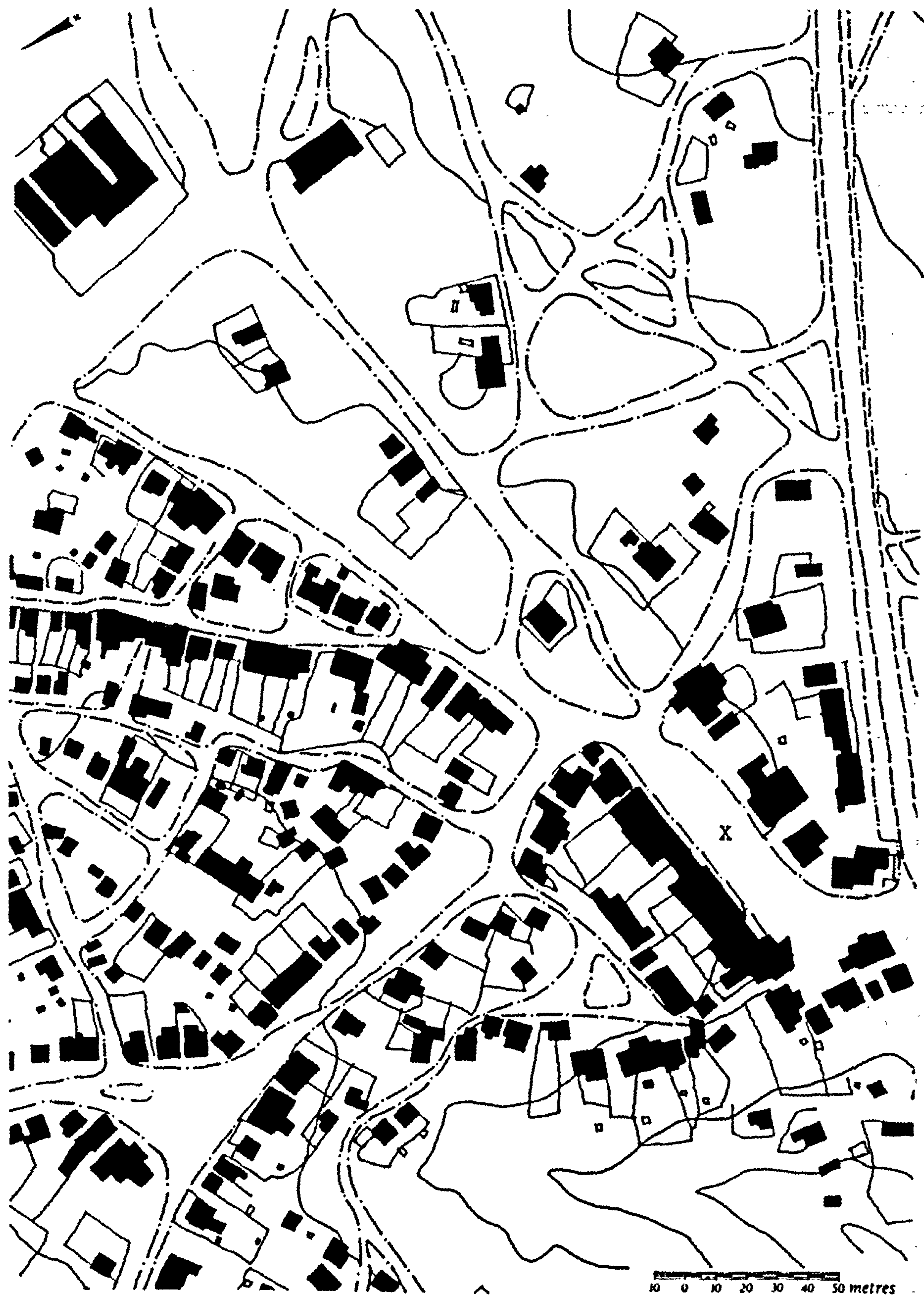


Fig.4.23 - Paranoa: 1978 map

concrete be erected by the population, even the more important buildings such as churches, or community centres, remained as shanties. That state of affairs imposed a limitation to make such buildings contrast with their surroundings, which would normally be realised by the use of monumental, robust structures, and/or the use of higher quality materials. To be sure, the configuration of such a building stating or not its dominance in the townscape, would directly affect the quality of spaces to be formed in its surroundings; i.e. expanding to accommodate such an explicit dominance, or behaving indifferently in the face of the unspoken monumentality.

If we put side by side the plan of Vila Paranoa (fig.4.18a), with its churches housed in shanties, and that of Ouro Preto (fig.4.18b), with its churches standing out of the fabric, the idea that 'the presence or absence of a monumental building tends to bear a direct relationship to the development and layout of urban spaces' becomes apparent. What we distinguish, by contemplating the plan of Paranoa, is simply a number of units of similar sizes keeping a characteristic relationship with the street, densifying at stages. But what about the many churches? one would ask. It is hard to tell where they are by looking at such a plan. And if we pay a visit to the shantytown we will realise that the task of finding these churches has not become much easier.

But if we look again at the above mentioned plan, we shall note the presence of a series of larger rectangles, lined up next to each other, limited by a fence (fig.4.19). Would these be the churches we are looking for? No is the answer. They are the school (a) and the medical centre (b); which actually are permanent structures (of concrete and brick). Of course they haven't been built by the



Fig.4.24 - Paranoa: 1982 map

population⁴⁶. And there actually seems to be an uneasiness about the way these buildings relate to their environment. The spaces around them are amorphous. This is a natural outcome of the fact that such buildings came as ready made packages (even if in stages), which landed on the shantytown, making little concession to the existing network of pathways (which was already there). Furthermore, this planned intervention did not come from a member (or members) of the community, i.e. from within the settlement; but from outside it.

The Formation of Urban Spaces

To analyse the formation of urban spaces in Paranoa, three maps were used, dating from 1976, 1978, and 1982. By comparing these three maps, the aim was to identify how the spaces of Paranoa began to be formed and how they evolved. Such an analysis could certainly benefit from further data.⁴⁷ The analysis focusses on a relatively short period of the life of the settlement - 1976-82. This concentration on a limited period of time, however, is well suited for the carrying out the analysis proposed here. The documentation consulted covers precisely the period through which the shantytown underwent its major growth, providing in that way, plenty of material to be analysed, as pathways appear in the initial stages of their formation, reaching quick consolidation as urban spaces.

In the formation of spaces of Paranoa, three elements responsible for the definition of such spaces, have been characterised.

46. It is possible that initially the school was housed in a shanty, before the government erected the permanent building.

47. I was unable to gather such data, either because it is not available or because it has been edited only recently, as I am in England writing this dissertation.

1976



1978



1982



Fig.4.25 - Street 'A'

namely:

A - Quality of ground surfaces: that is the formation of pathways defining a beaten track of exposed earth, delimited by its surrounding natural vegetation - pathway edges.

B - Fences: used to determine the limits of individual plots.

C - Shanties: as built volumes that combine to form spaces.

The basic pattern of formation of spaces involving these three elements (fig.4.20), consists of pathways being formed as people move from one spot of interest to another (e.g. from their houses to a source of water). Such pathways, as we saw earlier on, cause the ground to present a differentiated condition: losing its vegetation and exposing the earth underneath, where people walk, and keeping its natural vegetation where people do not walk, therefore defining the edges of the pathway.

The next step is the erection of a dwelling along the pathway. Such a process may involve the erection of a fence enclosing the plot, prior or not to the erection of the building. The fence, however, does not always appear; and many times, when it does appear, it does not enclose the area in front of the building, allowing for a direct relationship between the latter and the street (fig.4.13). This is particularly true in the case of commercial buildings, where a more immediate relationship with public spaces is required - i.e. these buildings directly open to urban spaces, with no fences separating them from such urban spaces; nevertheless, it is also the case of non-commercial buildings.

Let us now look at how certain spaces of Paranao have evolved, and how the three elements characterised here (ground surface (pathway edges), fences, and volumes) are interrelated.



Fig.4.26 - Fragmentation of area 'B'

Looking at the settlement as a whole, and comparing the 1976, 1978, and 1982 maps, we observe that there is in the first map a network of pathways already well established, and that a significant portion of such a network is further consolidated by volumes that have been built alongside it. Note in the 1976 map (fig.4.21) that the fences tend to develop towards the back yards, leaving the fronts in a direct relationship with public spaces - these building fronts being responsible for the configuration of such spaces. The pattern, to be sure, is not homogeneous - there are some houses that have enclosed the frontal space (fig.4.22). And even when buildings appear, the edges of pathways are still apparent. The 1978 map presents a few differences in relation to the 1976 one (fig.4.23), as the network of pathways expands, and some areas further densify, notably area X.

Coming to the 1982 map, we shall identify much fewer pathway edges, these have disappeared leaving volumes and fences as main elements responsible for the configuration of spaces (fig.4.24).

If we now follow the evolution of particular areas, such as the Street A, we shall identify the following process. The erection of houses along a pathway, which still maintains its edges. These houses arrange themselves in two rows in an asymmetrical arrangement in relation to the edges of the pathway. Some of these houses (in the 1976 map) present frontal fences that contribute to further definition of the urban space (fig.4.25a).

The 1978 map shows a densification of the area considered. Note that such a densification develops along the initial alignment formed by the initial houses. The edges of pathways are still present in that map (fig.4.25b).

The 1982 map shows a dramatic change. The area has further

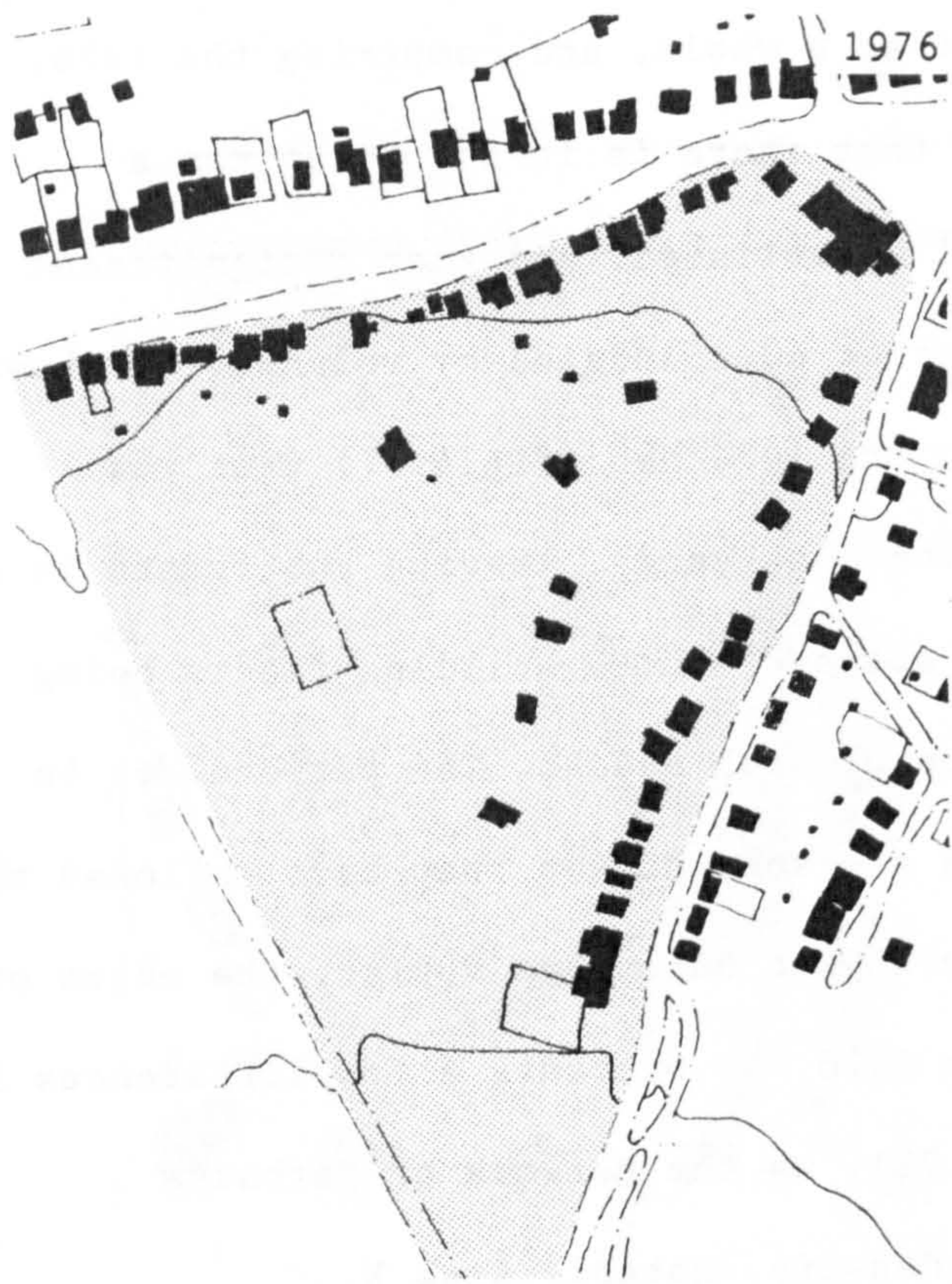


Fig.4.27 - Fragmentation of area 'C'

densified, almost leading to houses cramming together. Such a densification, again, follows the alignment of the initial rows of dwellings. The edges of pathways have been interrupted towards the left, creating a parallel pathway and leaving some islands of grass between the two rows of houses. More fences have appeared, in many cases, in front of the buildings. Also, fences that were previously there, moved back towards the dwellings (fig.4.25c).

Let us now look at the same location from a different angle: moving down towards the centre of the shantytown. We shall observe that houses arrange themselves in continuous rows, even if interrupted at stages to give way to a connecting street (fig.4.25c)), or by a volume that projected further into the street. Nearing the centre, the density tends to increase and houses gradually start to merge together, providing an even stronger configuration of spaces. Also, as we move towards the centre, frontal fences gradually begin to disappear, leaving buildings opening directly to streets. Side fences (fig.4.25a) appear in an intermediate section along our route, as complementary defining elements of urban spaces.

If we walk along the same route in the 1976 map, we observe that no frontal fences were present in that period in the central area, and its surroundings; and that where such fences appeared, they had a temporary role to play in the configuration of urban spaces, as they vanished subsequently, and the actual buildings then stood as dominant vertical elements defining the street.

We examine now cases where two pathways have developed creating a large area between them. This pattern of development is notably apparent in two areas illustrated in figures 4.26 and 4.27. What we see in both areas is that rows of houses developed along the initial



Fig.4.28 - Redefinition of spaces

pathways, creating a large vacant void towards which the backyards opened. Such vacant voids are gradually punctuated by new dwellings; not in a random pattern, but in accordance with the row of houses that were already there. In the case of the Area B we notice the gradual appearance of two rows of houses, respectively parallel to the two existing ones. These new rows further consolidate through densification, nevertheless, forming not only new rows of houses, but also interacting with new pathways created (to give access to the interior of the vacant area). Such a secondary network of pathways now leads to the formation of new spaces as the area densifies, generating expanded enclosed spaces (bb).

The Area C, of a more triangular shape, presents a complex pattern of development, where a new row of houses is sketched along one of the sides of the triangle (fig.4.27), but which seems to lose its power as another concurrent row develops along the other side of the triangle. Here too, a new secondary network of pathways appears which leads to the configuration of urban spaces - in this case, however, at a more incipient stage.

I may refer to the development of the two above described areas as a process of fragmentation.

Another area presenting an interesting development is illustrated in figure 4.28. The initial network of pathways, here, was gradually punctuated by buildings. Such buildings created an alignment which prolonged one of the pathways towards an end that such a pathway did not reach. As such an alignment consolidated, and the edges of the initial network of pathways disappeared, the area gained a new definition, with the two rows of houses enclosing an expanded space. This expanded space then gained primacy in the organisation of the new



Fig.4.29 - 'Y' connections I

network, leaving the connecting alleys in a secondary position.

The above described pattern of evolution of pathways may give us some insight into the morphology of streets, and squares. As to the third location that interests us, I shall observe that the pattern of connections, in Paranoa, often involves three pathways arranged in the shape of a Y. Such a pattern appears in many of the main connections in the network of the shantytown (figs.4.29 & 4.30). If we follow the evolution of some of those Y connections, we shall observe that they generally suggest a triangular layout of houses. And as the edges of the pathways disappear, the space expands to form a potential gathering space (maybe a future square). The size that such expanded spaces assume varies from large, in connections of main routes (fig.4.29), to small in secondary paths (fig.4.30).

Another characteristic pattern of connection is the T junction, which is often associated with the process of fragmentation mentioned earlier on. As an area adjacent to a pathway fragments, a secondary network of pathways appears, linking to the existing one. The angles formed in such connections are variable, nevertheless, they tend to the right angle, rarely assuming an acute layout (fig.4.29 & 4.30).

It is also important to observe that in the secondary network of pathways (because of its development being a posteriori to that of the existing one), the connecting pattern tends to shoot off from the existing route, therefore, stating its secondary nature. And the pathway that shoots off squeezes in the gap between two houses, becoming less visible (sometimes only inhabitants know about them), and less continuous than the main route (fig.4.31).

Another pattern of development of connections revealed a tendency towards a prolongation of the extremity of an alignment of

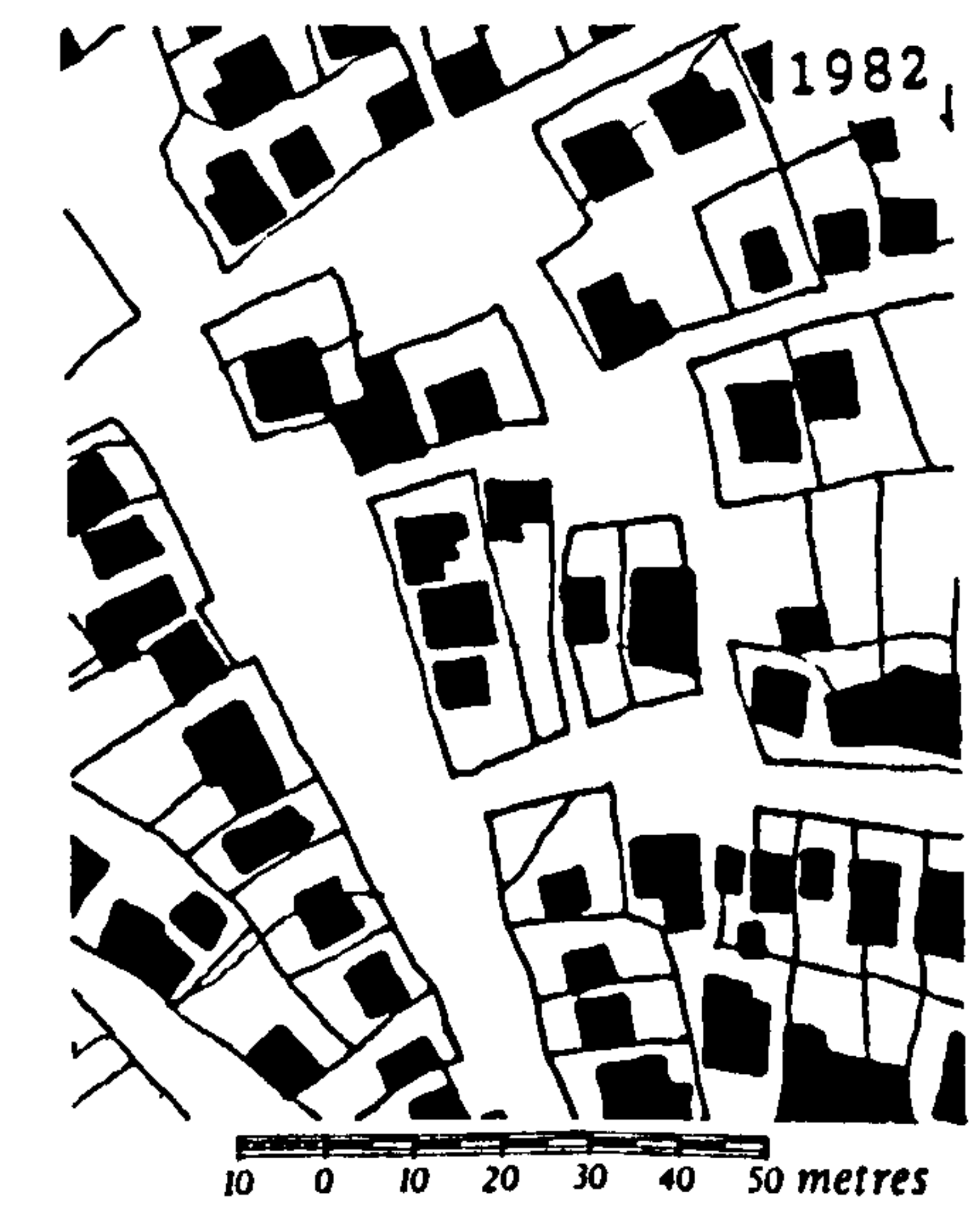
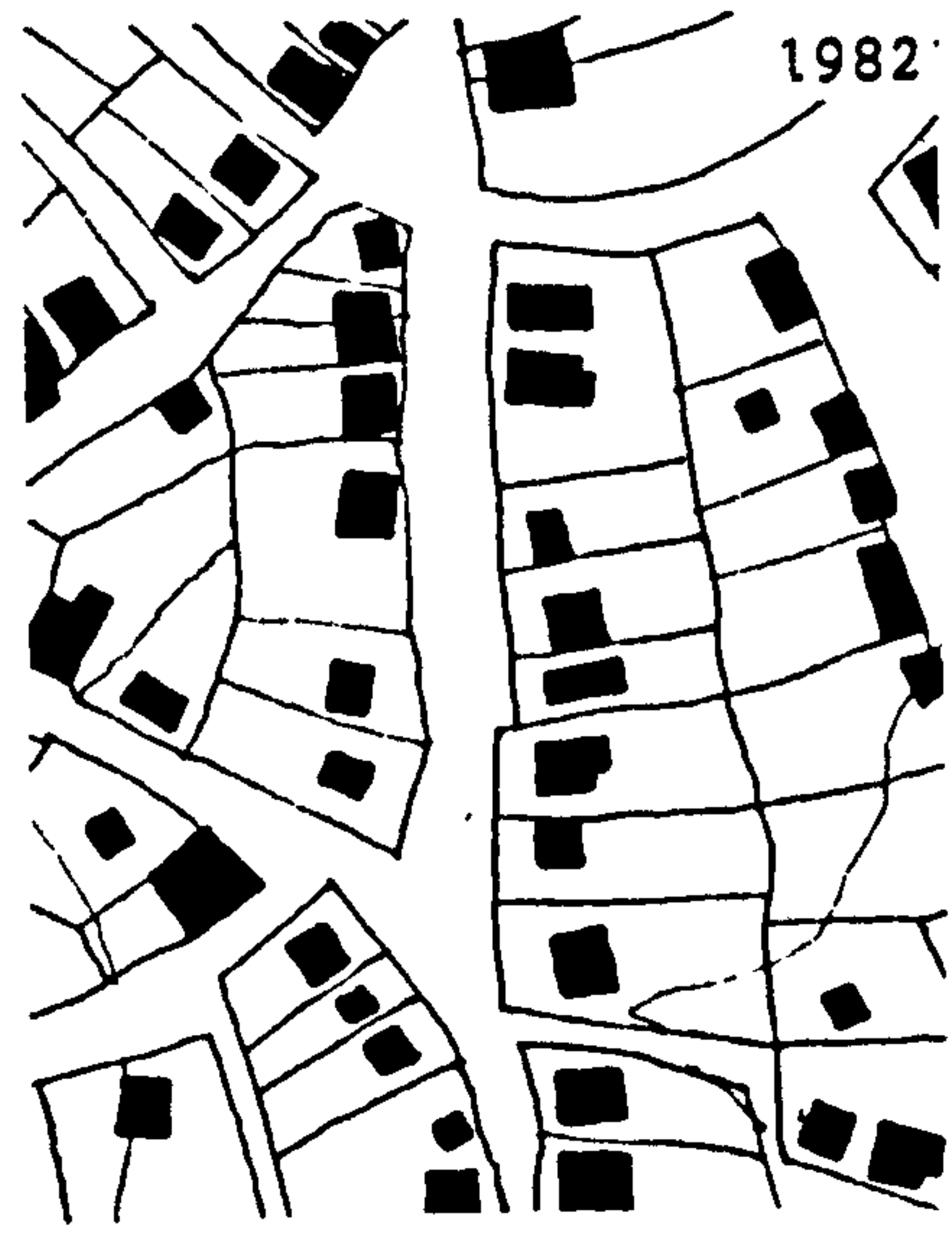
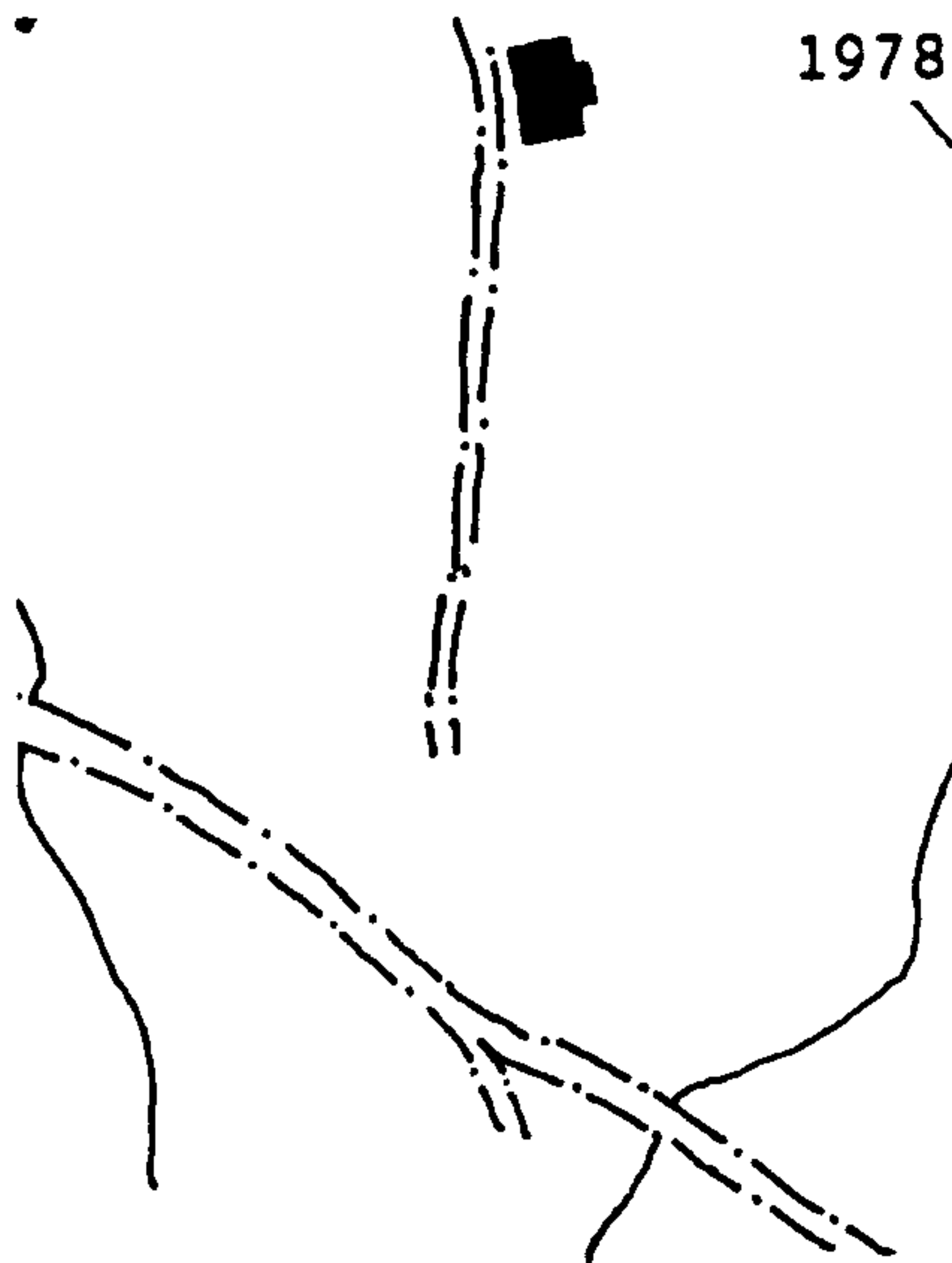


Fig.4.30 - 'Y' connections II

houses, with densification, leading to a narrowing of the passage between two buildings (fig.4.32).

Finally, in some instances, it was identified as an original network of pathways, of a complex nature, given the fact that people crisscrossed the area from a variety of directions, giving rise to alternative routes. Such areas tended to develop mainly near the centre of the shantytown. This state of affairs is illustrated by the Area E, where the many directions of pathways seem to have given rise to too many alignments of buildings, which appear in a sketchy fashion, and which compete with each other. As the edges of pathways disappear, we end up with a space which lacks integrity, where shanties stand isolated with a weak relationship to the surrounding buildings (fig.4.33).

SUMMARY AND CONCLUSION

As a summary and conclusion of the urban analysis presented here, I may say that three main elements responsible for the definition of spaces were identified, namely ground surface patterns (edges of pathways), fences (plot boundaries), and volumes.

Such elements seem to work together in the creation of a spatial continuity which links the network of the fabric as a single unit.

Initially, the definition of space is provided by pathways, that characterise continuous edges, contrasting the space for circulation of people, from that of non-circulation, which keeps its natural vegetation. Pathway edges as defining elements, however, are only temporary entities. Soon they are taken over by the more imposing presence of buildings; with or without fences. It is important to note that pathways condition the way such buildings are arranged, namely by

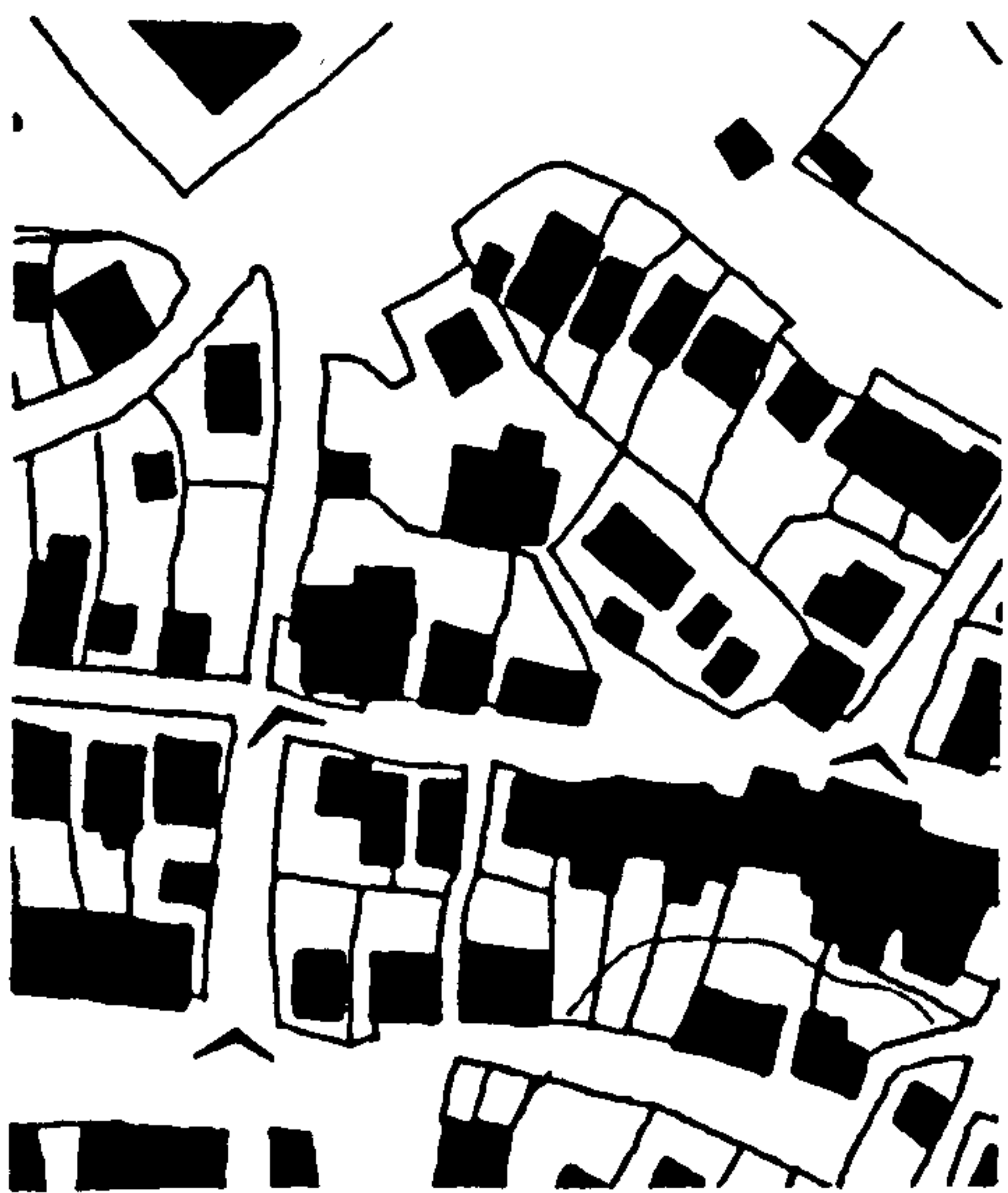
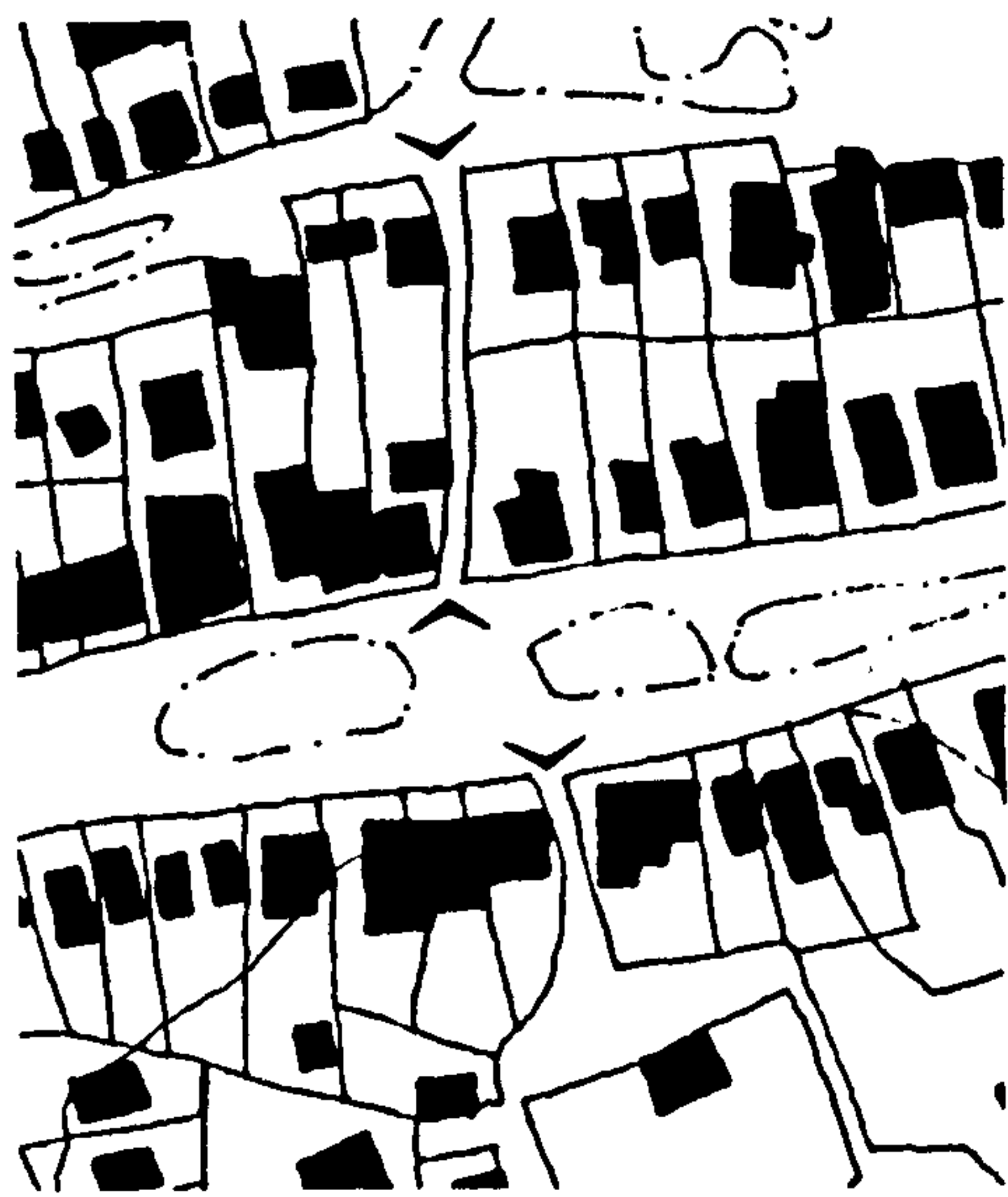


Fig.4.31 - Secondary streets 1982

suggesting an alignment (parallel to the circulation of people) along which such buildings are to be organised. And as we saw, if such a message is ambiguous, that is, by too many pathways appearing concomitantly, the result will be a weak definition of alignments, and a lack of integrity of urban spaces. This seems to make it clear that what is important in the definition of the spaces of the shantytown settlement analysed here, are not buildings in isolation, but buildings in relation to each other (on which they are anchored, and vice-versa) and of such a group of buildings in relation to the surrounding spaces. In the arrangement of streets, we saw that the above mentioned relationship is an alignment of dwellings, suggested by the pathway. This alignment once established, tends to remain where it is, not being displaced as a whole, but gradually densifying, or maybe presenting minor variations, such as gaps in the alignment for the appearance of secondary networks, or the accretion of extremities, provoking a narrowing of the thoroughfare.

The Y connections seem to suggest a typical pattern, according to which people split routes to go in different directions. The relation between such connections and the formation of squares seems to be confirmed by the layouts that we find in medieval settlements, and other vernacular cities, such as York (fig.4.34). This would suggest that in the connections between main routes, where the flow of people is more intense, people tend to place their dwellings further apart. And as the edges of the pathway disappear, the space expands to a large area, which encourages the placement of monumental buildings (of communal importance), such as temples, theatres, etc. In the case of Paranoa, however, the most I can do is to speculate, inasmuch as monuments as such are absent.

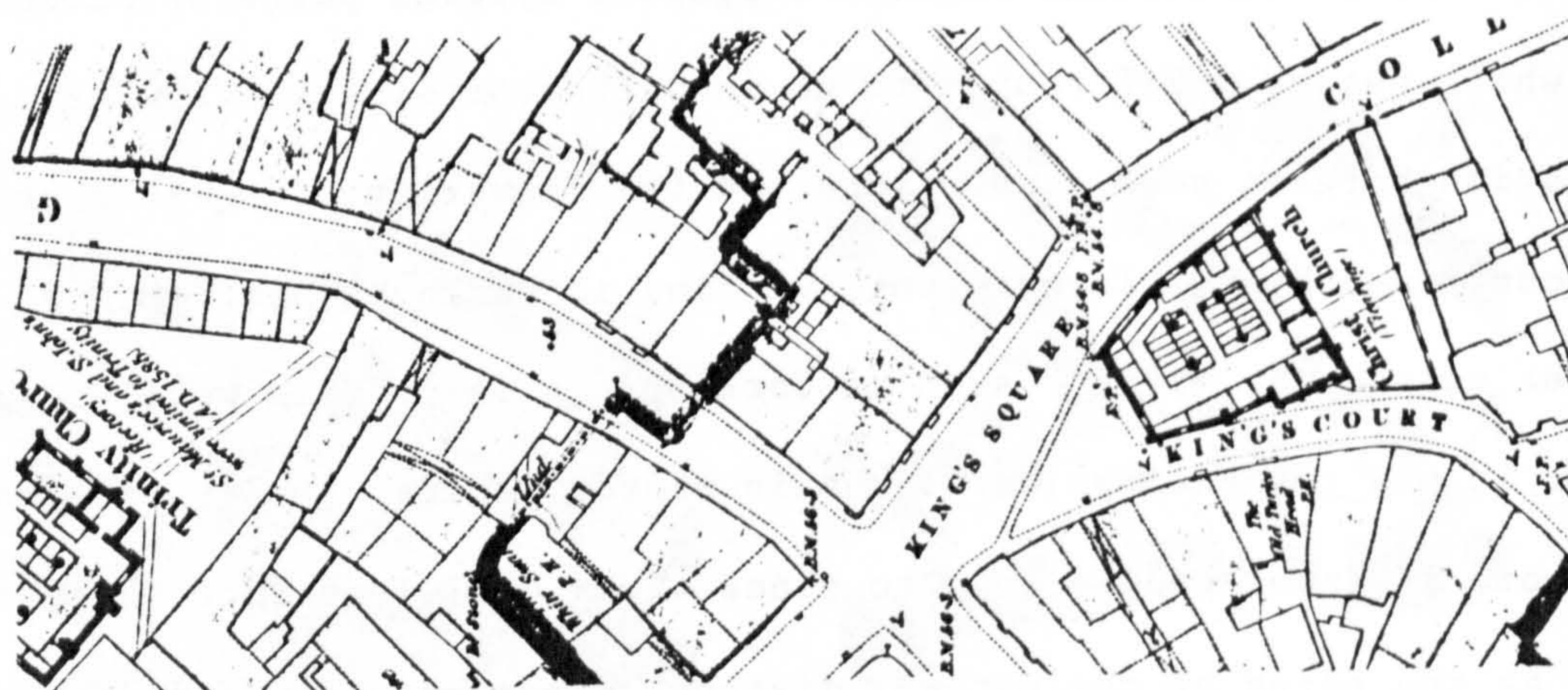
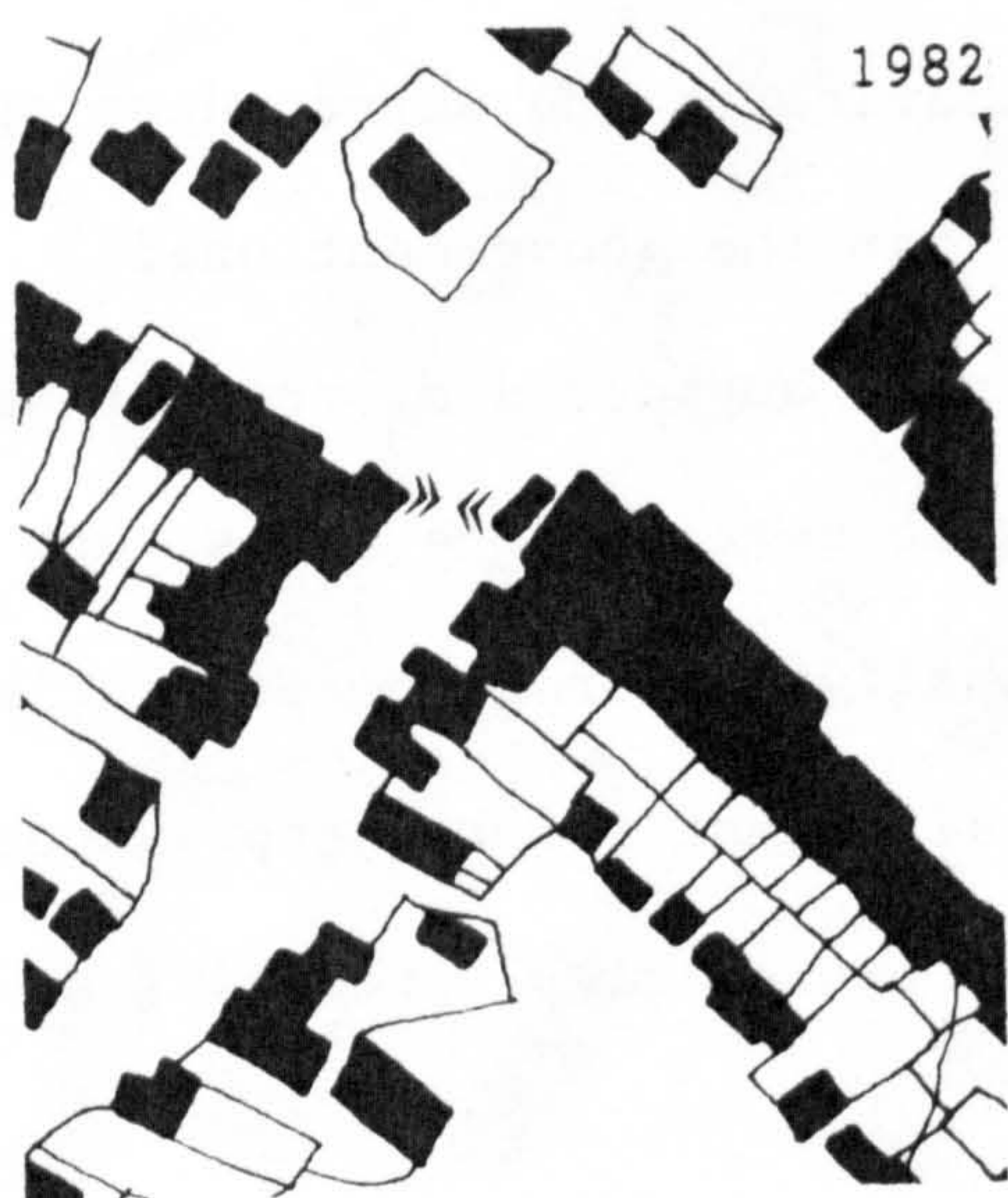


Fig.4.32 - Narrowing of pathway

Fig.4.33 - Lack of integrity

Fig.4.34 - King's Square (plan)

As to the appearance of frontal plot defining fences, it may be said that they are important incipient vertical elements in the configuration of spaces - important inasmuch as they secure the 'ownership' of the land, and give continuity to the process of definition of urban spaces, and incipient inasmuch as they are temporary, tending to be replaced by dwellings as the settlement densifies. Buildings fill the empty spaces, consolidating an alignment of houses, and thoroughfares tend to expand due to the increase of flow of people, eating away fences that privatised the frontal space.

These insights into the formation of urban spaces, and its relation to the movement of people shall be used in the analysis of the two case studies that follow. The main aspects to be explored in such an analysis are the linear movement of people and the layout of streets, the layout of gathering places (how they come to be formed, their relation to the surrounding fabric and monumental buildings), and the formation of connections (such as Y and T connections). Also the analysis developed above shall help us to look critically at some planned interventions, notably in the case of York.

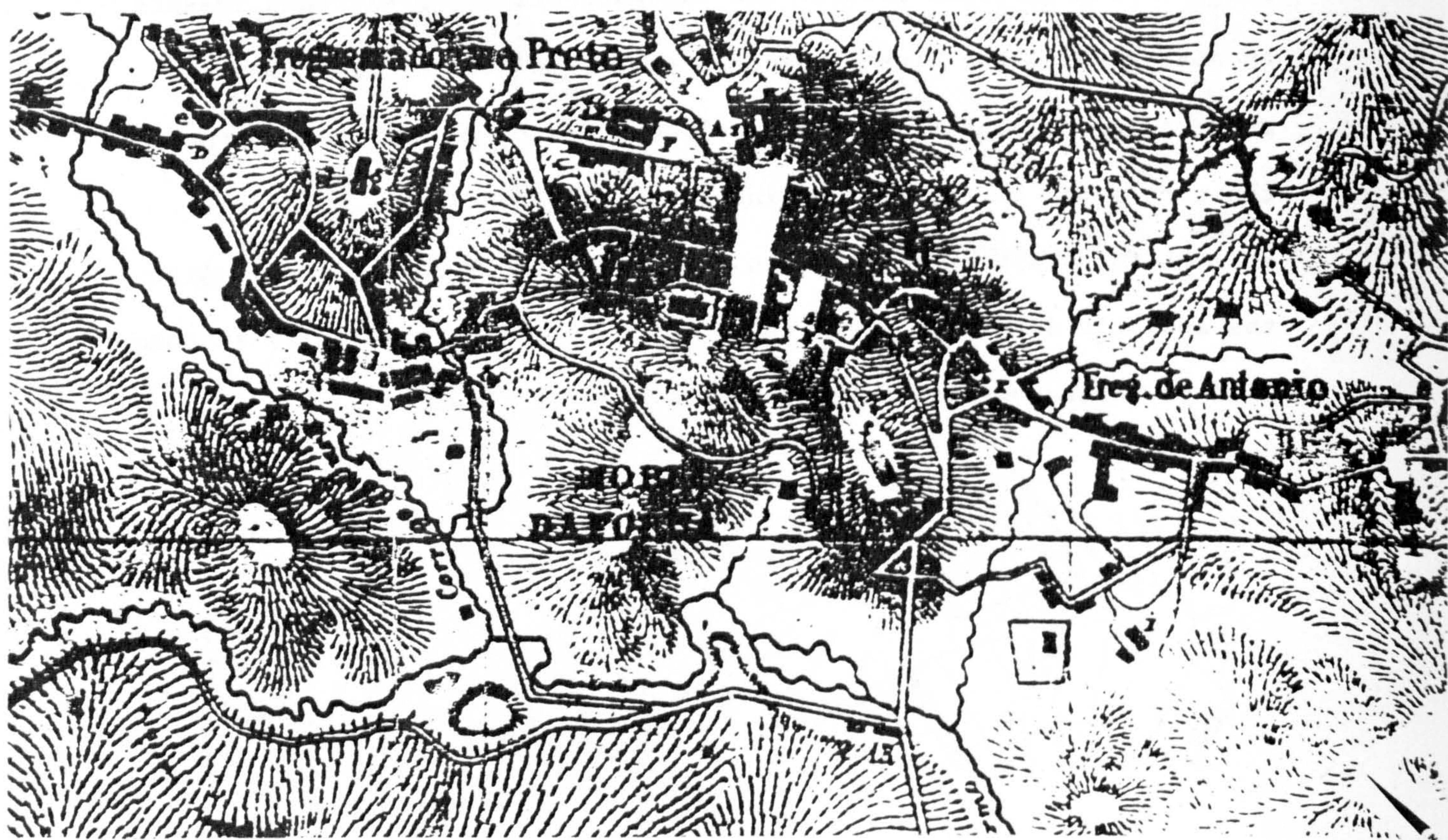
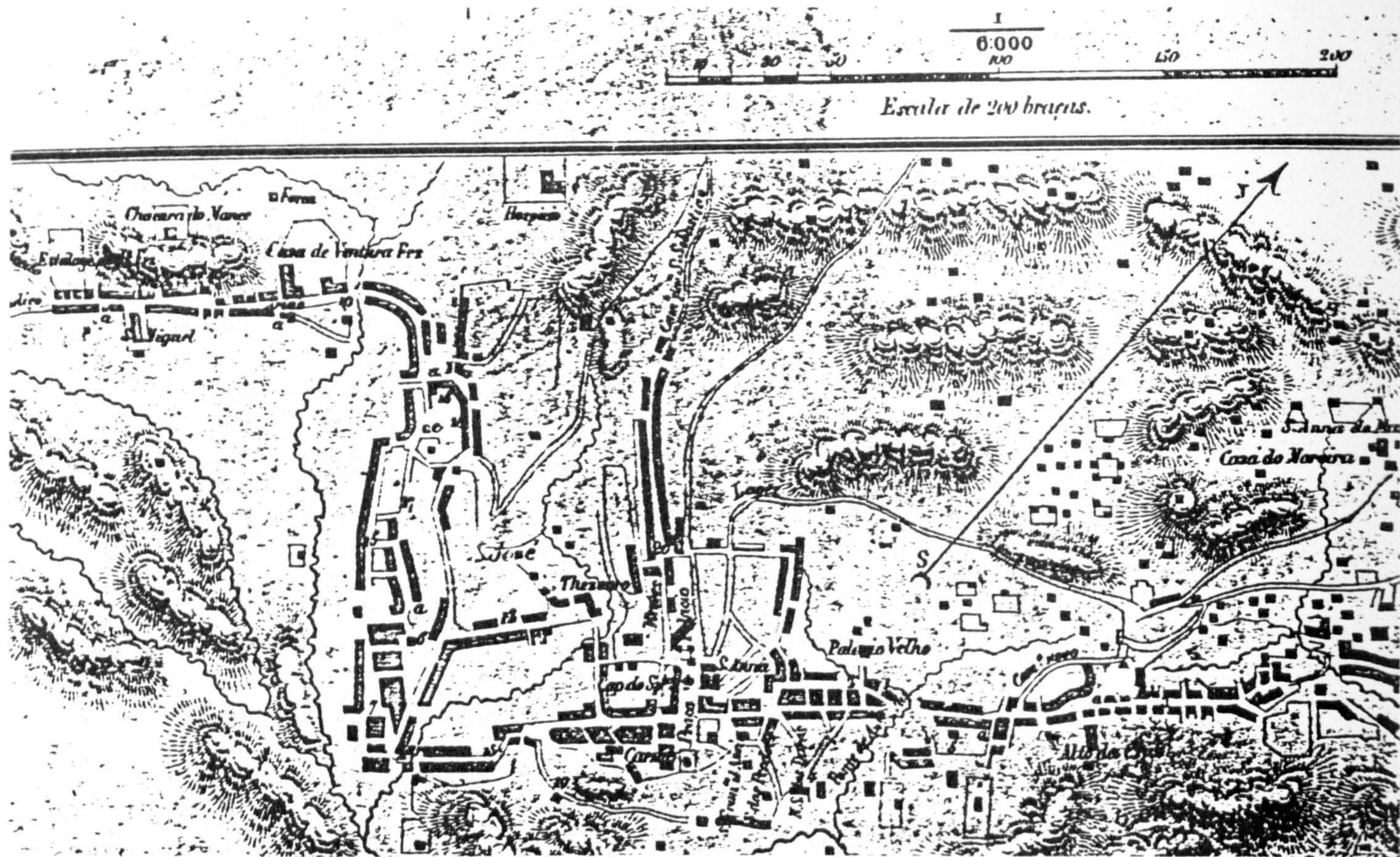


Fig.5.1 - 1783/5 map of Ouro Preto

Fig.5.2 - 1850 map of Ouro preto

OURO PRETO

This chapter consists, like the previous one, of an application of ecological and phenomenological frameworks to the description and analysis of urban spaces. The way such frameworks are applied this time, however, differs from what we have seen in the last chapter, insofar as Ouro Preto, as it is presented to us, sharply contrasts with Vila Paranoa. Such a contrast is related to the fact that in the case of Vila Paranoa we were able to follow the evolution of the settlement, by actually identifying the role of pathways in the formation of urban spaces. In the case of Ouro Preto this is not at all possible given that the development of the central (historic) core of the colonial city (the area to be analysed here) took place in the eighteenth century, and that there is scarce information about how such a growth took place - never mind information about the original network of pathways. (On the other hand, here the spaces have gone through a longer period of consolidation, allowing us to talk about permanences in the urban fabric). Given such a state of affairs, the study that follows relies essentially on the analysis of a number of maps of Ouro Preto (1783/5, 1850, 1888, 1949, and 1973) (figs.5.1-5.5). Historical accounts (secondary source) about the development of Ouro Preto were also used, inasmuch as such maps are many times inaccurate, and as they depict the settlement at a late stage of its development. Also, an



Fig.5.3 - 1888 map of Ouro Preto

overview of the wider context (relying on secondary sources) in which Ouro Preto developed is presented here. Such an overview goes as far as talking about the Portuguese tradition of city building.

When talking about the above mentioned context, we shall be looking at the following headings:

The Portuguese heritage

The 'Land of the True Cross'

The gold rush in 'Minas Gerais' and the birth of Ouro Preto

Topography and other physical constraints

Cultural patterns

Once these contextual considerations have been presented, I shall pass on to describe the urban form proper, referring to:

Urban evolution

Building materials and techniques

Urban description

Urban analysis

Finally, I shall draw a brief comparison between Ouro Preto and other Colonial settlements of the same region.

THE CONTEXT

The Portuguese Heritage

In this section we shall briefly look at some aspects of the Portuguese culture, notably in relation to the production of urban settlements.

The expression 'north and south divided' couldn't be more suitable to characterise the Portuguese context from the time of its formation up to the present days. Such a division is the focal point of the present section. As we will see shortly, it has a direct impact on

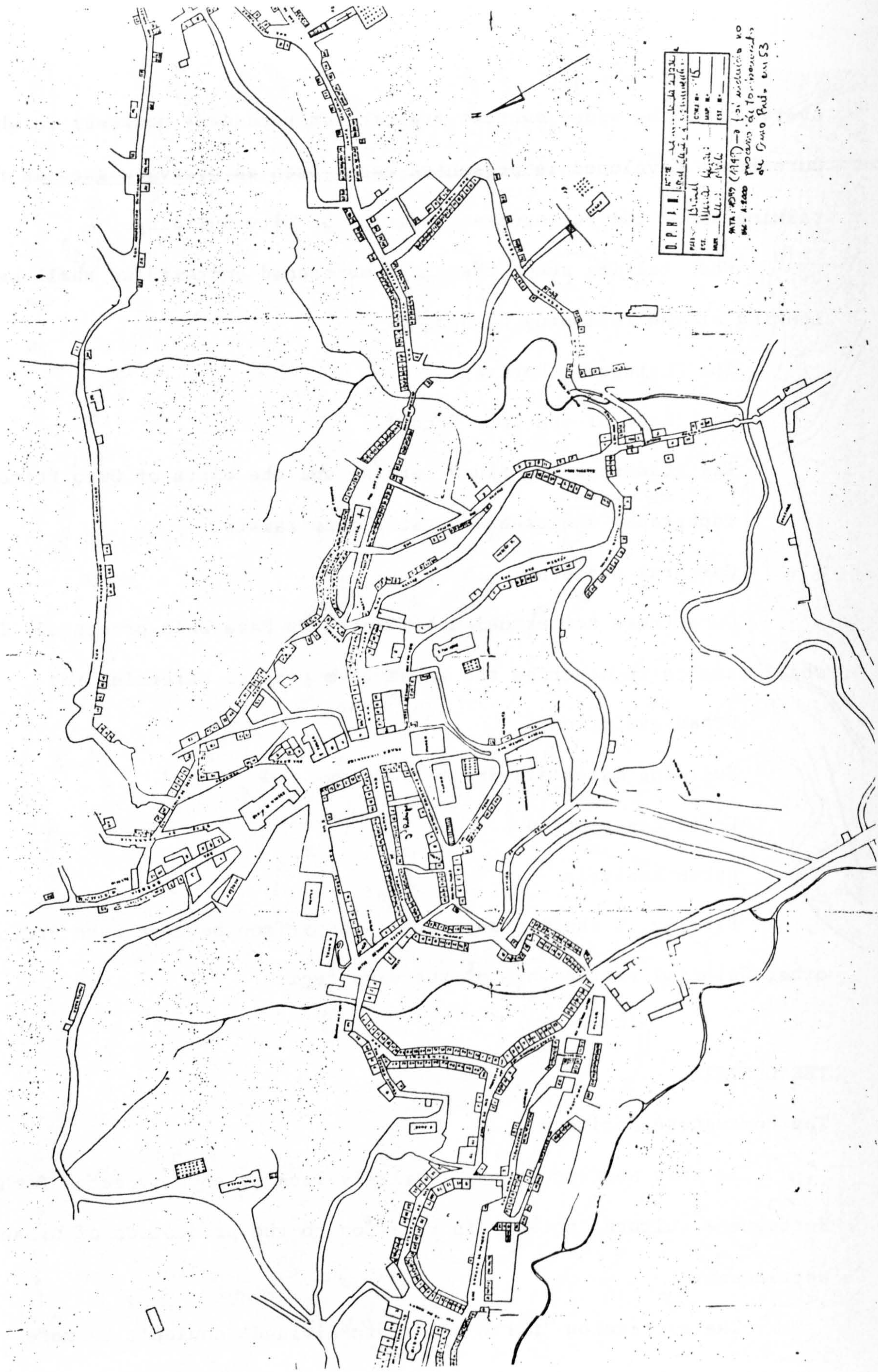


Fig.5.4 - 1949 map of Ouro Preto

the production of colonial settlements, such as Ouro Preto.

When talking about the division between the north and the south of Portugal, the aspect that stands out is the difference between the two physical environments. As Oliveira puts it:

...geographers have been able to divide the country into two large regions, separated roughly by parallel 40 ... North and South Portugal are contrasts in climate and soil... 61.5 percent of the lowlands, below 200 meters (656 feet) are in the South; 95.4 percent of the tablelands and mountains above 400 meters (1,312 feet) lie in the North. Weather in most of the North is wet, with a much higher percentage of both rainfall and humidity, in contrast to the four to six months of dry weather in the rainless South.¹

In fact, the physical distinctiveness of these regions is so powerful, that authors like Oliveira go as far as claiming that 'All the other differences in economy, psychology and history are merely its results': the north with its humid valleys favour isolation, and localism; in opposition to the plains of the south which favour interchange.² In fact, these opposite trends (localism and interchange) are verified in the historic development of the two regions; and are, to be sure, strong components in the difference between northern and southern cultures.

Such a difference in the physical environment is directly responsible for the diverse production of urban settlements in the North and in the South. Deep and humid valleys in the north tend to favour the establishment of dense (up to 200 inhabitants), but

1. Oliveira, M., History of Portugal. Volumes I & II (New York, etc.: Columbia University Press, 1972), p. 4.

2. Ibid..



Fig.5.5 - 1973 map of Ouro Preto

scattered settlements.³ These settlements are generally situated on the hill-tops, adapting themselves to the rocky and uneven nature of the topography. In the flat plains of the South 'made easy for invasion but also communication', we see the appearance of low density (as low as 25 inhabitants per square kilometre) 'large but widely separated settlements'⁴.

The difference between north and south can be traced in the historical development of these two regions, yielding two different cultural expressions (with particular urban environments).

Back to the Phoenician and Ancient Greek times, we observe that whilst the south of Portugal was extensively colonised, the north was hardly touched:

At the same time to the north of the Mondego and in Galicia, with occasional infiltration south, our archaic culture of Iron people's was emerging. In its homogeneous location, it continued the tradition of backward but individually oriented northern cultures. In Galicia alone more than 5,000 Castros or small fortified villages on the top of a hill have been discovered. This culture lasted until Roman times.⁵

But even during the time of the Muslim conquest (VIIIth - XIIIth century), the south was the most influenced area:

Many words which are used to designate agricultural implements, techniques, weights and measures, which are of Roman origin in northern Portugal, are of Arabic origin, in the south.⁶

3. Ibid..

4. Ibid..

5. Ibid., p. 8.

6. Boxer, C. R., The Portuguese Seaborn Empire (London: Hutchinson, 1969 p. 12.



Fig.5.6 - Oporto (architectural typology). Source: photograph by Margarida Barreira.

Fig.5.7 - Ouro Preto (architectural typology)

With the conquest of the Algarve (the southernmost province), and therefore the expulsion of the Arabs, North and South were reunited. Such a union, however, did not eliminate the differences between these two regions, which still manifested their particular identities; as their urban settlements attested. As Oliveira points out:

An important development of the thirteenth and following centuries was the coastal settlement. Small fishing villages appeared here and there, some spontaneously, some because of royal or seigniorial acts. They were particularly numerous in the north of the Tagus.⁷

At this point it is important to observe that the centre of gravity of Portugal moved to the south, with the shift of the capital to Lisbon by the middle of the thirteenth century. This tells us something about the control exerted by the Crown on the life of the northern people, particularly relevant to us, in relation to the production of their urban environment - giving continuity to the tradition of organic settlements in that region.

As we will see shortly, the colonial settlements in the regions of the mines present similarities with those in northern Portugal, and that is explained by the fact that most of the immigrants who came to the Brazilian mines were from the provinces of the Minho e Douro (north Portugal). Colonial settlements in the region of the mines present the same organic configuration, and even similar typological elements (fig.5.6 & 5.7). In the case of Ouro Preto, in particular, we realise how easy the transposition of northern Portugal building tradition was, by the fact that that settlement developed in a mountainous and rocky

7.Oliveira, op.cit., p. 89.



Fig.5.8 - Amerindian. Source: Ciencia Hoje, 1989.

area.

'The Land of the True Cross'

...there were among them three or four girls, very young and very pretty, with very dark hair, long over the shoulders, and their privy parts so high, so closed and so free of hair that we felt no shame in looking hard at them... one of the girls was all painted from head to foot with that (bluish-black) paint, and she was so well built and so rounded, and her lack of shame was so charming that many women of our own land seeing such attractions, would be ashamed that theirs were not like hers.⁸ (fig.5.8)

The above impressions were proferred by Pero Vaz Caminha at the time of the first Portuguese contact with the 'Land of the True Cross' (as Brazil was called at the time). They tell us a lot about the cultural system of the European colonisers, which I believe is worth commenting upon. As Pagden puts it 'it was indeed that system, not the innate structure of the world, that determined both what they (colonisers) actually believed to be the objective reality before them and the areas of it they selected for description'.⁹

According to Pagden, there was already before the great discoveries, a number of images and expectations about the New World:

...the travellers of the sixteenth century went to America with precise ideas about what they could expect to find there. They went looking for wild men and giants, Amazons and pygmies. They went in search of the Fountain of Eternal Youth, of cities paved with gold, of women whose bodies, like those of the Hyperboreans, never aged, of cannibals and of men who lived to be a hundred years or more.¹⁰

8.Boxer, op.cit., p. 85.

9.Pagden, A., The Fall of Natural Man (Cambridge: Cambridge University Press, 1982), p. 2.

10.Ibid., p. 10.

Despite all the mystical atmosphere that transpires from the above expectations and images, the relationship between Europeans and Amerindians was actually based on an attitude of superiority by the former. Such an attitude was translated through an imposition of the European culture onto the Amerindian; also it quickly led to the slavery of such 'barbarian peoples'.

Pagden comments upon the Spanish *encomienda*: an institution 'first introduced into the Hispaniola by Columbus in 1499, (which) provided the Indians with Spanish 'protection', religious instruction and a small wage in exchange for their labour'.¹¹ Such an institution created an ambiguous state of affairs concerning the status of the Amerindian; specially in view of the brutality with which the colonists treated them. Pagden quotes one such colonist saying that 'if you don't hit an Indian he can't make his limbs move'.¹²

Academics throughout the sixteenth century spent a lot of their time trying to justify their project of colonisation of the New World, and the slavery of the Amerindian. The discussions and debates that took place in that period hinge precisely on the issue of the status of the Amerindian in relation to the European - after all the land the latter were conquering was originally occupied by the former. Pagden gives us an interesting account of the many arguments that were put forward to justify the colonisers' acts in the eyes of their Christian faith.

One of the most influential views on the subject was that

11. Ibid., p. 34.

12. Ibid., p. 36.

proposed by Francisco de Victoria, which conceived the Amerindian as a child, according to the Aristotelian conception - i.e., as a human being like the Europeans, nevertheless of inferior status. Such status, however, like that of a child, was transitory. The implication of that reasoning was that '...princes could take them (Amerindians) into their care and rule them so long as they remained in that state (of 'childhood')'. Academic views such as those displeased many; notably the emperor and also colonists.

Added to those academic debates '... the Council of the Indies (ever since the fifteen-twenties) had listened to a flood of conflicting opinions on the mental status of the Indians and on the proper and just way to govern them',¹³ Through the point of view of this dissertation, it interests us that the views in favour of the Amerindian cause had limited impact on the process of colonisation of the New world. The debates in academic and non-academic environments were quickly overwhelmed by the economic and political interests of the European crowns. Pagden describes an event that illustrates that point:

In 1542, in an attempt to bring some order into the affair, the crown had promulgated the famous New Laws which finally abolished the *encomienda*. Three years later, however, the emperor was obliged to repeal many of them in the face of a fierce rearguard action by the *encomenderos* and the practical impossibility of enforcing highly unpopular legislation on the other side of the world.¹⁴

In the case of Brazil the poetic and contemplative attitude which transpires from the account of Pero Vaz Caminha contrasts with the attitude of the colonists. What we see in the actual process of

13. Ibid., p. 107/8.

14. Ibid., p. 108.

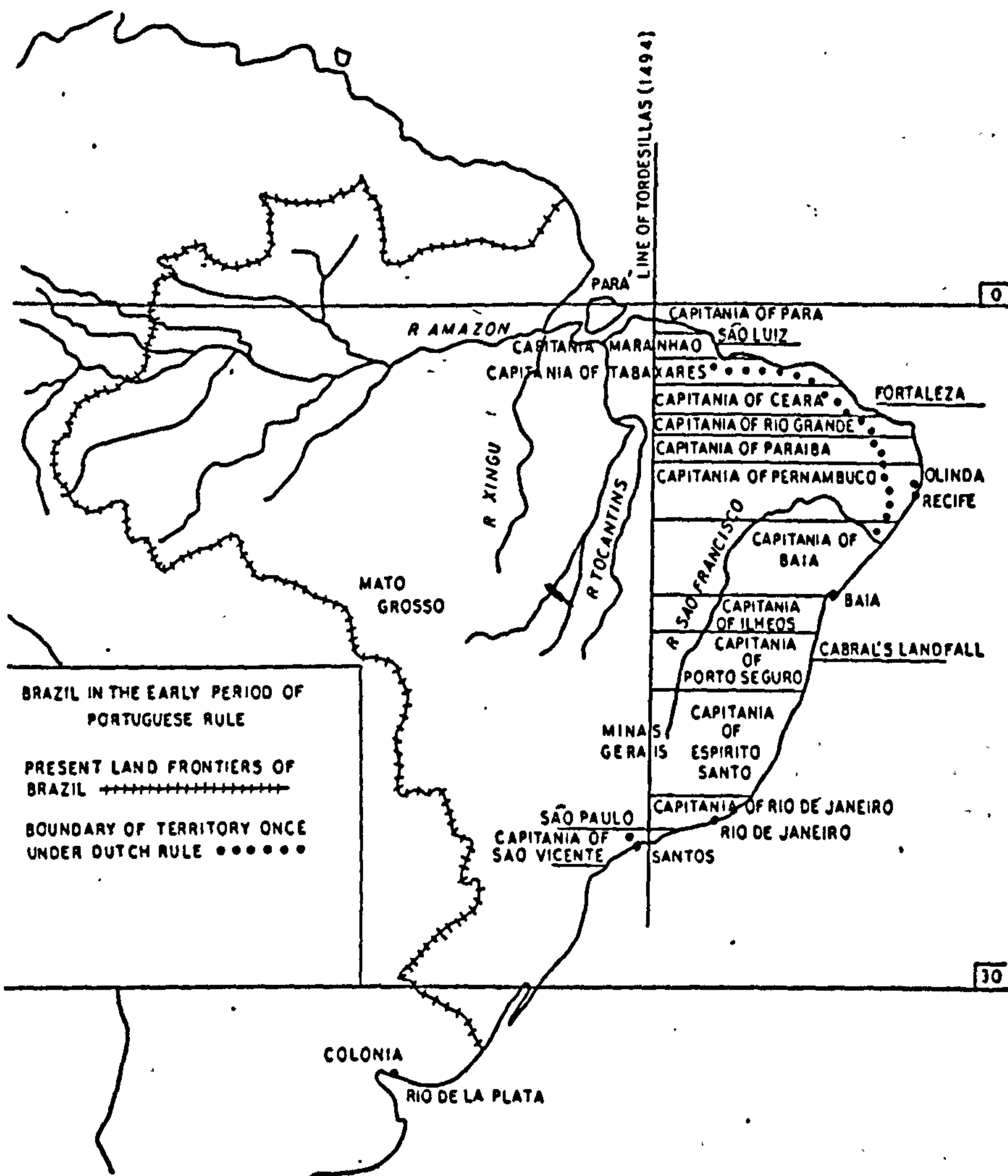


Fig.5.9 - Brazil's capitancies

colonisation is a growing number of ambitious adventurers (some ex-convicts) sent by a Crown with serious economic problems. Such an attitude is present throughout the development of the Colony, it is reflected in the ways the Crown managed it; and as we will see, it had a direct impact on the way urban settlements were created and evolved.

Brazil became part of the 'Europe centred universe' with the voyage of discovery lead by the Portuguese Pedro Alvares Cabral, in the year 1500. At that time, however, Portugal was engaged in a lucrative trade with her other colonies in Africa and Asia, so that for the first three decades she did very little towards the colonisation of the new land, contacts being virtually limited to transient traders.¹⁵

Once the French started coming in growing numbers, settling along the Brazilian coast; Portugal felt it was time to take serious actions towards an occupation of the land: the fifteen hereditary captaincies (capitanias - slices of land which cut the Brazilian territory along the parallels from the coast to the interior of the country) being the first expression of an attempt at colonisation. A further step in that direction was the appointment of a governor-general, who centralised the power over the colony from the Captaincy of Bahia (North-east) (fig.5.9).

As one can see, the relationship between the Crown and the colony was very much based on the consolidation of the possession of the land. The colony itself, offered no major economic attractions for the Crown; and particularly frustrating was the fact that, unlike the other Portuguese colonies, Brazil had not yielded any precious metal, or gems.

15.Ibid..

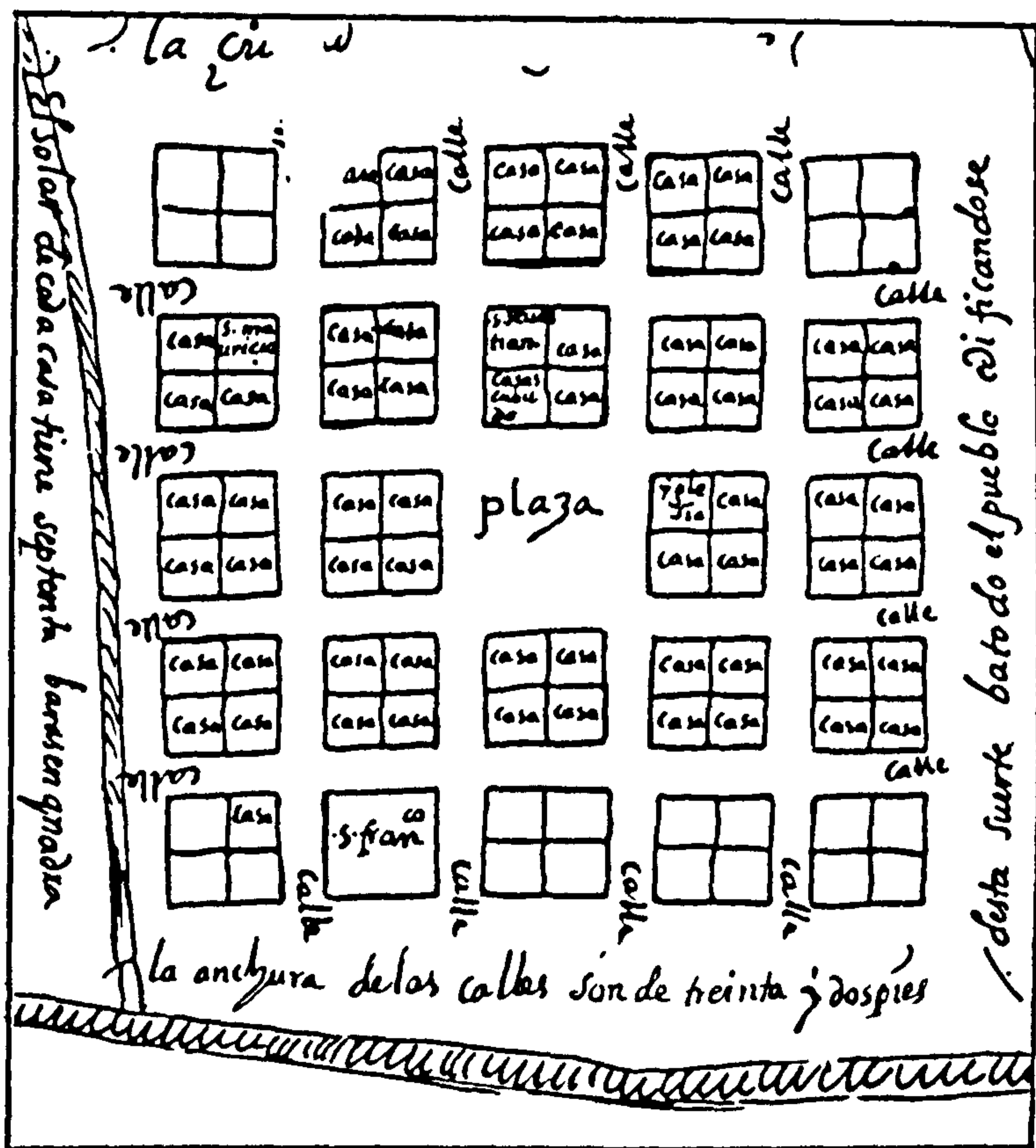


Fig.5.10 - Spanish colonial settlement. Source: Benevolo, 1980.

During the first century of 'colonisation' (sixteenth century), the main trading product was 'brazil wood', so-called, because of its peculiar red-hue, used in the dyeing of textiles.

Agriculturally, as Boxer points out, the first attempts of crop development were frustrated: 'Numerous insect pests made any kind of agriculture a gamble in many regions of Brazil'.¹⁶

Such a casual relationship between Crown and colony was reflected in the attitude of the people who came to Brazil during the sixteenth century. As in the rather radical description given by a settler of the north-east of Brazil in the late sixteenth century, the Portuguese were divided in five categories: 'Sailors, merchants and traders, craftsmen and artisans, salaried labourers and employer class... most men among all of these five classes were anxious to return to Portugal as soon as they had accumulated enough money to do so and retire in comfort'.¹⁷

Moving to the seventeenth century, we see that Portugal is frustrated in her efforts to achieve centralisation of her control over the colony.

By early 1600's it seemed possible that the tendency towards centralisation and reinforcement of the governor's powers led to a unitary Brazil, strongly controlled from Bahia. But the colony was too large to be governed like the mainland; and the growing needs of territorial expansion brought about a political and economic structure altogether opposed to centralisation.¹⁸

Portugal would have to wait until 1761 to have all the

16.Ibid., p. 89.

17.Ibid., p. 90.

18.Oliveira, op.cit., p. 43.

hereditary captaincies under her control: 'Each captaincy became now a purely administrative unit depending upon Lisbon government...'19

With the above account, we are brought to the threshold of the settlement of Ouro Preto, which began its existence in the last few years of the seventeenth century. In order to move on to talk about it in more detail, let us synthesise the information of the present section, stressing its relevance to the development of colonial settlements in Brazil, notably Ouro Preto.

As we see from that account, the colonisation of Brazil wasn't smooth. It was rather marked by struggle, frustration, and instability. The Crown wasn't able to effect a centralised control over the colony until the second half of the eighteenth century; as a result of that, there is no such thing as a planned colonisation implemented by the Crown, which would be reflected in the configuration of the settlements. There certainly were bits and pieces of legislation scattered throughout the Captaincies, which would sometimes dictate a very tight definition of the layout of the settlements, as in the case of the Piauí captaincy:

...determine the most appropriate place for the square designating the area for the edification of the church, which should be large enough to receive a suitable number of customers when the population increases, as much as other areas suitable for houses of entertaining and performance, prisons, and other public workshops, laying out the houses of the inhabitants in a straight line, so that the streets are right and wide.²⁰

However, because of the inconsistency of an overall policy,

19. Ibid..

20. Vasconcelos, S., Vila Rica (São Paulo, Editora Perspectiva, 1977), p. 87.

these tight regulations were most often overlooked, and this is particularly true of the Region of the Mines, where the whole context was very unstable, and this is reflected in the organic pattern of the settlements; the only exception to that is the city of Mariana (the first capital of the Region of the Mines), which was laid out according to a plan produced in Portugal.

Putting side by side Portuguese and Spanish colonies, we are, in fact, surprised by the striking difference between the organic Portuguese settlements and the chequerboard pattern of their Spaniard counterparts (fig.5.10). The explanation for such a difference is here essentially attributed to the different patterns of colonisation that were implemented by Portugal and Spain. As Benevolo puts it:

The Portuguese found either poor and inhospitable lands in their hemisphere (Brazil and Southern Africa) or, as was the case in the East, densely populated and warlike countries that they were unable to conquer. As a result, they only founded a series of naval bases to protect their overseas trade, and were unable to conduct a proper full-scale colonising programme. The Spaniards on the other hand, found in their zone territories that were ideally suited to colonisation: ...indigenous empires that were both rich and highly developed.²¹

Another important feature related to the colonisation of Brazil, is the instability in the economy of the mother land. Portugal had been through various crises since her formation as a nation, and had developed a highly dependent relationship with other European countries, buying industrial products and paying back with gold from her African colonies. At the time of the discovery of gold in the Region of the Mines (end of seventeenth century), Portugal was going

21. Benevolo, L., The History of the City (London: Scholar Press, 1980), p. 615.

through yet another economic crisis, which certainly contributed to the Crown investing all her energies in the exploration of mines and the exertion of control over them.

Together with the irregular pattern of colonisation, the speed of the development of the Region of the Mines (fired by the economic crisis of Portugal), is an essential feature to understand the birth and development of mining settlements such as Ouro Preto.

Let us now transport ourselves to the end of the seventeenth century to contemplate the 'gold rush in Minas Gerais'.

The Gold Rush in Minas Gerais

Late in the seventeenth century, explorers from São Paulo did find the gold they had been seeking for so long ... the most important mines were located in what is now Minas Gerais ('General Mines') a name that clearly suggests the importance of the area...²²

The discovery of gold in the region of Minas Gerais is related to the expeditions to the interior of the country: the so-called 'Entradas e Bandeiras'. Accounts diverge on the exact date at which gold was found, nevertheless, one can say that it was somewhere around the year 1695. Whatever the exact date was, the fact is that before the turn of the century the news had travelled all around the colony and the mother land, resulting in massive migration to the region.

If the immigrants and, generally speaking, the Crown took this news with great enthusiasm, there were those who adopted a different view to the problem, people such as Dom João Lencastre, member of the Overseas Council at Lisbon, who claimed that:

22. Oliveira, op.cit., p. 437.

the chief danger... was that the hordes of adventurers who were now swarming the mining region, "leading a licentious and unchristian life," would speedily transform that district into a "sanctuary for criminals, vagabonds, and malefactors".²³

In that, and in fact in many other respects, as Boxer puts it, Lencastre proved to be a true prophet. The 'social atmosphere' of Ouro Preto, at the time of its formation, was indeed very restless. People moved by greed and the competitive attitude would cause tension and conflict. As expressed by writers or travellers who were there at the time:

Interest would govern actions, and people would only care about accumulating wealth.²⁴

To characterise the Mines (region)... it is enough to say... that it is inhabited by rough people, without shelter, and that, even in continuous movement, they are less inconstant than their own living habits: days never start in tranquillity: the air is perpetually gloomy: everything is cold in that land; apart from the vice, which is always burning... it is like hell.²⁵

Such an uneasy atmosphere culminated with the 'Emboabas War' in 1709, which involved Portuguese immigrants (called 'emboabas' by their opponents) and the Paulistas (descendants of the early settlers of São Paulo Captaincy).

The other important aspect which contributed to the 'heavy' and 'unstable' atmosphere of the Region of the Mines was the exploitation of slave labour. Sources report that in 1776, there lived in Ouro Preto

23.Boxer, op.cit., p. 42.

24.Claudio Manoel da Costa, quoted by Vasconcelos, op.cit., p. 36.

25.Earl of Assumar, 1720, quoted by Vasconcelos, op.cit., p. 38.

78,618 people: 12,679 white, 16,791 mulattos, and 49,140 black.²⁶

These slaves were very badly treated all over the colony, as attested by various accounts written at the time. An Italian Capuchin missionary, for instance, who was in Brazil in 1682 was told that "their labour is so hard and their sustenance so small, that they are reckoned to live long if they hold out seven years".²⁷

Other aspects that complete the scenario of the Minas Gerais region at the eighteenth century are: the widespread prostitution; the so-called 'bad clergy-men' who were 'stigmatised as being among the worst offenders in leading irregular lives, in defrauding the royal fifths'²⁸ and who became notorious by the contraband of gold dust in hollow wooden saints.

As settlements became 'vilas' (villages), like Ouro Preto in 1711, the Crown would assume the organisation of their spaces, by formalising norms, buildings regulations, etc..²⁹

Such a control occurs in the development of Ouro Preto. Nevertheless, as we can see by the rough atmosphere of the place such regulations were, most of the time, not implemented.

In Vila Rica (the former designation of Ouro Preto which literally means 'rich village') the topography, the disobedience of the people, the relative remoteness of the metropolis, the rapid development and improvisation would lead to the disregard of such tight regulations"³⁰

26.For further details see Vasconcelos, op.cit..

27.Boxer, op.cit., p. 174.

28.Ibid., p. 54.

29.Vasconcelos, op.cit., p. 87.

30.Ibid., p. 135.

As we see from the above account, one of the large outcomes of the gold rush was this dynamic and restless character which has a direct impact on the way the settlement of Ouro Preto developed.

The Mines region was "prospected occupied, and to a lesser extent, settled with astonishing rapidity".³¹

The other important outcome of the gold based economy was the affluence of its inhabitants, which made possible the realisation of major works of arts, and the erection of costly monuments essentially important for the picturesque identity of Ouro Preto: the churches. As pointed out by Simão Ferreira Machado, in his 'Triunfo Eucarístico' (1934):

In this town live the chief merchants, whose trade and importance incomparably exceed the most thinking of the leading merchants in Portugal. Hither, as a to a port, are directed and collected in the Royal Mint the grandiose amounts of gold from all the mines. Here dwell the best educated men, both lay and ecclesiastic. Here is the seat of all the nobility and the strength of the whole of America; and by the wealth of its riches it is the precious pearl of Brazil".³²

The settlement of Ouro Preto developed through this combination of dynamism and wealth, presenting features that are very peculiar to it, distinguishing itself from any other colonial settlements of the region of 'General Mines'. In order to fully appreciate the picturesque character of Ouro Preto, let us refer to two further contextual elements, which are directly responsible for its urban configuration, namely the physical environment (notably the topography), and the cultural context.

31.Boxer, C. R., op.cit., p. 51.

32.Ibid., p. 162.

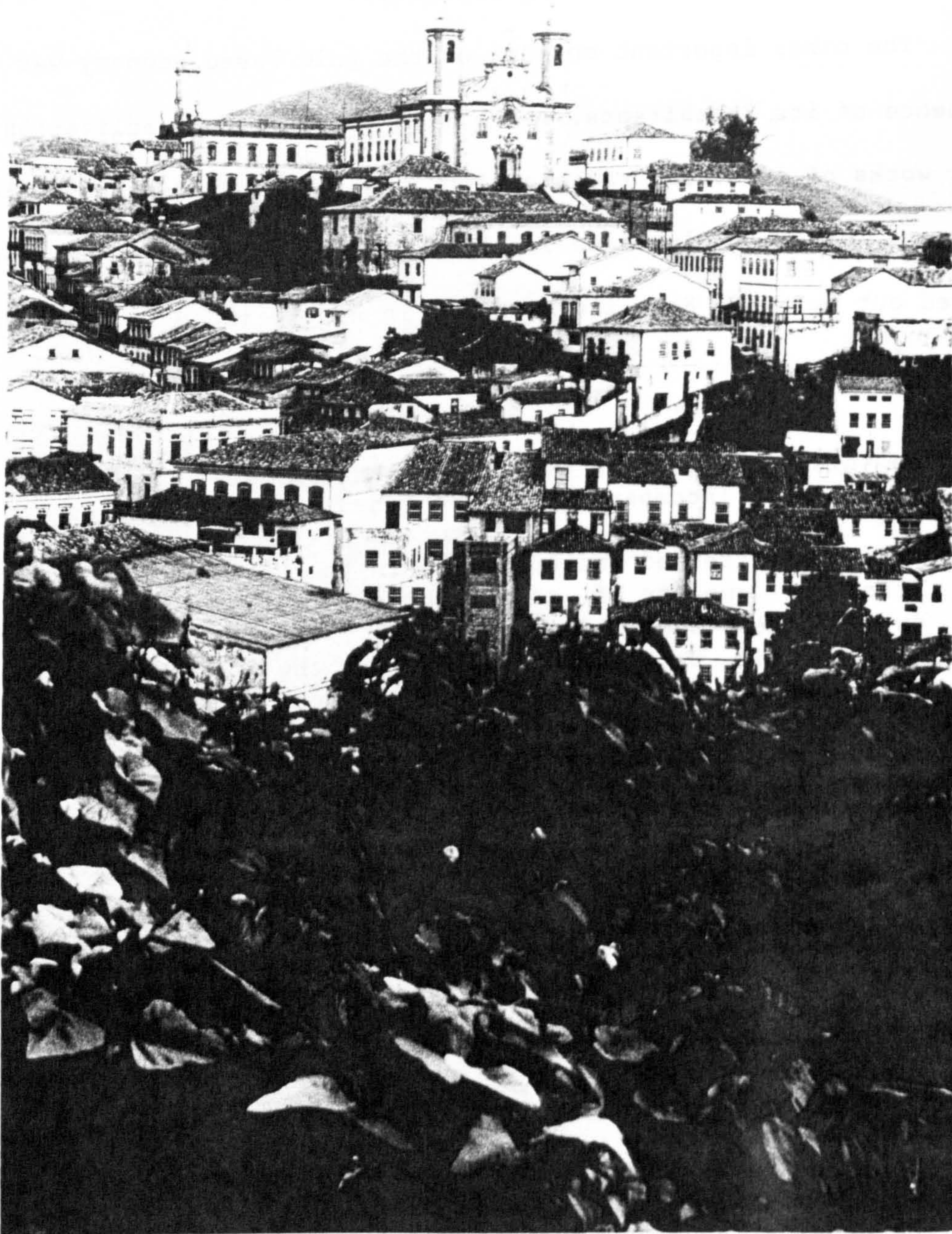


Fig.5.11 - Irregular topography

Topography and Other Physical Constraints

The region forms part of a vast plateau, whose most prominent feature is the Serra do Espinhaço, the oldest geological formation in Brazil. This range runs roughly north and south along a line down through Ouro Preto and Diamantine, separating the basin of the Rio Doce to the east from that of the Rio São Francisco to the west. It was on the flanks of the Serra do Espinhaço and its offshoots that the gold bearing streams and valleys were chiefly found.³³

The many thousands of immigrants from the Province of Minho e Douro (north of Portugal), in fact, found a natural setting in many ways similar to that of their homeland. The Serra do Espinhaço shapes the essential character of the place, with its rocky soil (rich in precious minerals), and its irregular features. Such an environment led authors such as Vasconcelos to claim that the topography of Ouro Preto is 'very inappropriate' to the establishment of a settlement: 'Natural flat plots are practically non existent, and their artificial production, through flattening of the topography is made difficult by the hardness of the soil'³⁴ (fig.5.11).

Such a topography had a direct impact on the development of the settlement, right from the building techniques and materials employed, to the (notably relevant to us) configuration of its urban spaces.

Two aspects of such an urban configuration concerns us here. The first has to do with the placement of monuments. As we will see shortly, the site on which Ouro Preto evolved, is punctuated by a series of hills emerging from the surroundings, overlooking the

33.Ibid., p. 36.

34.Vasconcelos, op.cit., p. 66.



Fig.5.12 - Churches' vicinities

settlement. It is precisely on these hills that most of the churches were built; a factor that contributes to the picturesque character of Ouro Preto, setting it apart in a category of its own amidst the other colonial settlements in Minas Gerais. And if the topography initially played an important role in the relationship between churches and settlement, it also accounts for this relationship being a permanence: the steepness of the terrains that surround these churches make almost impossible any attempt to erect a building in their vicinity (fig.5.12).

The second relates to the rapid occupation imposed by the gold rush: the urban fabric of Ouro Preto many times assumed unusual patterns, such as extremely steep streets which cut right across topographic contours. Some of these streets are so steep that steps had to be introduced.

Other aspects of the physical environment that certainly had an impact on the architecture of Ouro Preto are the wet climate, which contributes to the adoption of pronounced eaves (often as wide as two feet) protecting the façades against corrosion by the rain; or the strong winds, which affected the size and frequency of openings in the facades.³⁵

Cultural context

When looking at the cultural context we shall observe some aspects of the local culture that are believed to have had a notable impact on the formation of the settlement.

Let us start by recalling the fact that the majority of the

35.Ibid..

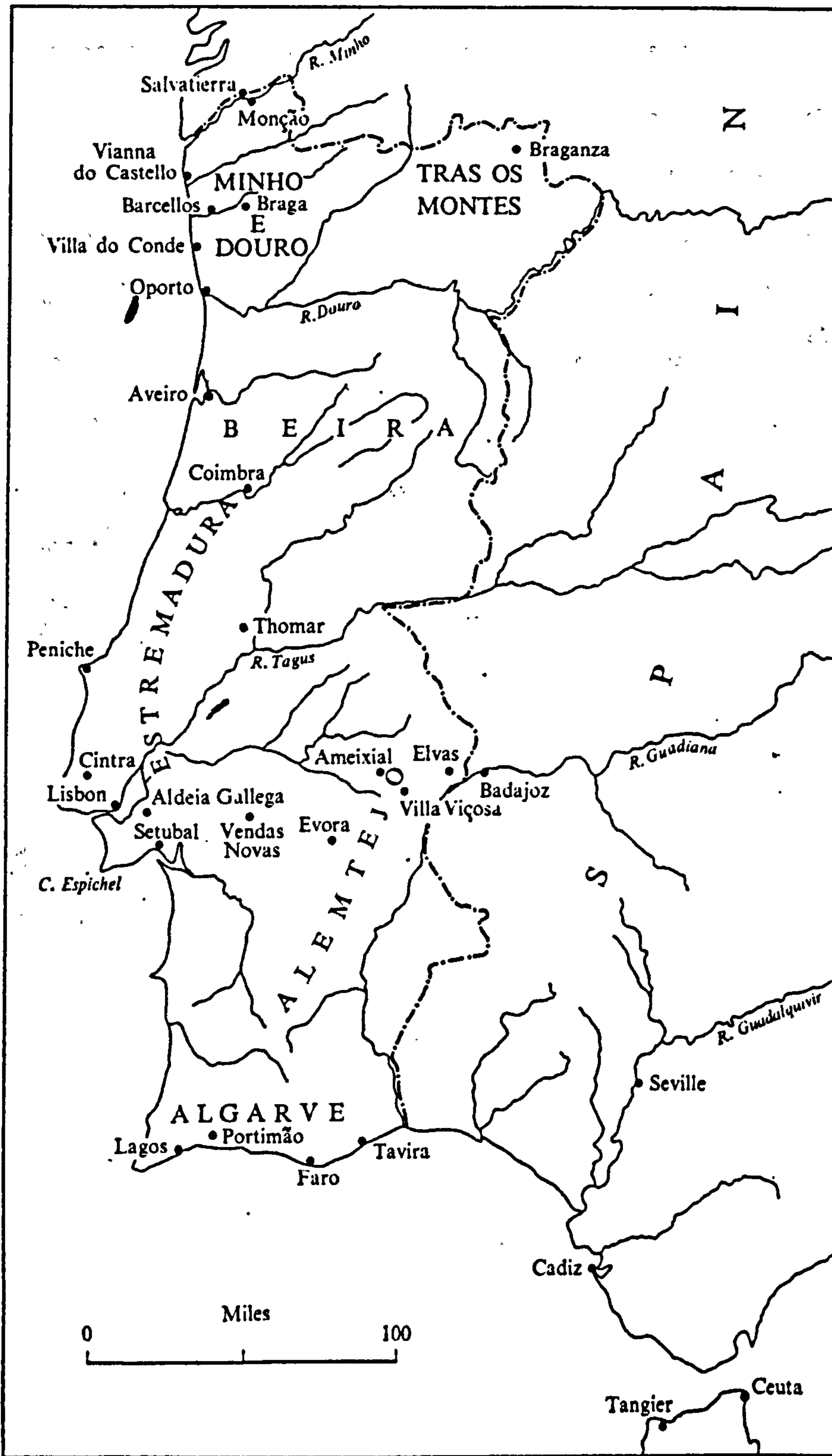


Fig.5.13 - Map of Portugal in the sixteenth century. Source: Boxer, 1962.

immigrants who came from Portugal to the mines were from northern Portugal. We therefore observe that it would be natural to give continuity to the tradition of city building of the Province of Minho e Douro (fig.5.13).

Since more than three-fifths of the Portuguese immigrants came from the Province of Minho e Douro, the result of these factors was that after a few generations, anybody who was not either pure black or pure white had a look of Minhoto and of African blood in his or her veins.³⁶

Another important aspect for our analysis is the role of religion in the organisation of the society of Ouro Preto. Religion had an important part to play in the development of the colony. Brazil was a pagan territory, the Amerindians needed to be 'properly educated', and the adventurers needed purification from their sins. Religious orders infested Brazil, and the Church as an autocratic institution made a strong appearance in the colony. Religion certainly was a strong component in society at the time of the formation of Ouro Preto; one may say that its role was particularly magnified as a result of the violent and promiscuous atmosphere of the place, which encouraged devotees to seek absolution in the holy temple. What is peculiar about the Church in Ouro Preto, however, is that it did not appear in its autocratic form, rather, it stemmed from the grassroots. The society of Ouro Preto was divided in a number of social groups: the so-called 'irmandades.' Every irmandade had its own temple, initially a chapel, and then a church. Such a temple was the focus of social life, the place where the festivities would take place, community meetings, and so forth.

36.Boxer, op.cit., p. 165.

Vasconcelos tells us about the irmandades, in terms of their role in the stratification of the society in different groups with their own churches and specific saints.

the tertiary orders of St. Francis, and Holy Mother of Carmo belonged to whites; the Confraternities of 'Merces', to Creoles; the ones of St. Joseph and Holy Mother of Good Death, to mulattos; and the 'Irmandade of Holy Mother of 'Rosario', to the blacks...³⁷

Each community, segregated in a certain area, would relate to particular saints, and erect its own temple. Even the slaves had their own churches finely decorated in gold. Among them is the church of St. 'Efigenia of the Black':

The story that the church of St. Efigenia was mainly built from the proceeds of the gold dust washed out of their hair by negress devotees in the font may be apocryphal, but it is symptomatic of what could happen in Minas Gerais. The Negro Irmandades whether bond or free, sometimes amassed considerable wealth... they sponsored the publication of the Triunpho Eucaristico at Lisbon 1734, and took leading part in organising the costly festivities which that book describes.³⁸

As we can see the context on which Ouro Preto developed is marked by ups and downs; movement, dynamism, and contradictory features; like that of Negro slaves building churches in stone lavishly decorated in gold. Such a context, in fact, could not be best attuned with another important cultural ingredient: the Baroque. Ouro Preto with its picturesque life-style and restless topography suited like no other settlement the expression of the no less picturesque, no less restless Baroque style. The Baroque, born in Europe in a context of a

37.Vasconcelos, op.cit., p. 45.

38.Boxer, op.cit., p. 177.

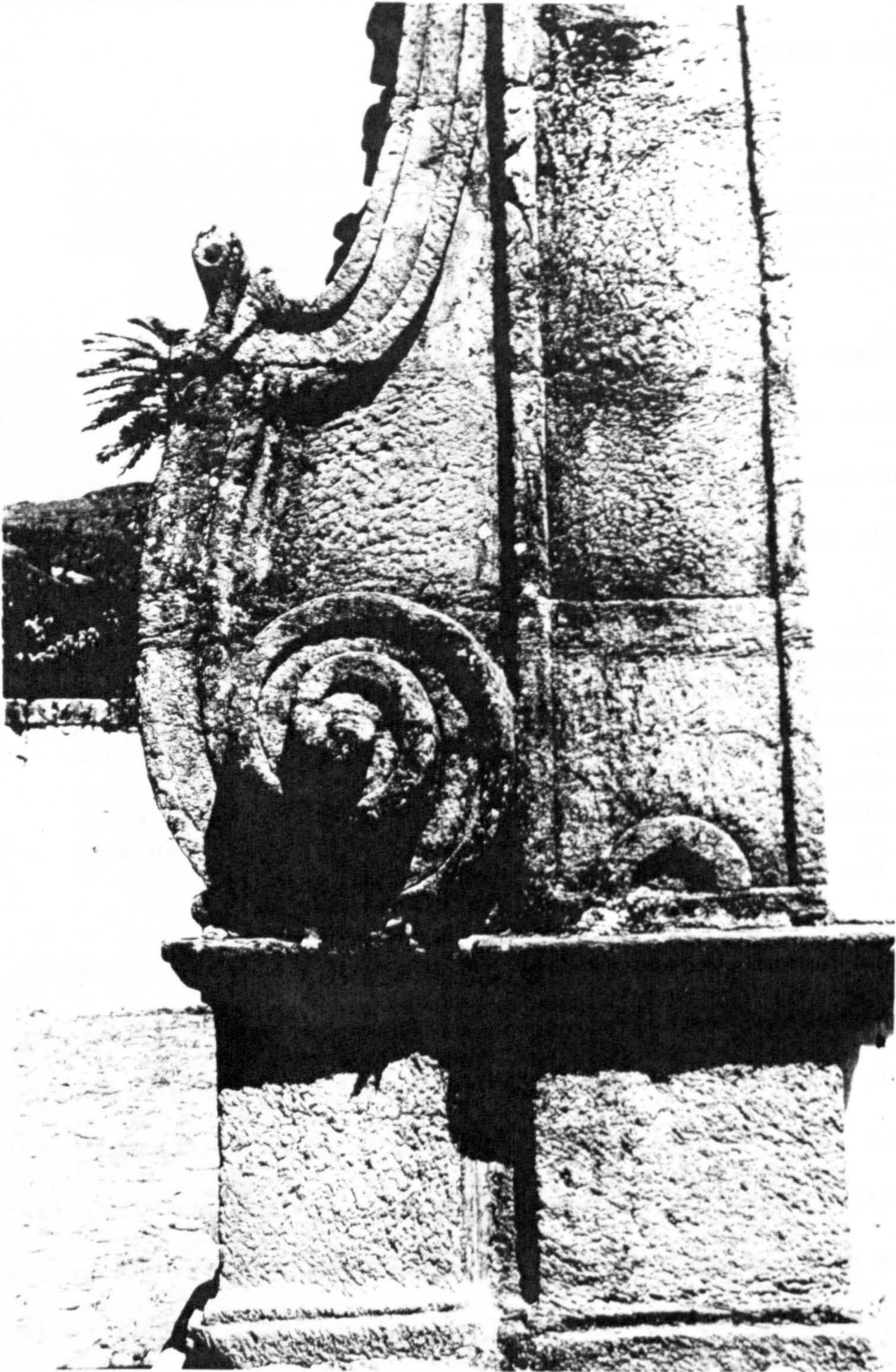


Fig.5.14 - Colonial Baroque art. Source: author.

plurality of views, of moving patterns, of infinite digressions, was freed from a rigid urban structure, such as the low populated medieval towns with Renaissance buildings, that offered few opportunities to innovate and express the internal movement that burnt in the Baroque spirit. The colonial setting on the other hand gave the long waited opportunity to materialise this infinite world.

Ouro Preto's context like no other in the Colony, suited the Baroque mentality. The dynamism, the vibrating nature, and the wealth, were available in plenty. In the words of Lourival Gomes Machado (1978) 'Ouro Preto was born Baroque'.³⁹

In that environment, a genuine expression of the Baroque flourished (fig.5.14), beautiful works of art, as recognised by many authors:

Those monuments, as well as newly founded towns, reflected exuberant Baroque and Rococo styles, of Portuguese inspiration yet with local features. The well preserved towns of Ouro Preto, Mariana and Diamantina are good examples of that fusion. Local architects and sculptors like the renowned Antonio Francisco Lisboa (1730-1814) nick named "Aleijadinho" (the 'little cripple') flourished, giving rise to a national art'.⁴⁰

The 'rise of a national art,' not a copy of the European, but a genuine expression, is most probably related to the birth of a national identity, in the form of the mulatto. The mulatto as the result of the miscegenation between whites and blacks, or Amerindians, was an ambiguous element, it would not fit in the existing society, and called for a restructuring of values. As Boxer puts it:

39.Machado, L. G., Barroco Mineiro (São Paulo: Editora Perspectiva, 1978).

40.Oliveira, op.cit., p. 484.



Fig.5.15 - São Francisco de Assis Church. Source: casa-jardim.

The fact that most white men had mulatto children, whether legitimate or otherwise, posed an administrative as well as a social problem for succeeding generations. In law, Negro blood was a bar to the holding of any civic or official position, such as a seat on the local municipal council, but this colour bar was often surmounted.⁴¹

And further on he says:

The fact that so many people of both sexes and of several colours lived in Brazil 'a lei da natureza', as the viceroys, bishops, magistrates and missionaries were constantly deploring, gave rise to a swarm of homeless beggars, vagrants and vagabonds, who were nowhere more of a problem than to the authorities in Minas Gerais.⁴²

If such a fusion of races yielded the homeless and beggars, it also produced artists. In fact, a great number of the Baroque artists in the Region of Minas Gerais were mulattos, as in the case of the foremost expression of the Baroque art in Brazil, 'the Aleijadinho' (fig.5.15).

Now that we have a general depiction of the context in which Ouro Preto developed, we may move on to talk about the settlement itself, starting with its urban evolution and culminating with an analysis of its spaces.

THE URBAN FORM

Urban Evolution

If we want to capture the event of the development of Ouro Preto in one image, we shall visualise a growing number of settlers rapidly

41.Boxer, op.cit., p. 166.

42.Ibid., p. 167.



Fig.5.16 - Pre-eminence of churches I

occupying the slopes of the Serra do Espinhaço not taking account of its broken topography, fixing their mining camps wherever they find gold, organising themselves into 'irmandades' around chapels; and as these mining camps multiply, pathways are formed between them, and as the concentration of settlers increases, the mining camps merge together to form the 'vila' of Ouro Preto.

The 'irmandades' play an important role in the birth and evolution of the settlement. As mentioned earlier on, such a grass roots social pattern, is reflected in the organisation of spaces, which involved the direct participation of the dwellers in the process of decision making of spatial production, leaving little room for the imposition of top-down interventions.

The fact that the Crown always aimed to exert a tight control over the Mines Region, is reflected in the various building regulations that punctuated the evolution of Ouro Preto, sometimes going as far as controlling the layout of windows and doors. In 1745, for instance we find a document which tells a settler 'to brick up the door of his grocery which opens to a cul-de-sac'.⁴³

Nevertheless, these were isolated attempts: there wasn't a consistent implementation of overall urban regulations, as the organic layout of the settlement attests.

The Occupation

Around the year 1698, the mining camp (or 'arraial' as these camps were designated) at the origin of the settlement of Ouro Preto was founded. Many other 'arraiais' surrounded the initial one.

43. Vasconcelos, op.cit., p. 90.



Fig.5.17 - Pre-eminence of churches II

following a pattern which is to some extent related to controlling measures put forward by the Crown. The miner could be given certain benefits if he settled at a minimum distance from existing mines.⁴⁴ The growth of the settlement around 'arraiais', is described by authors such as Boxer:

In the Mines region, the arraiais multiplied and conglomerations of neighbouring mining camps united to form the present day towns which still struggle up hill and down dale, with long winding streets and steep stairways connecting the original nuclei.⁴⁵

Or expressed by Saint-Hilaire - who visited Ouro Preto at the time of its formation:

Everywhere, the sand of the rivers and the soil of the mountains would be analysed, and when they found a gold yielding site, they would build tents in its surroundings, in order to exploit it. These sort of camps (arraiais) would become small settlements, then towns and in that way, they started to occupy inland regions, incorporating in the Portuguese monarchy, areas which were vaster than many empires.⁴⁶

These small settlements, notably in the region of Ouro Preto, would be structured by chapels: 'As the explorations normalise, the settlements organise themselves around their transitional chapels in which alleys and paths, configurated by houses, form the incipient public spaces'.⁴⁷

Some authors (e.g. Paulo Santos) remark that, from the

44.For further details see Vasconcelos, op.cit., p. 16.

45.Boxer, op.cit., p. 51.

46.Saint-Hilaire, in 'Viagem a provincia de São Paulo', p.35, quoted Vasconcelos, op.cit..

47.Ibid., p. 17.

information available from the documentation of the time, almost all the 'arraiais' were already formed by the year 1711 - this is precisely the year in which Ouro Preto becomes a town, it receives the designation of 'vila': 'Vila Rica' (Rich Town), and therefore becomes further subjected to top down intervention. The hypothesis that the 'arraiais' were already formed is very much confirmed by the present urban structure of Ouro Preto, notably in the relationship between monuments and fabric. In fact, the churches of Ouro Preto strike us for their frequency and location in the townscape. Every estate, that originated from a mining camp, and which still keeps the original designation, has its own church. These churches occupy privileged spots: they sit precisely on the top of hills overlooking the settlement. In fact, considering that the settlement was born by the fusion of various mining camps, articulated initially by chapels, that later, were replaced by vigorous churches (sometimes not until the nineteenth century), we can understand the pre-eminence of the churches of Ouro Preto (fig.5.16 & 5.17).

As we saw when describing the context in which Ouro Preto developed, such a 'church-centred' pattern of urban development is very much related to social features such as the organisation of groups in religious congregations (irmandades).

This pattern of urban evolution - the merging of various mining camps, is described by Vasconcelos, as a centripetal process (figs.5.18 and 5.19), which was actually totally different from the centrifugal process of development found in many other colonial towns, where the settlement would start off with a square (planned or not), enclosed by monuments such as a town hall and a church.

Although starting from the connecting movements of various



Fig.5.21 - Taipa de sopapo. Source: author.

camps. Ouro Preto eventually adopted a 'centrifugal' pattern of growth, which finds its start roughly at the time when it gained the status of town (therefore being subject to the intervention of the Crown). The role of the 'irmandades' in the organisation of the society is, at that stage, played down; and the centrifugal process manifests itself, as early as 1712, with the creation of the central square (nowadays called Tiradentes Square). As shown in official documents, dating from 1712, the government took the decision of raising the Town Hall on the hill, which divides the settlement in two halves - the space where Tiradentes Square was to be configurated. Such a square, sitting in the middle of the settlement, consolidates the town, by uniting the two extremes (West and East) of the linear configuration that the settlement had adopted so far. With the construction of the Governor's Palace (1770) facing the Town Hall, the space of the square is further consolidated, and stands as the main convergence point of the settlement.

From this moment on, the settlement starts the so-called centrifugal growth, with the creation of secondary streets linking the existing ones, or shooting towards the periphery (fig.5.20).

These developments take us to the beginning of the nineteenth century. And as far as this dissertation is concerned, an account of the urban evolution stops here, inasmuch as at that stage the historic core of Ouro Preto already presented its main character; the transformations that occurred subsequently were few if compared with its initial growth.

Let us briefly look at the main techniques and materials employed in the buildings of Ouro Preto.

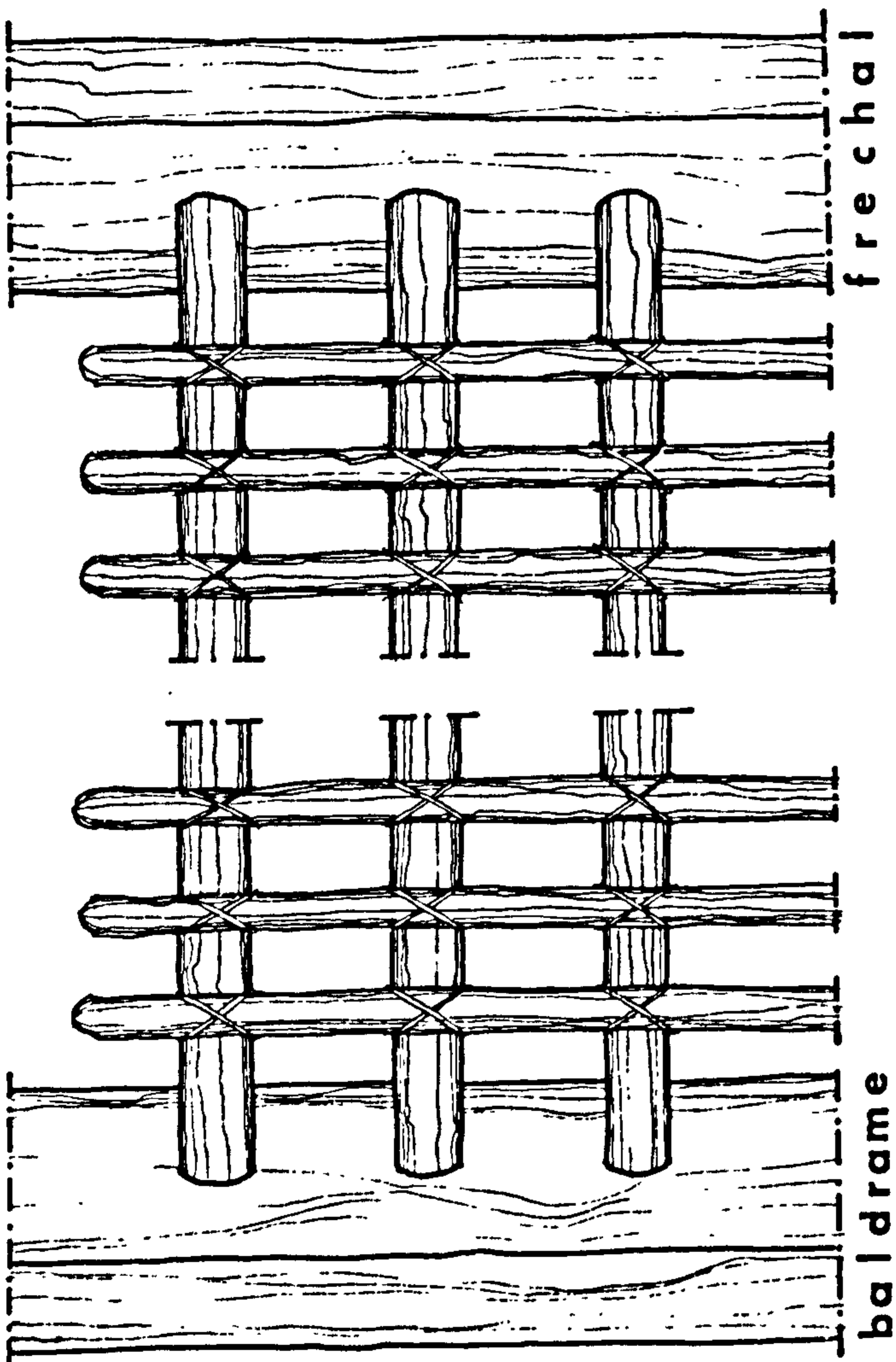
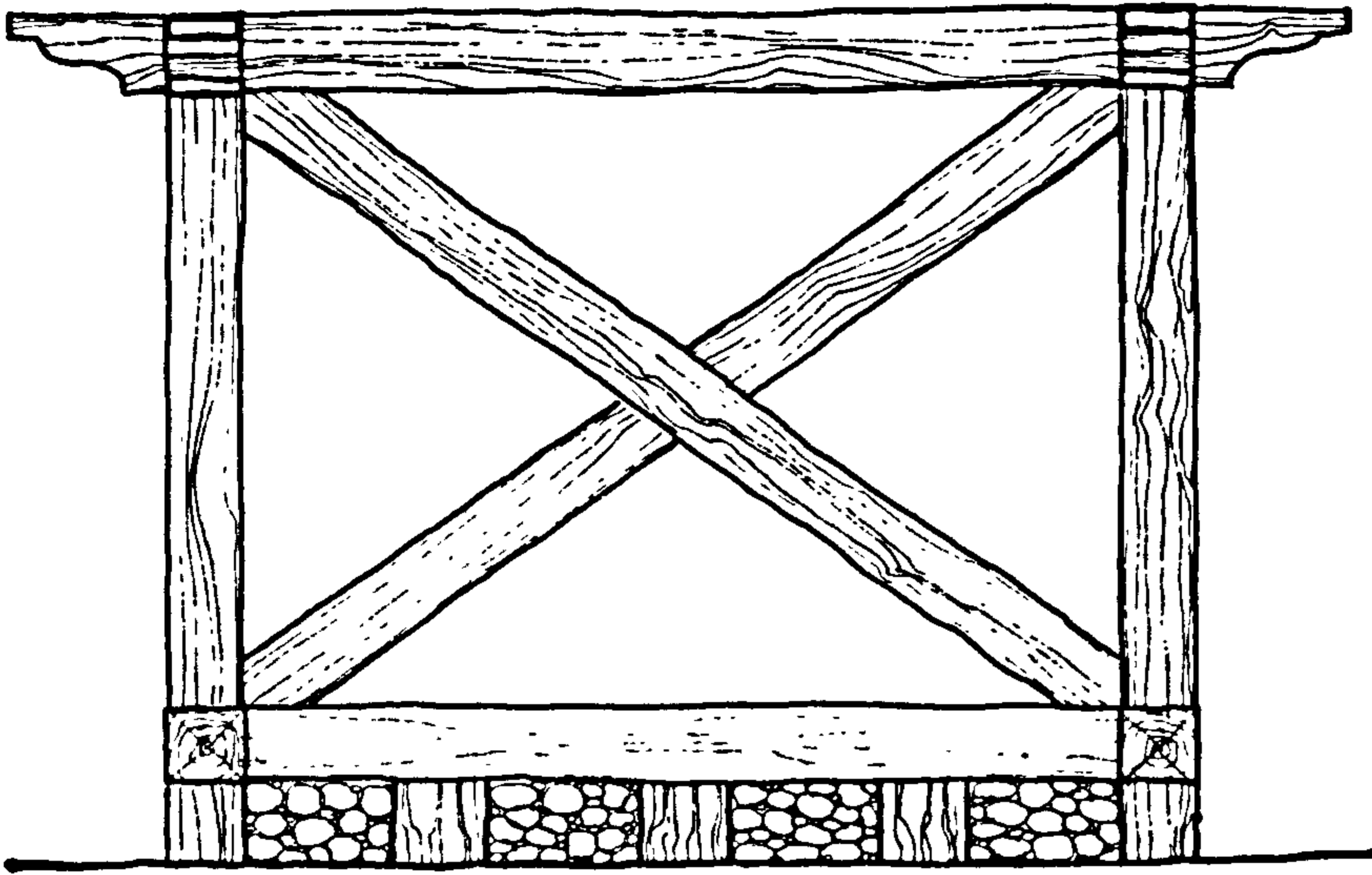


Fig.5.22 - Timber-frame structure. Source: Vasconcelos, 1979

Fig.5.23 - Pau-a-pique. Source: Vasconcelos, 1979.

Building Techniques and Materials

Whereas stone predominated in the rocky mountainous north (of Portugal), houses of 'taipa' (earth) and clay were common in the south.⁴⁸

In Ouro Preto we shall identify the wide use of masonry (notably in official and religious constructions), and also of the so-called 'taipa de sopapo', which literally translates as 'thrown earth' (fig.5.21). The 'taipa de sopapo' is an example of an independent structure, as opposed to a self-supporting one (e.g. masonry). The 'taipa de sopapo' most often appears in combination with a timber frame structure (fig.5.22). It basically consists of a grid of wooden sticks (pau-a-pique), filling the gaps between the structural timber frame (fig.5.23). The mud is thrown from both sides of the wall against such a wooden grid. The 'taipa de sopapo' was very popular in the Region of the Mines, such a popularity is certainly related to the appropriateness of such a technique to the uneven features of the topography and the hardness of the soil. The compressed earth (taipa de pilão), a technique more suited to flat terrains, was, comparatively, seldom employed in these vicinities.

In terms of finishing, the timber framed constructions generally present a protecting layer of painting covering the exposed wood, i.e. pillars, beams and frames of the openings (doors and windows). The walls are treated with a white wash.⁴⁹ This finishing gives the characteristic feature of the facades of Ouro Preto, with its marked

48.Boxer, op.cit., p. 13.

49.Some argue that constructions in Ouro Preto, were once painted in colours other than white. It is difficult to say what proportion of constructions presented these colours, at what period, for how long, and what sort of impact such multicolored walls had on the townscape.

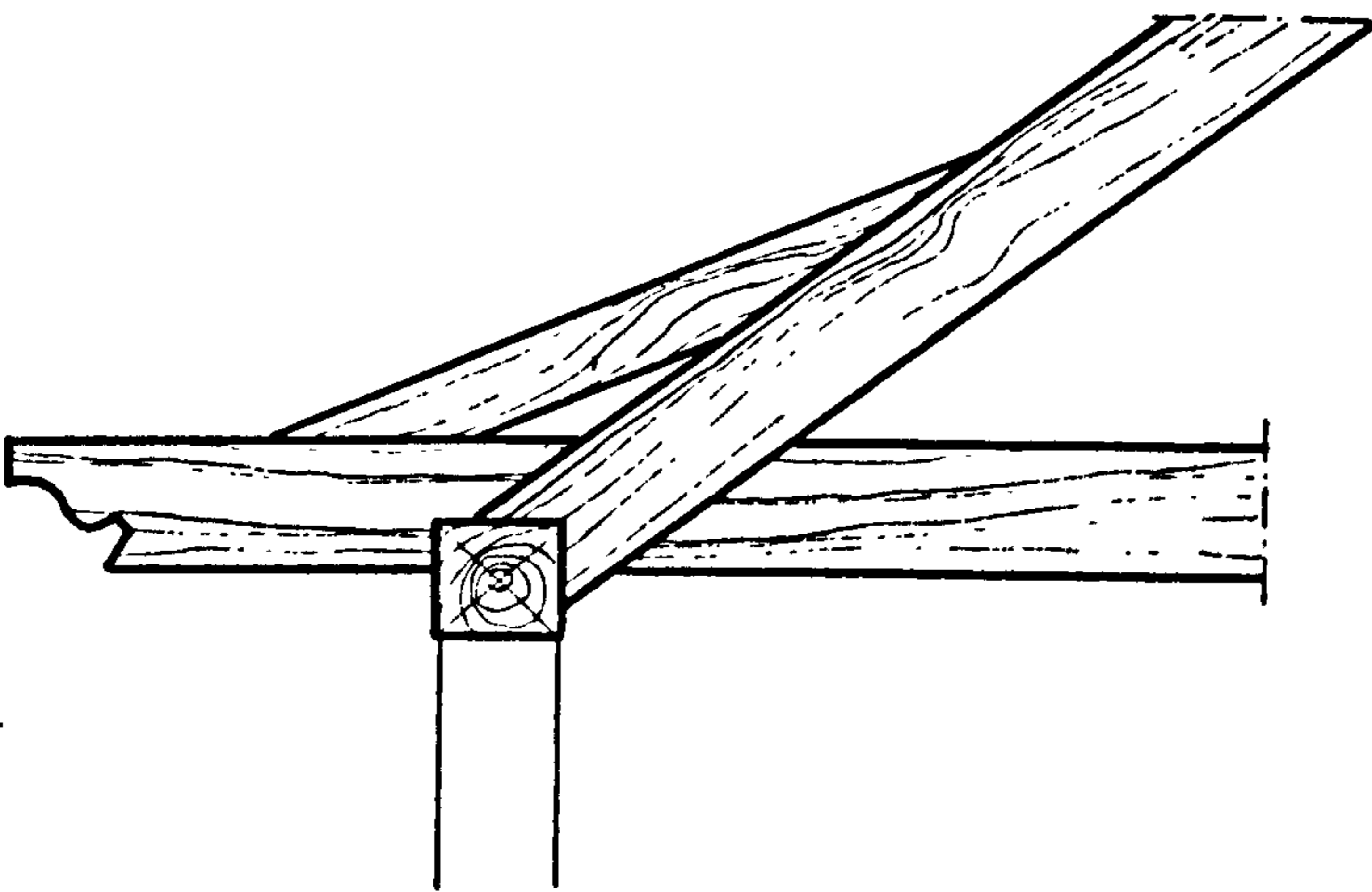
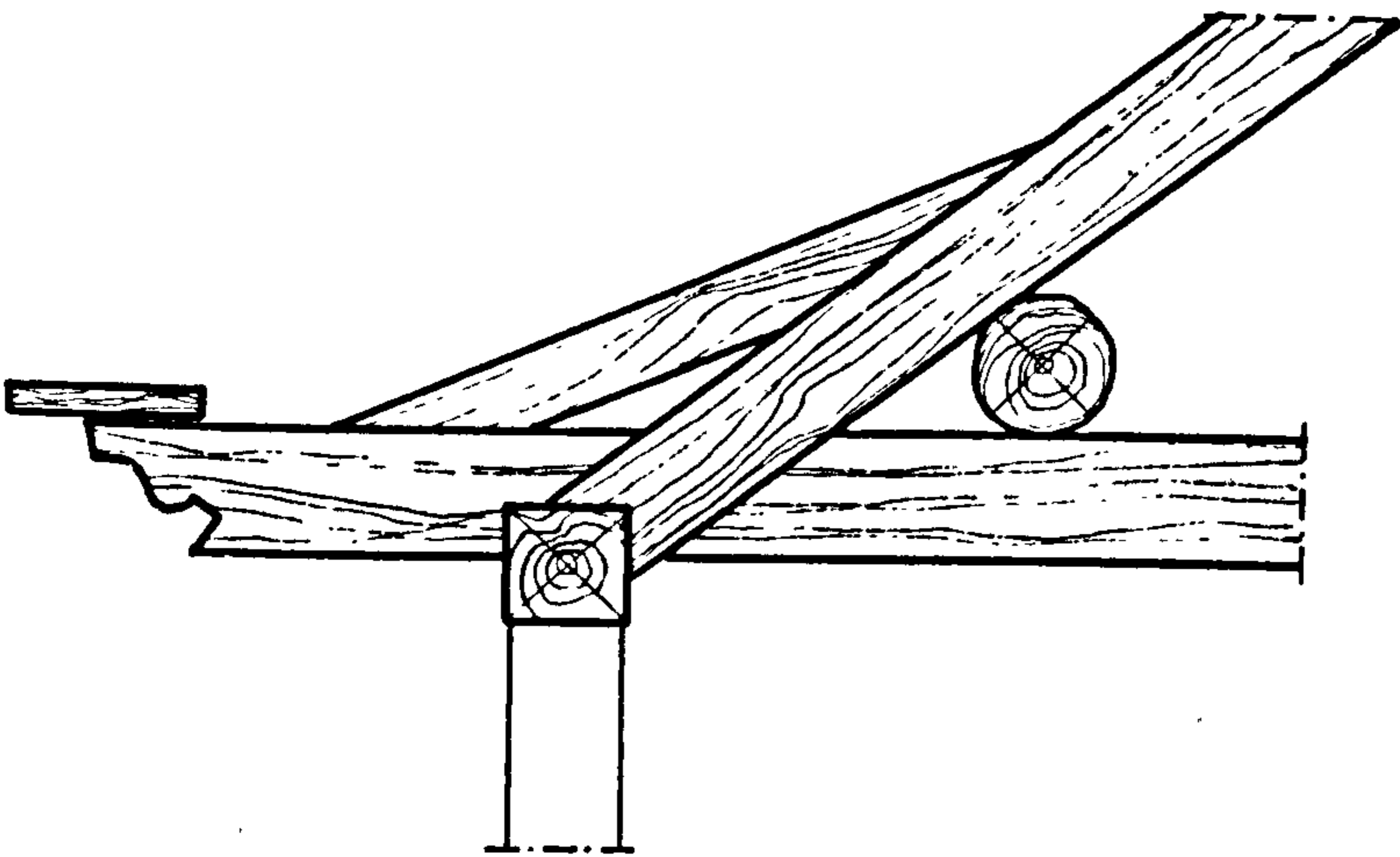


Fig.5.24 - Galbo do Contrafeito. Source: Vasconcelos, 1979.

coloured (blue, yellow, red) elements standing out from the white background.

When talking about self-supporting structures, notably stone masonry, we shall remark that the finishing presented by these buildings tended to follow the same typology of their framed counterparts; e.g. the frames of the openings are salient and generally keep their greyish-yellow stone texture without any painting, while the walls are treated with white washes.

The roofs are made of burnt clay-tiles on a wooden structure. They are generally pitched (exception made for corner buildings). The slopes are marked by a special structural device 'Galbo do contrafeito', which breaks the flat surfaces of the roof into gentle curves (fig.5.24).

I believe, we now have the necessary elements to analyse the urban spaces of Ouro Preto, i.e. we are now able to understand why certain forms came about, what configurations persisted, which ones changed, and why.

URBAN DESCRIPTION

The 'Ouro Preto' that interests us is this historic settlement, that is the overlaying of different patterns of appropriation by different groups and individuals throughout its development. With the contextual background in mind, we shall be able to identify the picturesque in the urban fabric of Ouro Preto, and combined with that the cross-cultural features which characterise the city as a thing of its own kind.

Consonant to the framework adopted so far, the present urban analysis will gravitate around the experience of the environment - that

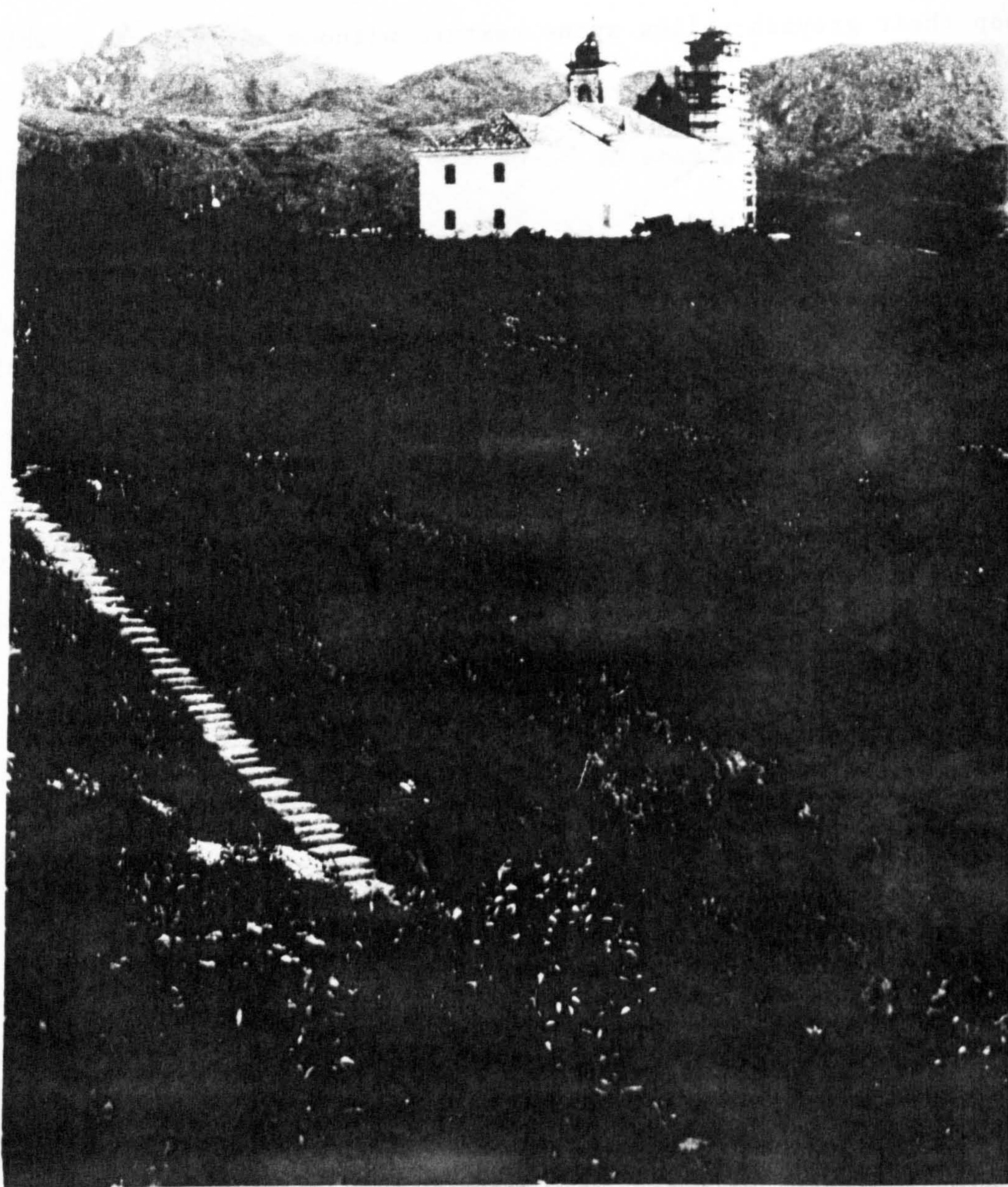


Fig.5.25 - São Francisco de Paula Church. Source: author.

of some authors and also my own. Such experiences will colour the description of the urban spaces, and this will be useful to the analysis of the spaces of Ouro Preto.

The authors I shall quote either visited Ouro Preto at the time of the gold rush or have registered their experience of the settlement as it appears in the twentieth century (whose historical core has maintained the same basic morphology). These people talked about what they saw or what they felt about the settlement and the natural environment. They also talked from their heart; i.e. they were not asked, most of the time, to write about this or that, they were not given a questionnaire to answer, or went through an interview process, rather, they wrote about things that had an impact on them.

We earlier saw some of these accounts (e.g. Vasconcelos), and we shall look at a few more; and then I will present my own experience of the settlement. The introduction of an account of my personal experience comes with the recognition of the importance of the process of selection, which takes place as one starts to carry out an urban analysis. Such a selective process, as we saw earlier on, is already present at the moment when one defines the objects that are to be analysed. By starting to talk about our experience of Ouro Preto (my own and that of other people), I am taking the first step towards the analysing the spaces of Ouro Preto. When talking about particular experiences, I do not aim to say how an individual feels when using the spaces of Ouro Preto, rather, I intend to extrapolate the individual realm, and make general observations about the settlement.



Fig.5.26 - Tiled roofs (fragility). Source: author.

Impressions

Enter this great land, cross a beautiful bridge, cross the second, the third there is a palace facing it.⁵⁰

Thomas Antonio Gonzaga was a poet who lived in Ouro Preto in the eighteenth century. His view of the settlement is of someone who is charmed by its urban spaces, someone who finds pleasure in his strolls through the town. Particularly relevant to Gonzaga, were the bridges, not one bridge, but two, three... most probably exalting the abundance of streams and fountains, that made the settlement of Ouro Preto even more luxurious, with potable, spring water, plentifully available throughout the year. We may also read in Gonzaga's text, the variety and movement of Ouro Preto: three bridges are mentioned, the first two, intermediate stages of a pathway, the third leading to the culmination of such a pathway: the palace.

Paulo Santos, who wrote a book entitled 'Religious Architecture in Ouro Preto' tells us that: 'The architecture of the city is so spontaneous and natural, and blends to such an extent with the landscape that, it may be said, that it (the architecture) is part of the terrain, like the trees of the forest or the grass of the ground.'⁵¹

And Vasconcelos (1977) adds: Ouro Preto's constructions perfectly match the local topography, accentuating its contours, the colours and forms of the roofs mingling with the soil itself.

50. Thomas Antonio Gonzaga, quoted by Vasconcelos, op.cit..

51. Quoted by Vasconcelos, op.cit..

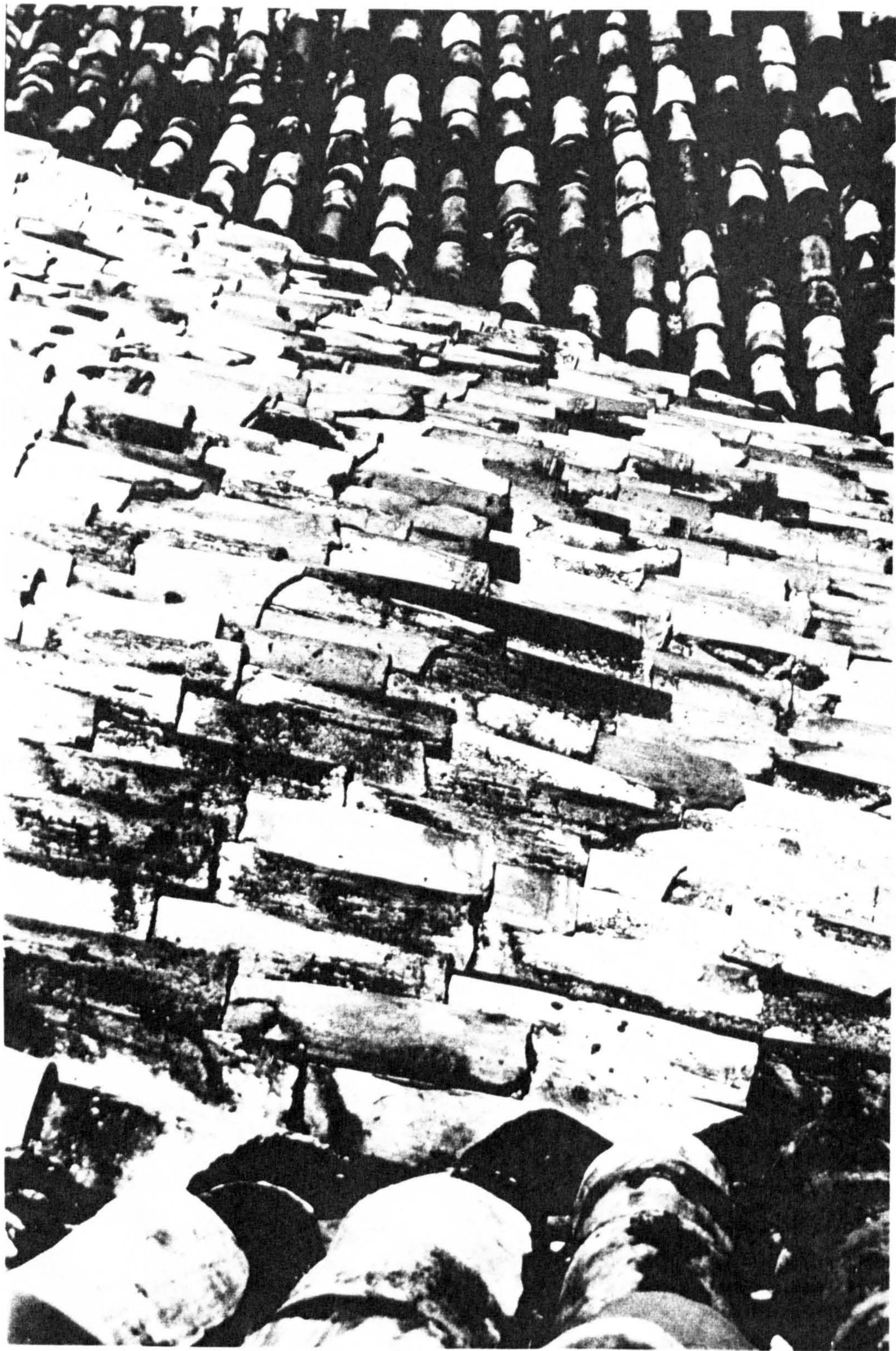


Fig.5.27 - Tiled roofs (hues).Source: author.

Experiencing Ouro Preto

PAULA

She sits like a guard dog on the top of the hill,
her head between the limbs,
The elbows resting on the ground,
And the shoulders pointing straight up to the sky,
As if they were tied to two pieces of string hooked in
the clouds.

Standing in that posture, she defines a horizontal
plane above my head,
Her eyes fix a point in the horizon,
Far away, as far as the infinite,
Somewhere unreachable.

My eyes look in her eyes,
But she doesn't see me,
She feels impenetrable.

By relating with her, I cannot stop feeling a certain
discomfort... pain, maybe,
Neither can I help the fact that she inspires me
transcendence.

The essential identity of the settlement of Ouro Preto is
captured in the image of the church of São Francisco de Paula, sitting
on the top of a hill, looking at the infinite, surrounded by green
patches, superimposed on the rocky mountainous formation in the
background, with the city at its feet (fig.5.25). Such an image gathers
the picturesque dimension of Ouro Preto in its paramount manifestation.

As the traveller gets nearer she/he cannot avoid being
overwhelmed by the image of its eleven churches dominating the scenery,
sticking out of the fabric. Like no other monuments, the churches rule
in the townscape, not even the Governor's Palace, with its bulky mass,
nor the Town Hall, state their 'monumentality' in the same pronounced
way that the churches do.

This first sight gives us some clues about the peculiar
circumstances in which Ouro Preto developed, epitomising the historical



Fig.5.28 - White washes ageing. Source: author.

account presented earlier on.

Moving closer, one distinguishes the mingling of white, red and green patches of texture punctuated with bright colours (see Appendix 4). Penetrating the settlement, one notices how the various layers of white houses, with their coloured framed windows and doors, and red roofs juxtaposed to the masses of the vegetation; and how one finds oneself below the churches, that define a horizontal plane which cuts across above one's head (fig.5.11).

Through the wanderings in the city, one goes up and down, and the movement upwards is always slower and more painful, at stages one seems to level up with some of the churches, but there will always be one which is still above one's head, and if one tries to reach that one, one cannot stop being crushed by its monumental mass, by its slim towers, and still one sees other churches surrounding her/him, on the top of neighbouring hills, unreachable, unless one goes down to the bottom of the valley and up again. Every visit paid to a church, in Ouro Preto, has the flavour of a pilgrimage.

The whole environment of Ouro Preto is very dynamic, to the point of being restless. The fabric surrounding the monuments moves with the topography, it captures the essence of such a topography, and translates it in its urban forms: the fabric at times accentuates the contours, alternatively it flows with them, and merges with the setting to form a coherent whole.

In such an extremely irregular site, the surfaces of the walls and roofs interact with that of the pavement to create a variety of layouts, and as a result, a number of experiences of a unique kind: as one goes down hill, the street seems to project over the tiled roofs of the houses, as a result one is set in open space, only to be collected

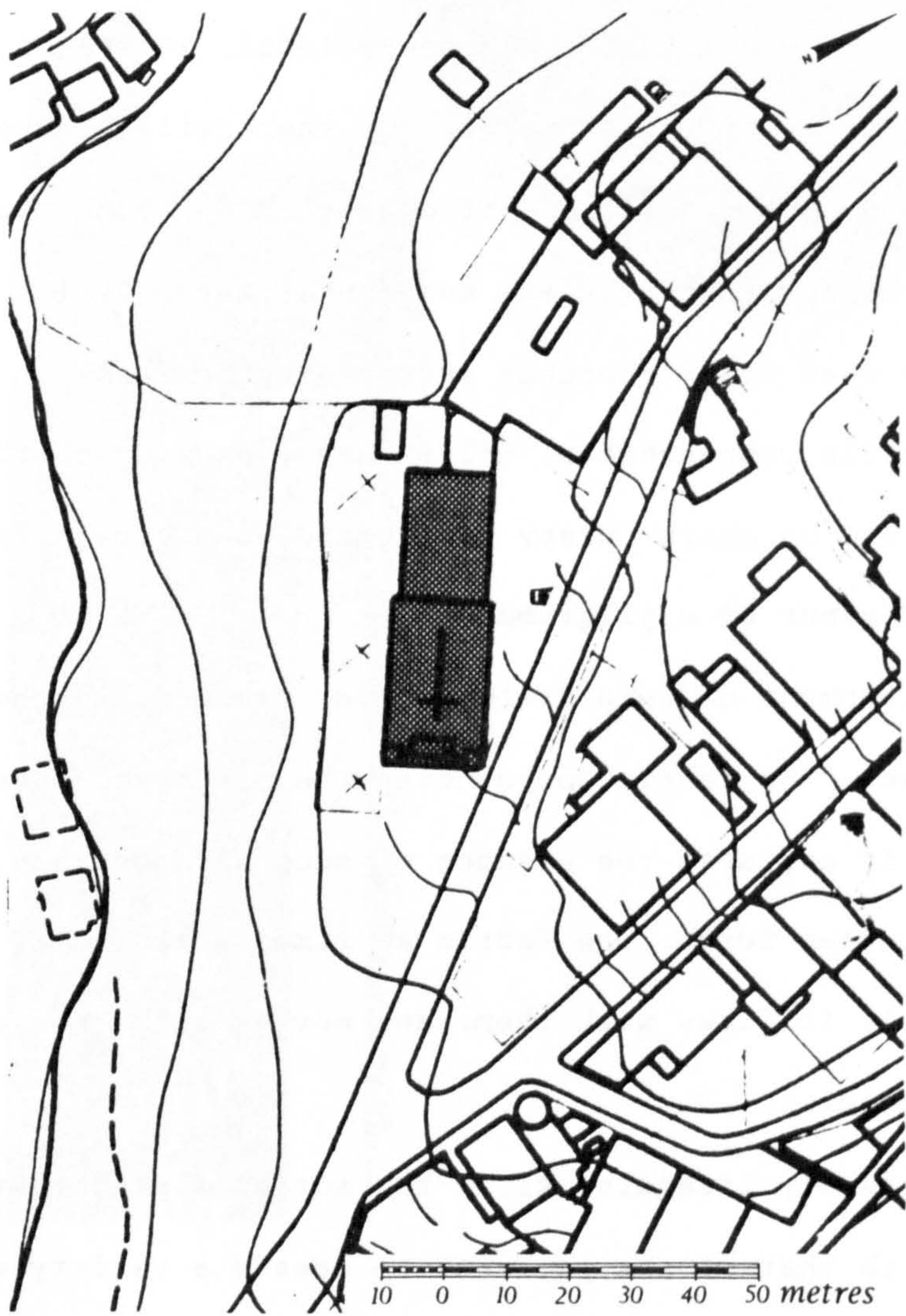


Fig.5.29 - Holy Mother of Mercy Church

by the steep slope of the rocky mountains in the background (fig.5.26). The roofs reveal themselves to the passer-by in strange and unusual ways, at times, one looks down upon them, and they connect with each other to form an irregular surface under ones feet, such a surface, nevertheless, does not afford walking on, as the fragility of the tiles is clearly apparent.

Verticality is a strong feature of the elements of the facades. sticking out from white backgrounds the coloured frames of the windows and doors, succeed each other as one walks along the streets (see sketches in Appendix 4).

The textures are pronounced. The tiled roof, stained through the action of time, provides a rich contribution of redy, brown, and creamy hues (fig.5.27). The white washes corroded by the rain, present a variation of greys (tending to black) punctuating the bright facade (fig.5.28). The stone pavement, completes the picture, with its grey lines and solid surface.

With these impressions in mind, I propose to approach the urban analysis proper.

URBAN ANALYSIS

This urban analysis has a limited scope. It does not propose to provide an exhaustive examination of Ouro Preto, rather, it aims to draw from what has been said earlier on to help us to understand Ouro Preto in its picturesque nature, and to identify how the locations presented earlier on (squares, streets, and connections) are articulated in this settlement.

The first question I would like to ask is: why Ouro Preto? Why not Diamantina, or Tiradentes, or perhaps Mariana? None of the latter

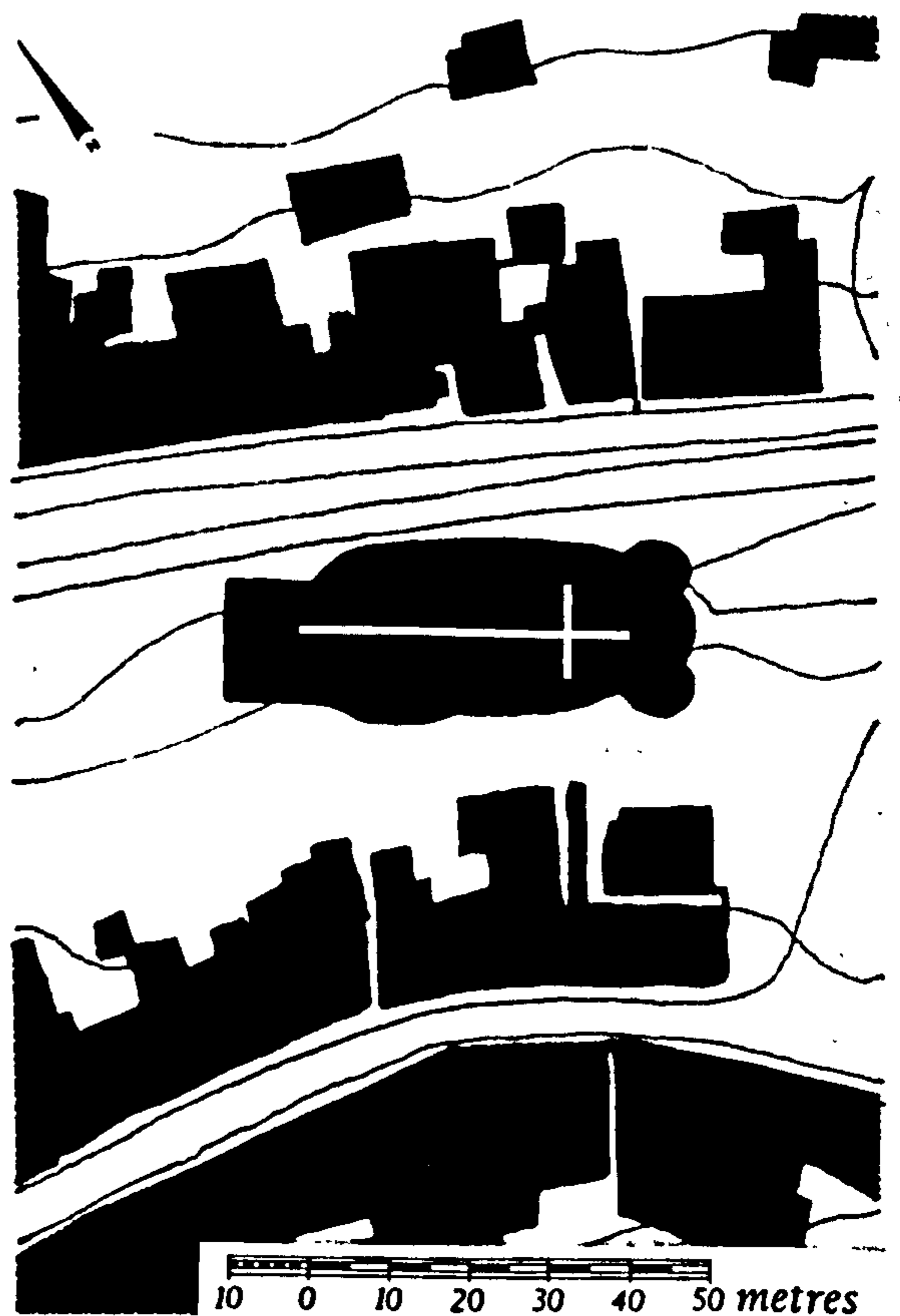
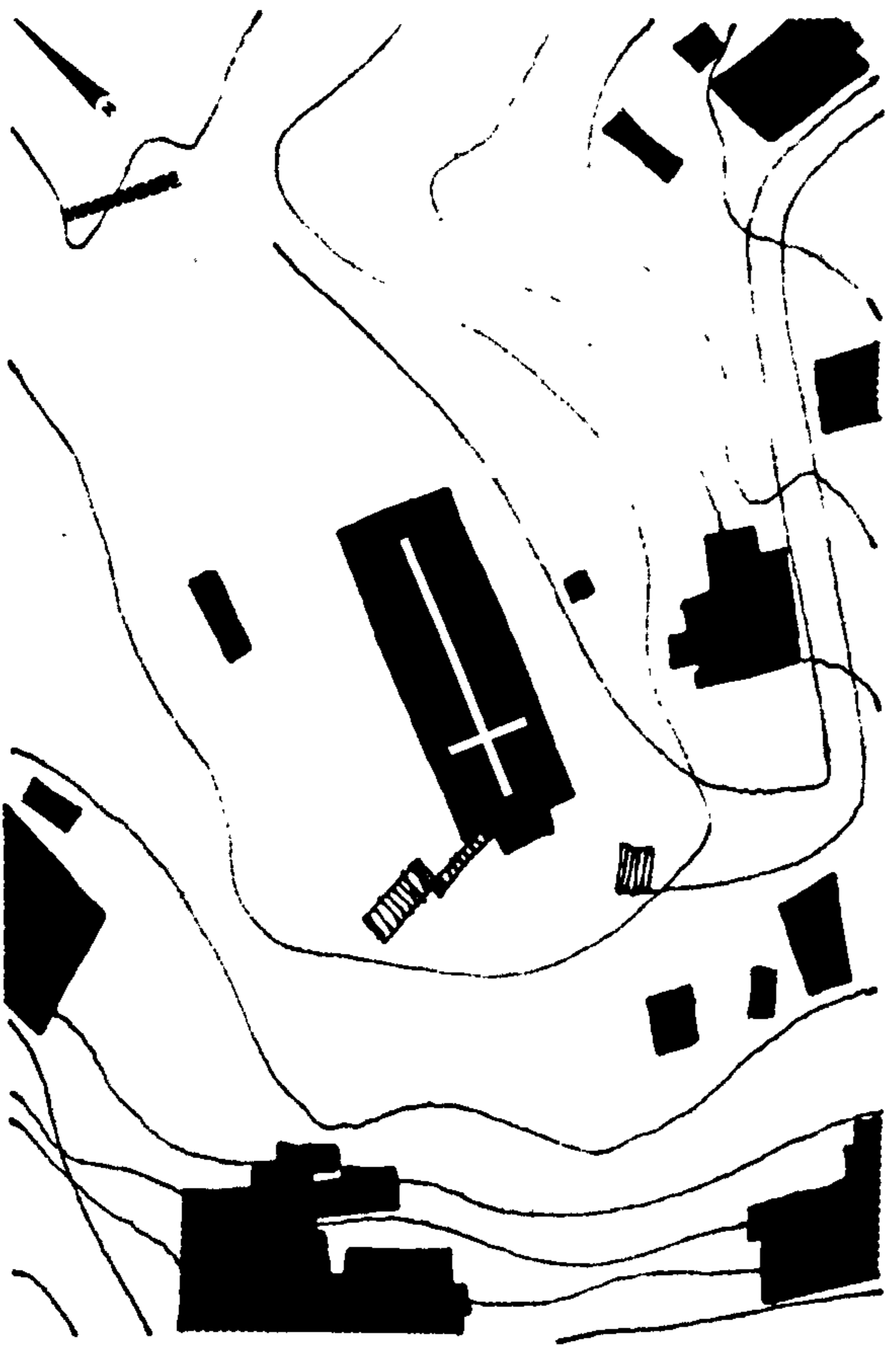
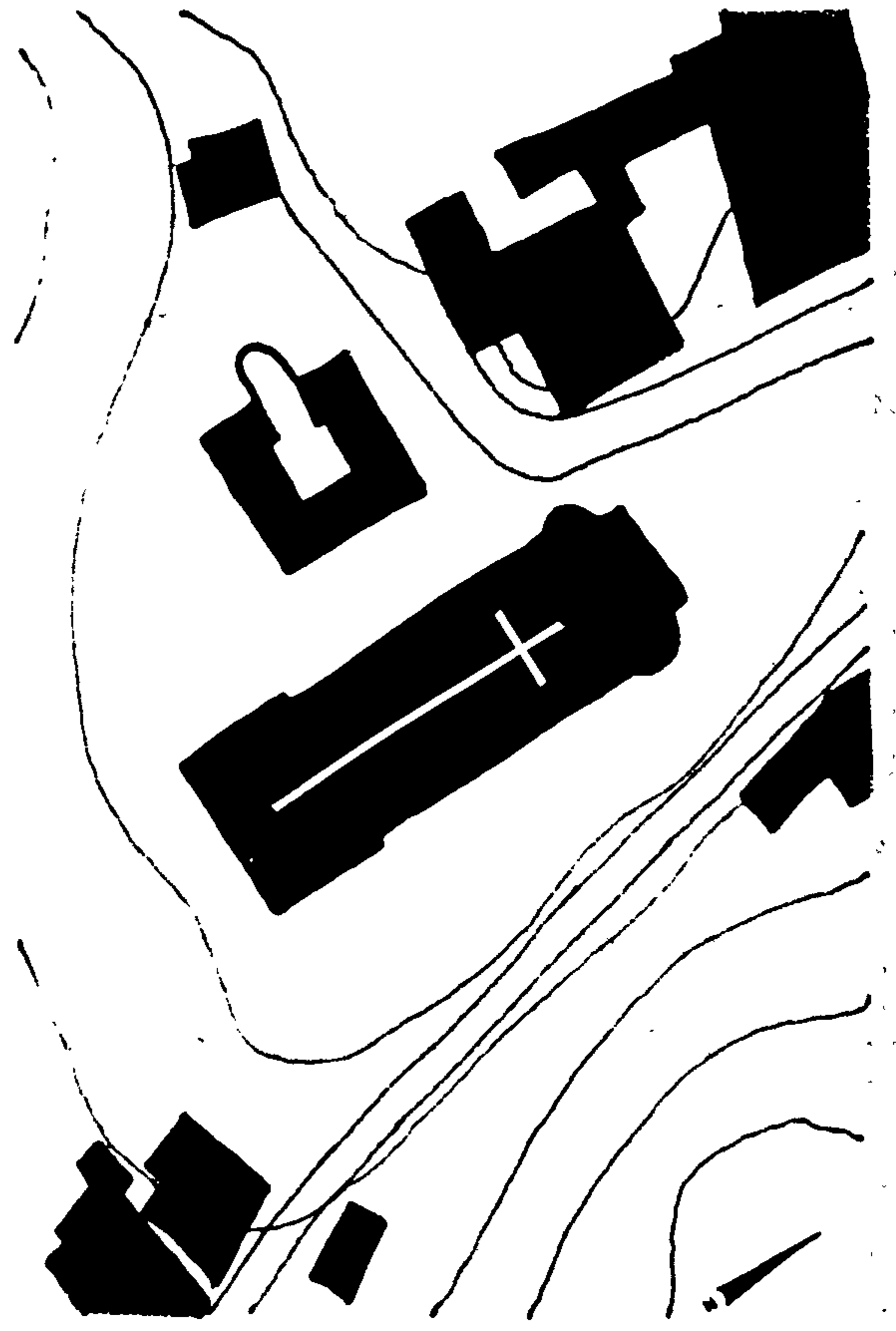
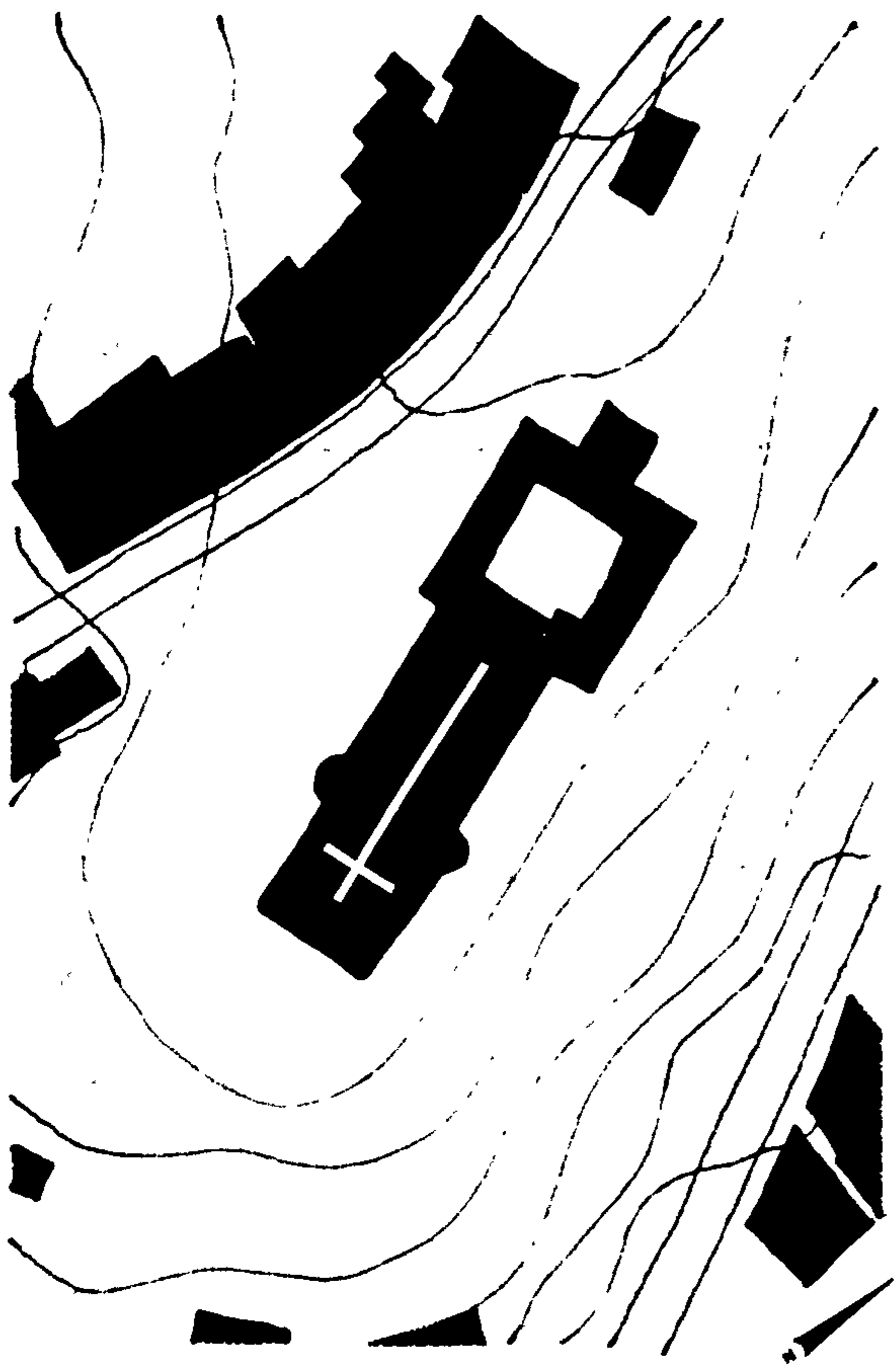


Fig.5.30 - Churches in relation to the urban fabric I

settlements seems to have the mystique, unique atmosphere that Ouro Preto does. None of them has the power of creating the impact provoked by Ouro Preto. And if we look at their history, we shall realise that none of these settlements present a nearly as peculiar and extreme development.

It is in this overlapping of a dramatic topography, of an extremely fast occupation, of a very unsettled atmosphere, of an exorbitant wealth, and of the erratic course of development, that we find the answers for the uniqueness, and specialness of Ouro Preto.

Ouro Preto was lucky enough to keep almost intact the fingerprint of such a peculiar combination of events; which is now delivered to us in the form of its urban configuration, encrusted in the rocky slopes of the Serra do Espinhaço.

The urban expression of the history of Ouro Preto's development reaches a peak (which is both figurative and concrete) in the form of the churches raised on the top of the hills, overlooking the settlement at the bottom of the valley.

Connected to that dominant expression, we identify other aspects that further contribute to the picturesque character of Ouro Preto; such as: the dynamism of the fabric interweaving with the landscape, or the richness of its textures.

The impact of such aspects on people was explored in the previous section, we may now investigate how these aspects have developed in time, and their relation to the locations we saw in the theoretical chapter in the beginning of this dissertation.

In order to analyse the urban form of Ouro Preto, five maps were used, dating from 1783-1785, 1850, 1888, 1949, and 1973, shown in figures 5.1-5.5.

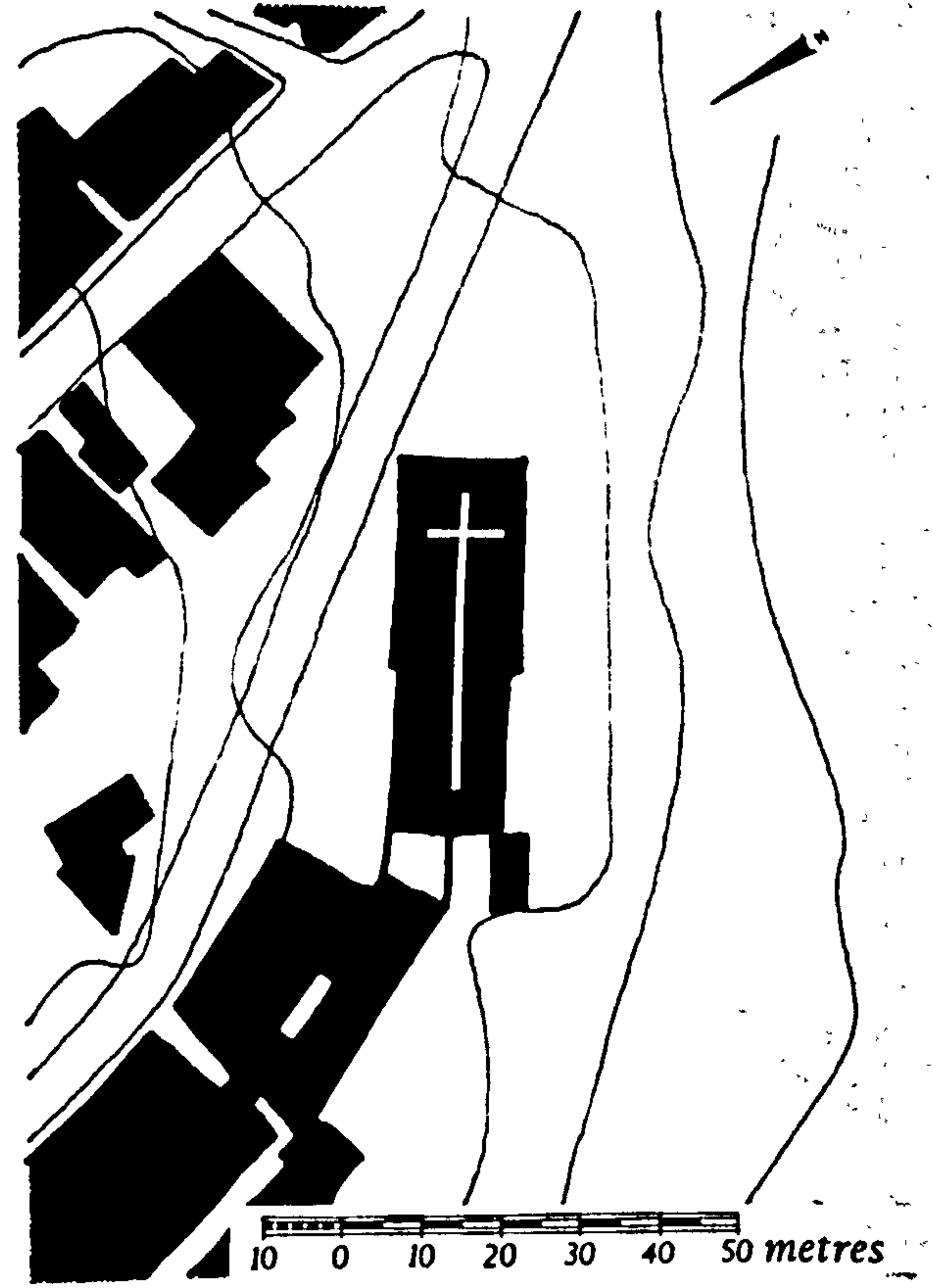
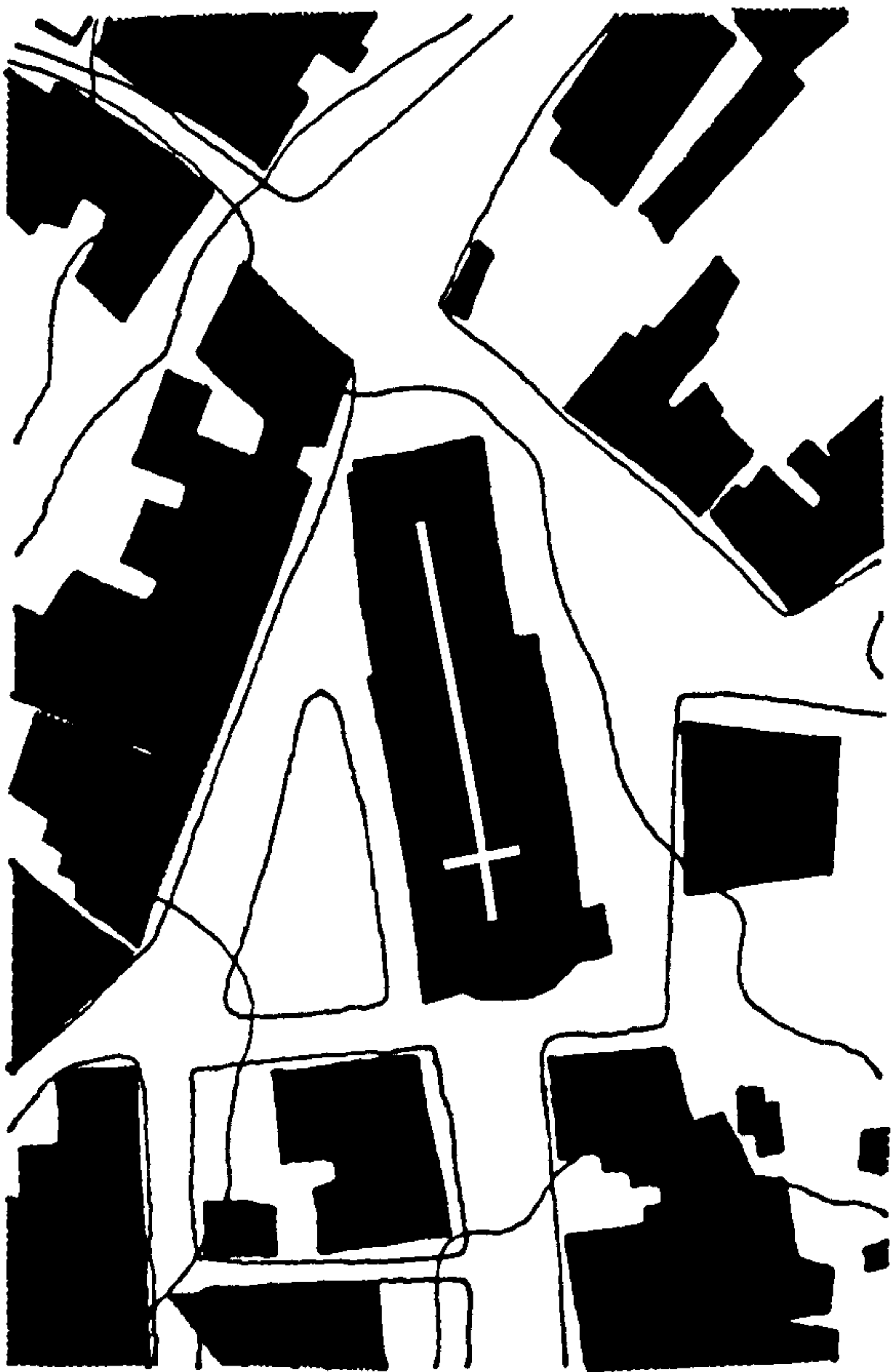


Fig.5.31 - Churches in relation to the urban fabric II

Comparing the different maps, the first thing which strike us is the relatively small number of alterations that occurred throughout the evolution of the settlement. Such a persistence of urban configurations is here understood as influenced, to a great extent, by the constraints imposed by the topography. If we look at the area next to church of Our Lady of 'Merces' (fig.5.29), for instance, we may wonder why such a central and privileged space was not occupied. As a matter of fact, the slope of the flank is steep enough to frustrate any attempt of doing so.

In fact, Ouro Preto consolidated its built masses in these areas that were suitable for the erection of buildings. The patches we see in and around the settlement, have been ruled out, as they are inadequate for construction. They are either too steep or the soil is too soft. The occurrences we see in the past few decades, of people recently arrived in Ouro Preto (to work in the aluminium trade), who (in their attempts to settle in certain parts of the Serra do Espinhaço) have many times ended with their houses falling into the bottom of the valley in the rainy season, is symptomatic of the strong limitations imposed by the topography.

If we have a look at the 1785 and 1850 maps (although rather schematic representations), we are able to identify, already, the linear configuration characteristic of Ouro Preto. This information tends to corroborate the thesis presented earlier on, that the settlement had its layout defined in the early stages of its formation. In that perspective we have strong reasons to believe that the present Ouro Preto is structurally the settlement of the early years, which was subjected to almost three centuries consolidation.

We may now elaborate on the idea that the topography played a

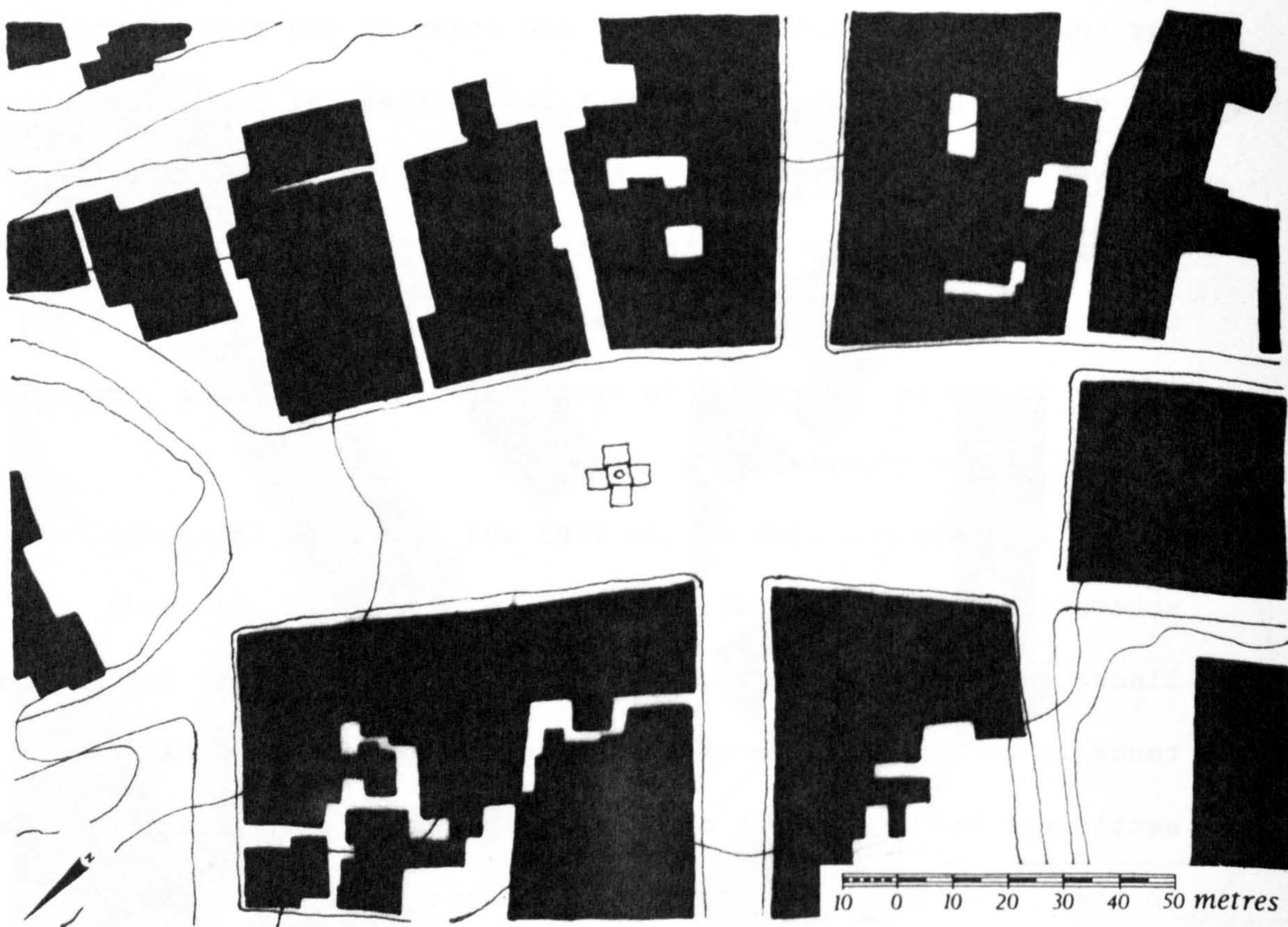
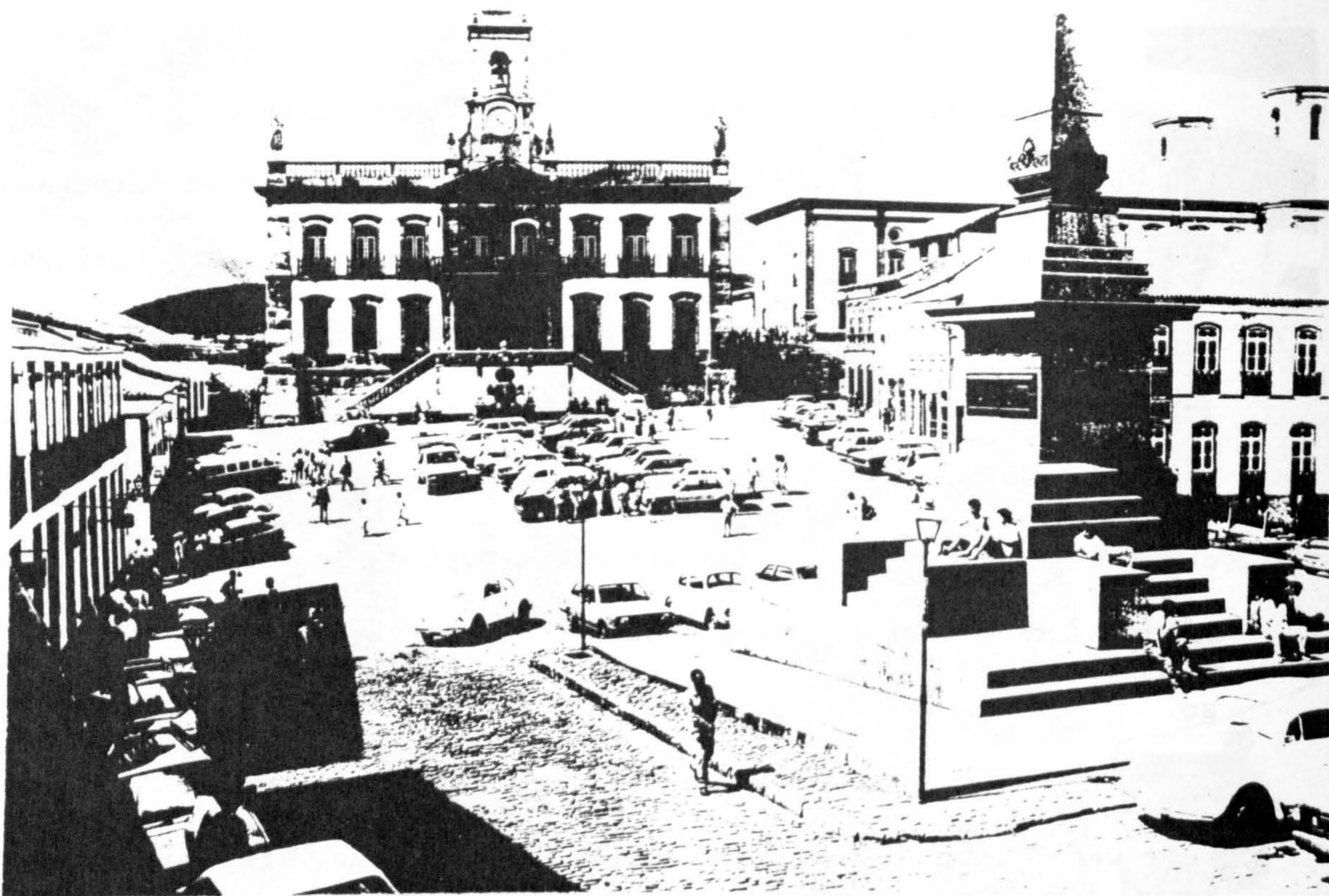


Fig.5.32 - Tiradentes Square

crucial role not only in the formation of Ouro Preto, but also in its subsequent development, to look at the particular locations that interest us.

The first location to be analysed here appears in connection with the churches, namely the squares.

Squares

We shall observe that the initial structure of the society in distinctive irmandades lead to the consolidation of gathering places in the form of chapels and churches. The fact that the camps with their chapels were at the origin of the settlement, and that these chapels, which would at a certain stage become churches, were at the centre of the social life, plus the fact that they would be segregated from the daily life of the settlers, contributes to the small number of squares. The churches as focal points in the life of the settlement, as expressions of such a pronounced mundane holy dichotomy are removed from the fabric, they overlook it, but do not integrate with it to form open gathering places (squares) around them⁵². Buildings adjoining churches are rare exceptions, they generally present themselves fully detached from the neighbouring buildings in an island like layout (figs.5.30 & 5.31).

The major, and perhaps unique break of such a pattern was the configuration of the central square - 'Praça Tiradentes' (fig.5.32). A closer look at Tiradentes Square reveals that there are no religious

52. There may be said to be three exceptions to the pattern of the relationship between churches and fabric described above, where the church presents, to some extent, an integration with the surrounding fabric; these exceptions are the churches of: Rosário, Pilar, and São Francisco de Assis.



Fig.5.33 - 3 'squares': Alves Brito, João Castilho, & Sílvio Brito

monuments enclosing it. The buildings that were erected in that square were either administrative (e.g. the Governor's Palace, or the Town Hall), or of commercial/residential nature.

If we move out of Tiradentes Square, we shall identify a few other open public spaces that act as points of convergence; some of them received the denomination of Square, like Reinaldo Alves Brito Square, João Castilho Square, or Silvio Brandão Square (fig.5.33). It is, however, questionable as to what extent these locations act primarily as 'gathering' spaces: in the first two cases, the spaces have a rather elongate shape, and according to such a shape, they tend to be used mainly for circulation. (In the latter example (Silvio Brandão Square), the use of such a space for the circulation of cars, actually prevents people from using it as a space for resting and gathering).

The necessary information is not available to comment upon the uses of these spaces in the past, notably at the time of their consolidation, or when they received the designation of square. What can be said on the other hand, is that these spaces had their configuration virtually unchanged throughout the years as attested by the maps consulted.

Another important observation about these 'squares' relates to them presenting a triangular layout, which may be associated with the evolution of a 'Y' connection that appeared in the original network of pathways.

Other examples of open spaces are the 'Largo do Coimbra', which faces St. Francisco de Assis Church, where there is a small open market for selling precious stones; and which has seen its area reduced by the fencing off of half of its space. The 'Largo do Coimbra' is used as a



Fig.5.34 - New Street

gathering and resting place by the passers-by, however, due to the above mentioned top-down intervention (effected in the past decades), it is now reduced to a narrow strip, a configuration which jeopardises its actual use.

At the opposite extreme of the settlement, we find the 'Largo do Rosário', which is an open space facing Rosário Church. Such a space, however, occurs on a steep slope, making it difficult for actually stopping and gathering. Above this space we find a level platform, defining the space of Rosário Church; such a space, however, states its segregation from the surrounding fabric, not only because it detaches itself from the slope of the hill, but also because of the stone wall marking its limits.

When we walk around Ouro Preto, we find a series of other pockets; however, they are either too small or tend to be situated on the slope of a hill; that causes an impediment for them being characterised as gathering places.

In view of all these observations, Tiradentes may be said to be the only genuine 'square' in Ouro Preto. Apart from it, what we find in terms of gathering spaces is a legacy of the old pattern of 'irmandades' with their churches on the top of the hills. Such a pattern, may be said to have become anachronistic for the many decades that lie between the dissolution of the 'irmandades' (as key elements in the organisation of the society), to the consolidation of the settlement as a tourist asset, and later as a 'historic site' protected by UNESCO. The reason for the persistence of the original relationship between the churches and the fabric, is here attributed to the constraints imposed by the topography, and also to the constant decadence of the economy (primarily related to the mining activity) of

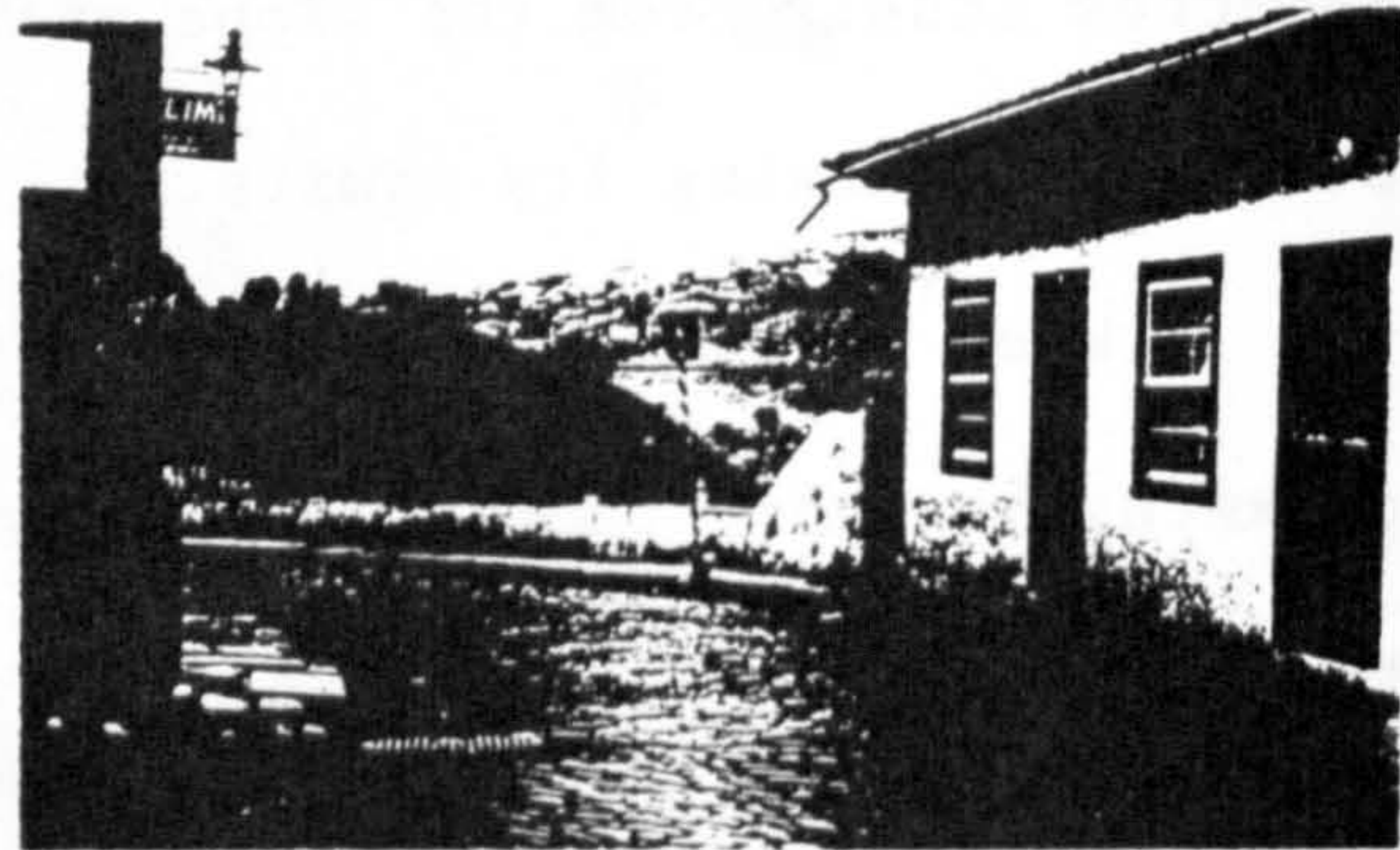
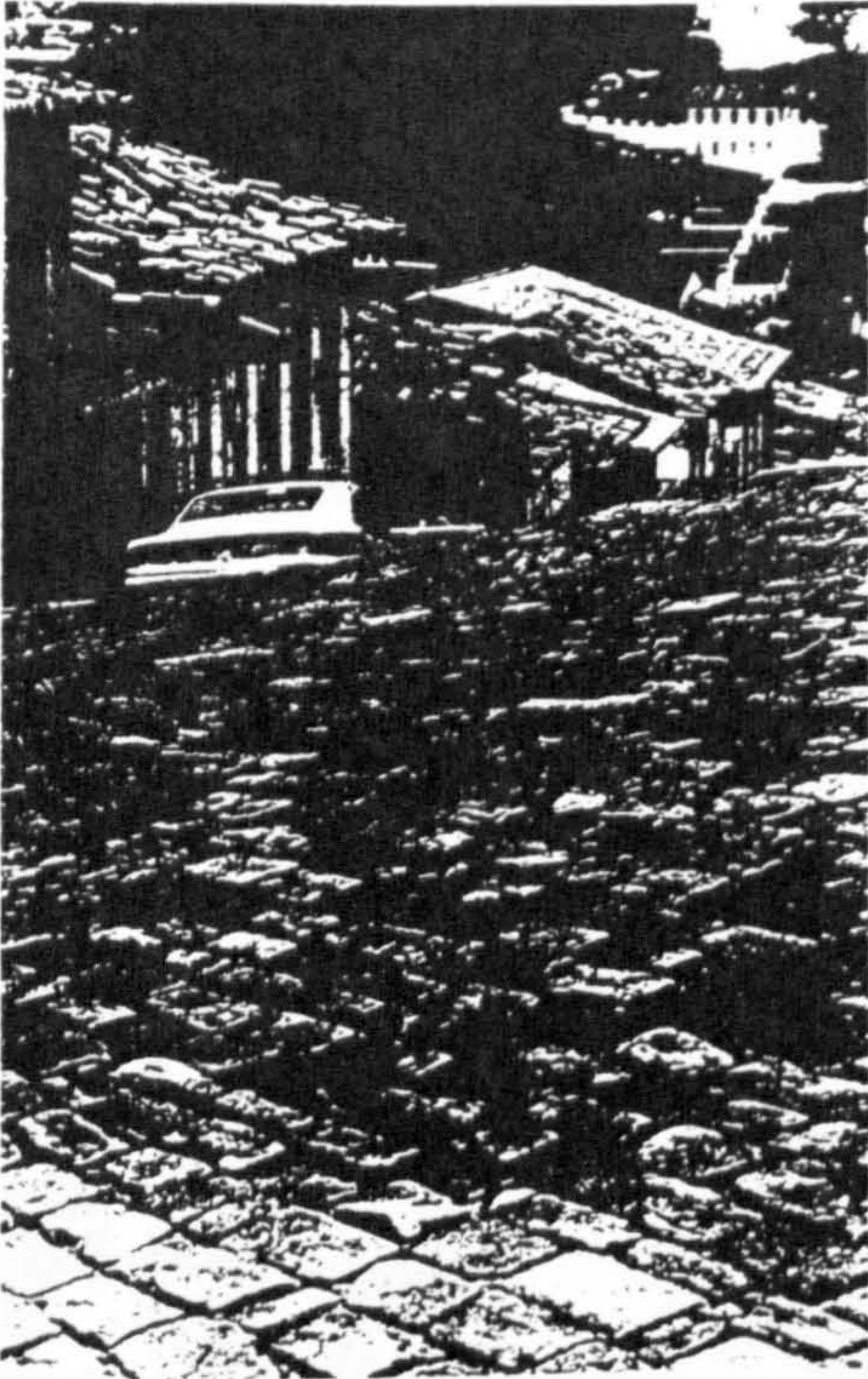


Fig.5.35 - Variation of surface layout. Source: author.

Fig.5.36 - Roof below level of street. Source: author.

Fig.5.37 - Facade colapsing. Source: author.

Fig.5.38 - Bridge. Source: author.

the settlement and its surroundings.

Streets

We may start talking about the streets by saying something about the pattern of transformation they were subjected to throughout the development of the settlement. The 1785 and 1850 maps (figs.5.1 and 5.2), reveal the appearance of a new street: Rua Nova. 'New street' is the crystallisation of the dislocation of the axis of gravity of the settlement. A closer analysis of the topography allows us to understand why this new street gained increasing importance: 'New street' gently follows the horizontal contour, making the transit more fluid, whilst the former axis goes down to the bottom of the valley (fig.5.34)..

The 1888 map, although presenting limitations to the analysis of the transformation of the pattern of streets⁵³, if compared to the 1973 map further confirms the persistence of the settlement: based on the information provided by these two maps (figs.5.3 and 5.5), we can identify only small alterations, such as the closing of small alleys (a, b, and c in fig.5.3), probably due to the increase in density of the settlement.

In general terms, the layout of the fabric, although being closely related to the topography, is not a mechanical response to it, in the sense of always being longitudinal to the slope: what we see is that some streets tend to challenge the steep slopes of the Serra do Espinhaço.

Despite the lack of accuracy of the early maps, we are able to

53. Current historic research by the SPHAN (Secretaria do Patrimônio Histórico e Artístico Nacional) is looking at the dates of erection of buildings of the urban fabric, aiming to provide an accurate assessment of the development of the settlement.

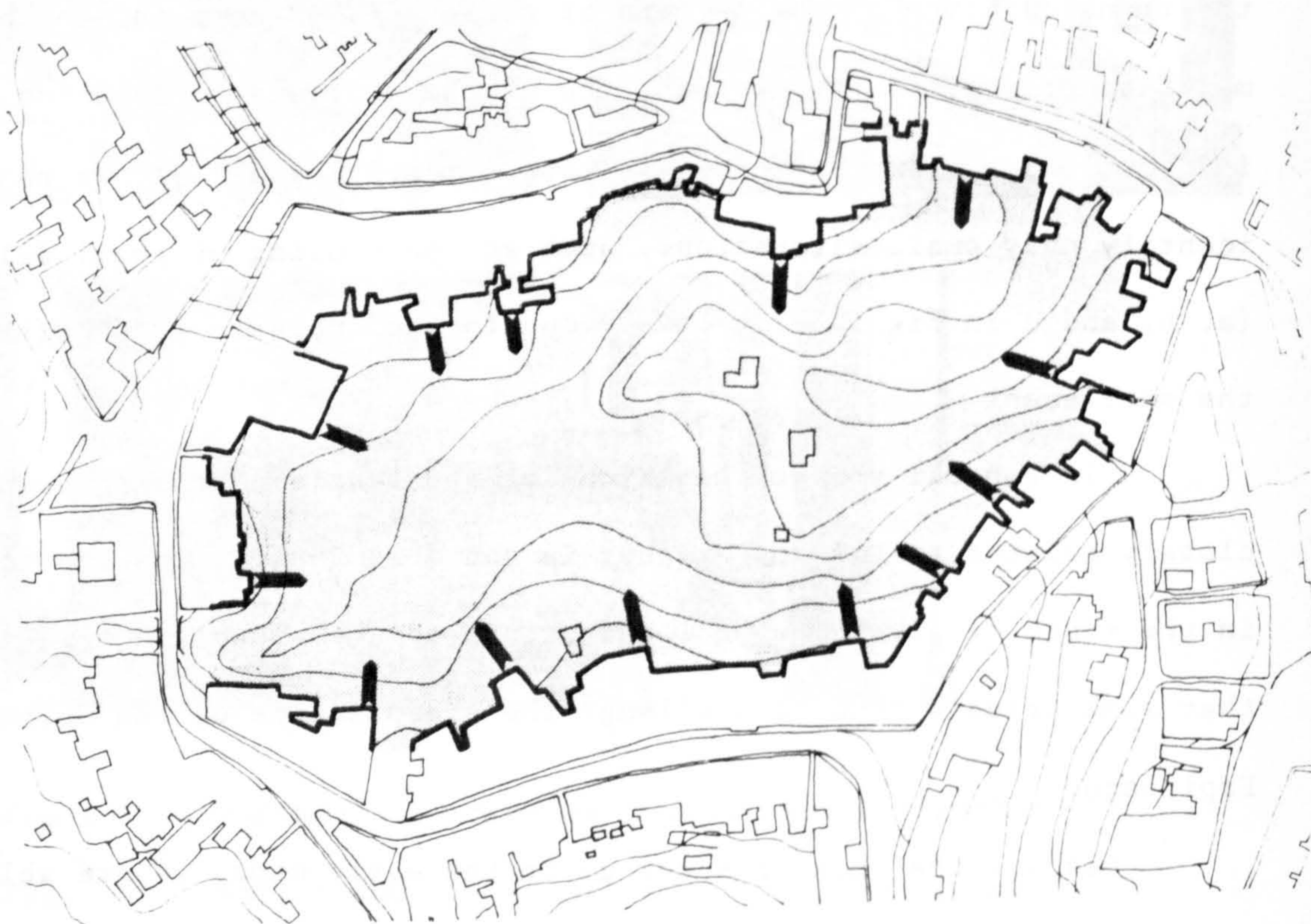


Fig.5.39 - Linear movement and surface layout

identify the organic pattern of the streets, already present right at the formation of the settlement. In the 1973 map, such a pattern is clearly apparent. In the same lines of organic patterns elsewhere, the layout of the streets in Ouro Preto are marked by a diversity of the angles articulating the various building units. The variation of the distances between the two surfaces that enclose the street is also clearly apparent (fig.5.35). The roofs of the houses present different heights stating their individuality (fig.5.35). Another important contributor for the definition of the individuality of the buildings is the difference of rhythms imposed by the openings in the façade: although these façades tend to blend with each other through the white wash treatment that most of them present, the openings in the façade vary in frequency, size, shape, and colour from one unit to another (fig.5.35).

By all these characteristics, the streets of Ouro Preto may be said to be essentially those of a traditional vernacular settlement - the streets of Ouro Preto clearly appear as defined paths from here to there.

On the top of this traditional pattern, however, the streets of Ouro Preto reveal their own particular and unique way of expressing themselves. Flowing with the undulating topography, streets will disclose unexpected arrangements, such as the presence of roofs below the level of the street (fig.5.36), or the collapsing of one of the lateral surfaces of the street, a function of the steepness of the

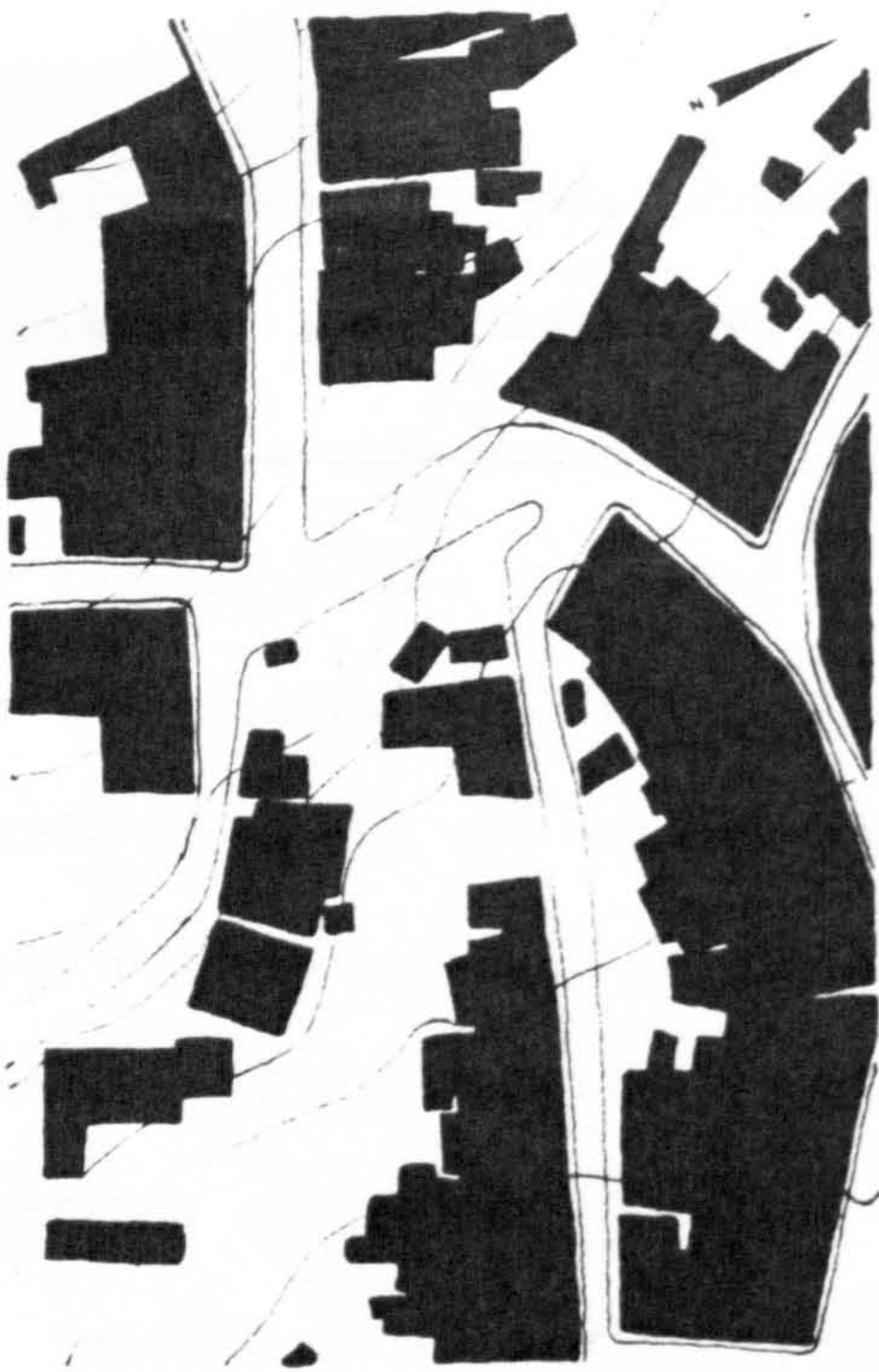


Fig.5.40 - Rua Aleijadinho

Fig.5.41 - Largo do Rosario (view). Source: author.

Fig.5.42 - Largo do Rosario (plan)

Fig.5.43 - Conection Largo do Rosario/ Getulio Vargas

terrain, providing a panoramic view to the valley (fig.5.37)⁵⁴, or the narrowing of the roadway gathering itself, for a moment, in the form of a bridge, to project the passer-by over the stream (fig.5.38).

The overall layout of the settlement, as Vasconcelos points out, assumes an elongated shape, characterised by a main route, stretching in the east/west direction. The appearance of Rua Nova caused such a main axis, only to be dislocated further up the Serra do Espinhaço.

Around the main axis, where the main circulation of people is, the major concentration of buildings is found (and this is also the case in some parts of the former axis), characterising the smoothness of the surfaces (of the building's facades), which is in direct relation to the linear pattern of movement that shapes them. To illustrate that I may refer to the area defined by the old main axis (Rua do Pilar) and the new one (Rua Nova - nowadays Rua São José). If we look at the spaces of the streets we shall identify a continuous smooth layout of the adjacent surfaces defining a space where linear movement takes place, i.e. the street. The relation of the street with such a linear pattern of movement is made even more obvious if we contrast it with the space towards which the same houses (that configure these streets) open their backs to (fig.5.39).

If we now compare the streets that compose the main axis with those streets secondary to it, we shall find that the latter present a

54. Although only one surface is present, the space of the street, in its essential being (that is a location which affords going from here to there) is clearly defined. An aspect which certainly contributes to the retention of the integrity of the street in this situation, is the fact that the void, on the right hand side, is in itself a limit, inasmuch as people would fall if they moved in that direction. In other words, the street does not afford a sideways movement, either to the left (where the houses are), or to the right (where the topography cleaves to form an abyss).



Fig.5.44 - Getulio Vargas

Fig.5.45 - Silvio Brandão Sq.(view) Source: author.

Fig.5.46 - Silvio Brandão Sq.(plan)

Fig.5.47 - Alves Brito Square (plan)

less continuous layout than the former (fig.5.40). Secondary streets, with a lower flux of people, will see a rarefication of the fabric, leading to the appearance of concavities in the smooth layout.

Articulations

Looking at the connections between streets of Ouro Preto, we shall observe that they establish, as much as other aspects, such as density of dwellings, or width of streets, the hierarchy between the various routes through the fabric. If we follow the main axis on the map, the above idea becomes even more evident.

Starting from Bernardo Guimarães Street, as we get to the 'Largo' do Rosário, we are presented with a frontal obstruction by the row of houses facing Rosário Church (fig.5.41), suggesting a movement to the left (A) (fig.5.42). The connection between Largo do Rosário and Getulio Vargas Street presents a funnel like layout, which directs the observer towards it (B) (fig.5.43). The next connection is marked by a corner building which keeps the movement in Getulio Vargas Street, by it suggesting a continuity with the early layout (C) (fig.5.44). Note how the house bends in the form of a 'boot' to accommodate that movement. The next connection is situated in Sílvio Brandão Square, and again is marked by a frontal façade, which compensates for the fact that the secondary route ('Escadinha' - literally meaning little stair) is more in alignment with Getulio Vargas Street, than is the main route São José Street (D) (figs.5.45 & 5.46). Reaching the end of Alves Brito Square, along that route, a frontal obstruction created by the facades emerges this time even stronger, suggesting a sideways movement, which may go up the main street, or otherwise deflect downwards along the old main axis (E) (fig.5.47). And we should remark here that for someone



Fig.5.48 - Alves Brito (view) I. Source: author.

Fig.5.49 - Alves Brito (view) II. Source: author.

coming from the opposite direction, i.e. from Tiradentes Square, this very connection will suggest, by its continuity, a priority to follow Paraná Street, which is part of the old main axis. Such a condition will nevertheless be attenuated by the last building coming down Paraná Street receding, providing a vista of the corner building of Alves Brito Square, and also the opening of the expanded space of such a square as the observer approaches it (figs.5.48 & 5.49).

Much further along in our west-east route, going down the next valley from Tiradentes Square, we shall come across another connection (F) (fig.5.50), where Aleijadinho Street shoots off Bernardo Vasconcelos Street. Such a shooting off, which clearly characterises the secondary nature of the former is stated by the 'layout of the connection', where the continuity with the existing pattern of movement is provided by Bernardo Vasconcelos Street.

It is interesting to note that the connections that appear in the main axes are mainly of the 'Y' type, suggesting that such main axes (old and new) appeared before the present secondary streets (that later would have shot off from those axes). These secondary streets connect to the main axes in the form of 'T' junctions⁵⁵. A look at the areas shown in figs.5.50 & 5.51, suggest a process of fragmentation (leading to the formation of T junctions).⁵⁶

If we now look at these connections in terms of the patterns

55.The terms 'connection', 'junction', and 'articulation' are used here interchangeably to refer to the same urban location.

56.Such a description of the development of connections seem to be in tune with Vasconcelos hypotheses about the development of an initial linear layout through the linking of the mining camps - i.e. centripetal growth (presenting Y connections), to a process of centrifugal growth (leading to fragmentation and the appearance of T connections).

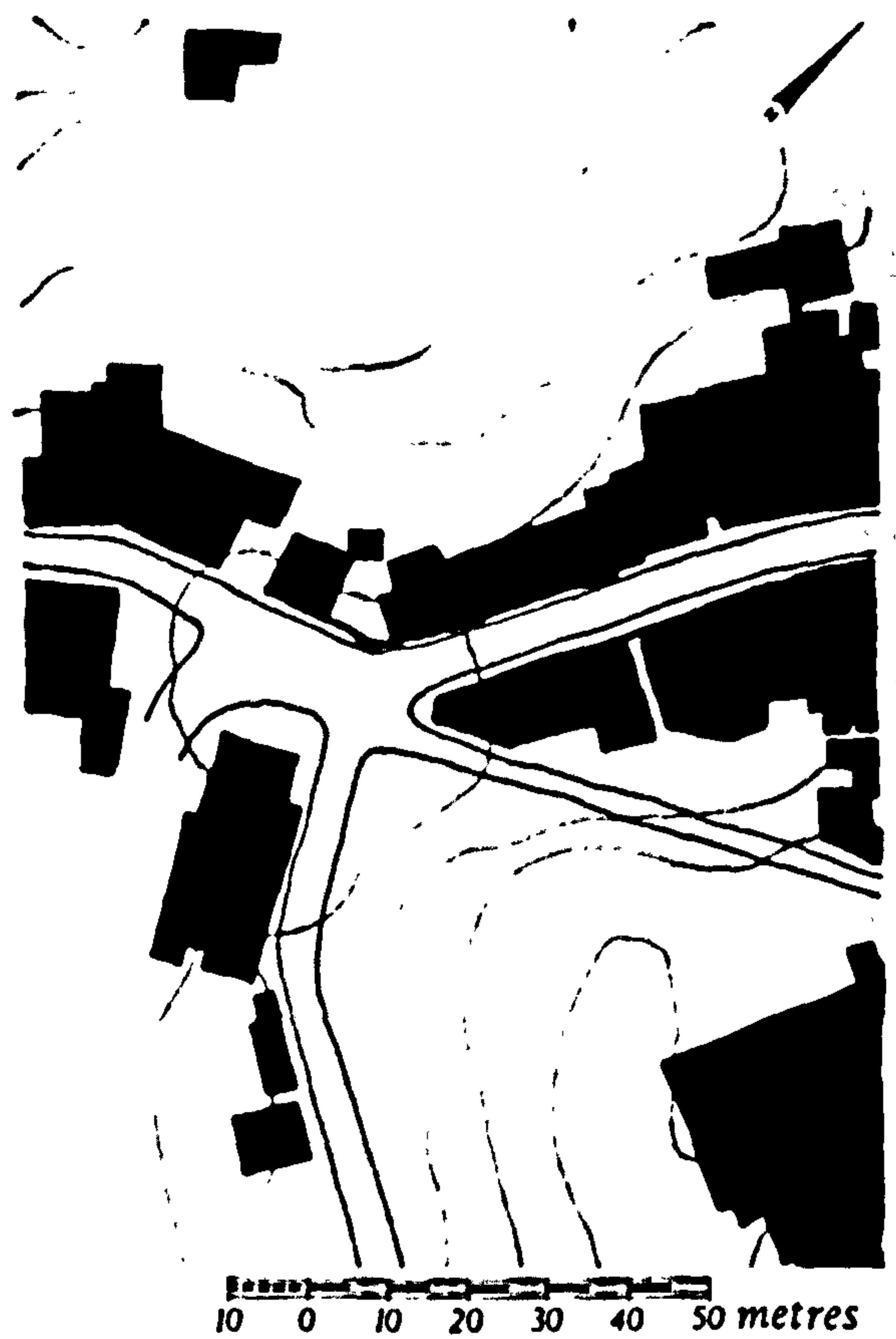


Fig.5.50 - Aleijadinho Street (plan)

Fig.5.51 - Disalignments

described by Sitte, we shall observe that in all cases there are misalignments (according to what Sitte calls the traditional arrangement) which prevent 'cross-junctions' (figs.5.51).

As to the bending of streets to avoid forming acute angles, we shall note that it is particularly evident in the Streets Salvador Tropé, Bernardo Vasconcelos, and the prolongation of Castilho Barbosa. Other streets, however, will refuse to bend, forming acute angles with the connecting street. This is the case of Teixeira Amaral Street, and the lane connecting to Getulio Vargas Street (fig.5.52). In these cases, we may observe that any attempt to make the connecting angle less sharp would result in these streets becoming even steeper than they already are (figs.5.53).

Let us now consider Ouro Preto in relation to the other colonial settlements of the Mines Region.

OURO PRETO IN CONTRAST TO OTHER COLONIAL SETTLEMENTS

A look at other colonial settlements, dating from the same period of Ouro Preto, further accentuates this settlement's peculiarity.

As pointed out before, no other settlement in the Region of the Mines is built in such a dramatic landscape, nor do they present such an exuberant architecture, nor do their churches dominate the landscape in the same way that the churches of Ouro Preto do. It is the combination of these three factors, namely the topography, the abundance of gold (generating wealth and causing a rapid occupation), and the pronounced organisation of the society into 'irmandades', that are absent in the development of the other colonial settlements in the Region of the Mines.

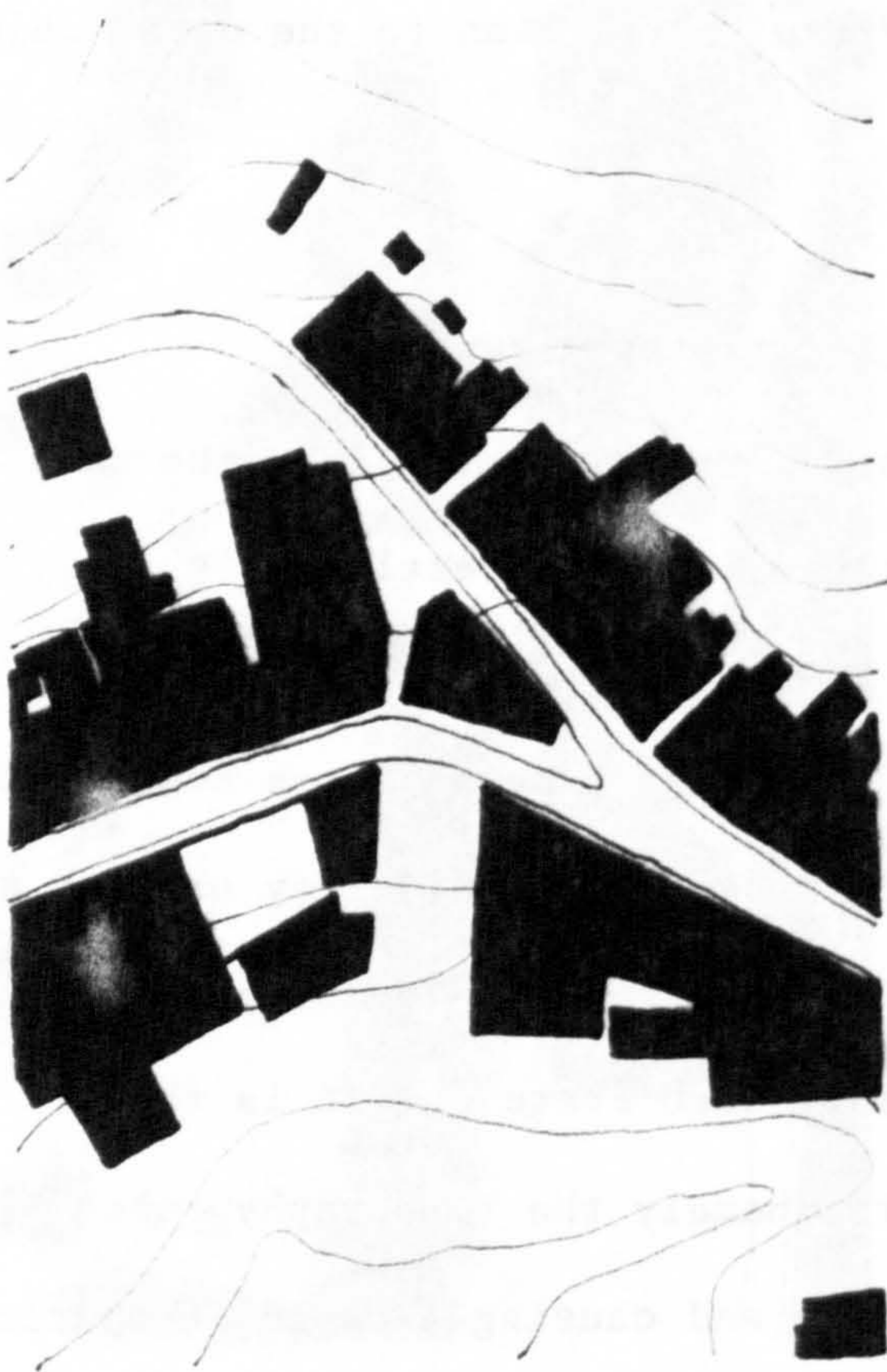
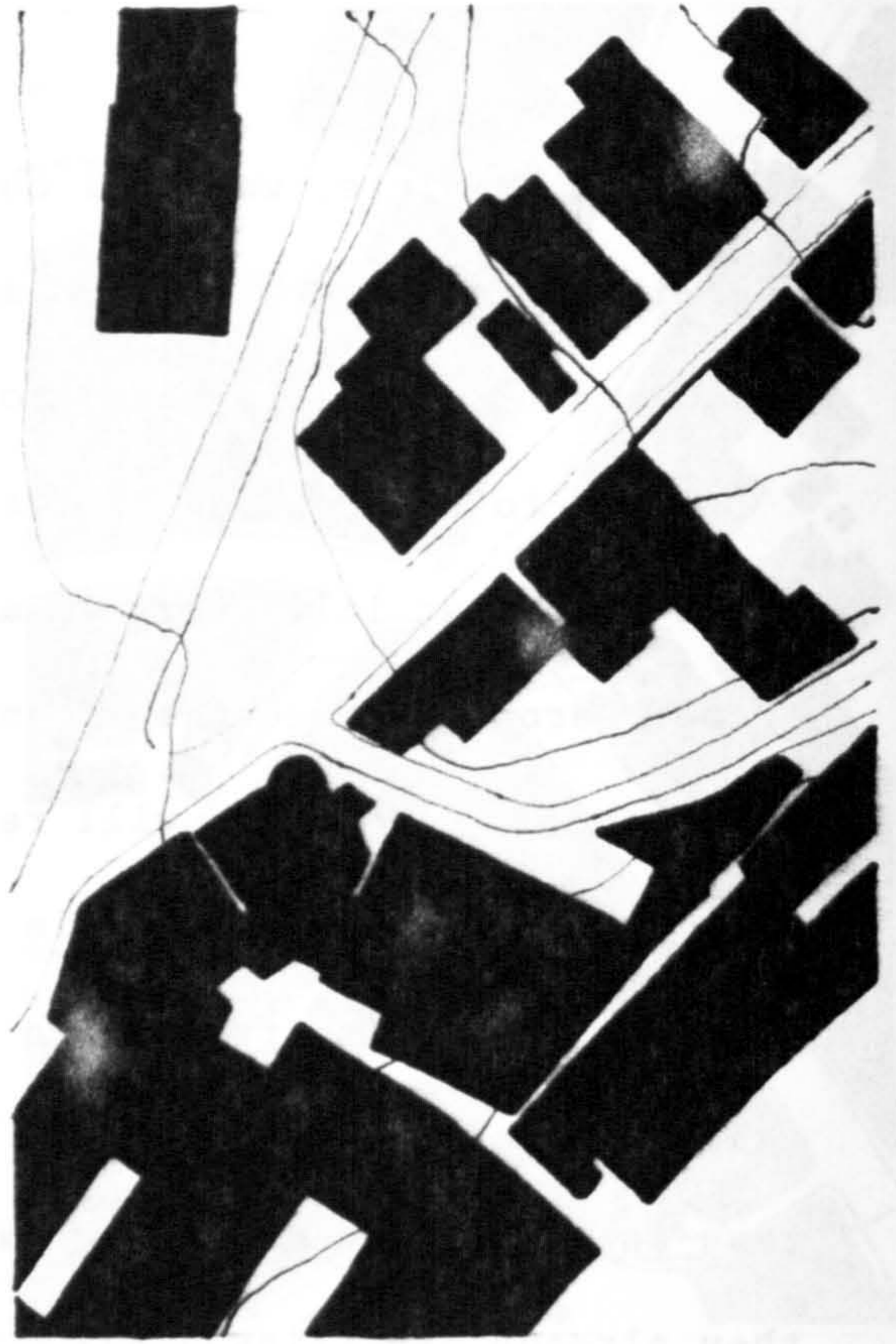


Fig.5.52 - Bending of streets (connections)

Fig.5.53 - Topographical constraints and the layout of connections

On the other hand, a contemplation of settlements such as São Bartolomeu, or Lavras Novas, is very instructive, inasmuch as these are settlements that crystallised in the very early stages of their formation; delivering us a basic pattern of a pathway development, providing some clues to understand the fabric of towns such as Ouro Preto, and more generally the formation of vernacular settlements in other cultural contexts. In the case of those two villages, we observe how the original pathway is gradually consolidated as a street by the building up of houses around it. Looking at figures 5.54 & 5.55, we realise how a street starts gaining its integrity. The secondary pathways on the other hand, have been frozen at a more incipient stage, and only sketch the formation of a street.

At a certain stage the fabric of those villages expands to accommodate the church with its respective open space (figs.5.56). There may be a question about whether such an open space should be given the denomination of 'square', in view of the fact that it provides a limited degree of enclosure (fig.5.56).. and that the space immediately around the church is segregated from the fabric by a wall or change of level; nonetheless, we can say that the churches in these examples are much more integrated with the fabric than is the case in Ouro Preto.

If we move to larger settlements, such as Diamantina, we shall find again that the churches reveal a much greater integration than the churches in Ouro Preto. They are rather laid out around a square (fig.5.57), or they are located in a street, most often stating their monumentality by receding from the alignment defined by the row of houses, creating in that way, their own individual space (fig.5.58). In the case of Mariana, and possibly of Diamantina, there have been top



Fig.5.54 - São Bartolomeu

down interventions⁵⁷ that will have contributed to such a relationship between churches and fabric.

Another example of a colonial settlement that presents the above cited relationship is Tiradentes; where the main church, although standing in a dominant position in relation to the settlement, does not cut itself off from its surroundings, as let us say, São Francisco de Paula, or São José (in Ouro Preto) do.

CONCLUDING NOTES

An ecological analysis of urban spaces was applied here by relating patterns of movement in space to surface layouts. Such surface layouts were approached notably in terms of the locations that were defined in the previous chapter (streets, squares, connections). As such, the above urban analysis accounts for non-planned interventions in space, and therefore translates the concern of the present dissertation with an immediate interface between person and environment.

To the extent that such an urban analysis was preceded by a characterisation of the context of Ouro Preto, we were given some insight into the picturesque nature of this settlement, expressed by its planned components, namely the monumental churches. We were given an idea of how the layout of gathering spaces was affected by the organisation of the society into 'irmandades' - i.e. squares are rarely associated with churches. (More comments about the role of cultural patterns in the formation of the spaces of Ouro Preto appear in the

57. The hypothesis that Diamantina may have had its development affected by top down interventions, is commented upon by Vasconcelos, S., 'Formação Urbana do Arraial do Tejuco,' Revista do Patrimônio Histórico e Artístico Nacional, Rio de Janeiro, (14), 1959.



Fig.5.55 - Lavras Novas I. Source: author.

Fig.5.56 - Lavras Novas II. Source: author.

concluding chapter of this dissertation).

Given the remoteness of the development of Ouro Preto, further veiled by the scarcity of documentation (plans, maps, and written information about its growth)⁵⁸, an ecological analysis can only partially be carried out. Inasmuch as particular stages of the development were not registered, and in that we have little information about the planned decisions that may have affected such developments, we are still limited in the statements we can make about the various spatial configurations.

58. The results of the fore mentioned research (footnote) about the development of Ouro Preto is currently being carried out by the Secretary of Historic Monuments of Brazil (SPHAN), are not available to this date.



Fig.5.57 - Diamantina (churches) I



Fig.5.58 - Diamantina (churches) II

YORK

The present chapter proposes to analyse some urban spaces in the city of York, and to suggest new layouts for such spaces. Such an analysis, it was thought, would benefit from an historical account of the evolution of the settlement. With that in mind, this chapter starts with an overview of the birth and development of York (fig.6.1).

HISTORICAL OVERVIEW

Preliminaries

The historical overview presented here is a brief account which aims to provide a general idea of how the spaces of York came to be the way they are. In view of such a purpose, and given the limited time available, the present account relies mainly on secondary historical sources, overlaying different sources as often as possible, and complementing those with primary source informations (in the form of maps).

Such a procedure is certainly limited, in that it may give rise to historical inaccuracies, and contribute to the perpetuation of historical myths. Such implications, however are of lesser importance to the problem this chapter sets out to tackle, namely, the analysis of some spaces of York. Such a problem, as I see it, does not require a detailed and accurate historical account, but only a general feeling

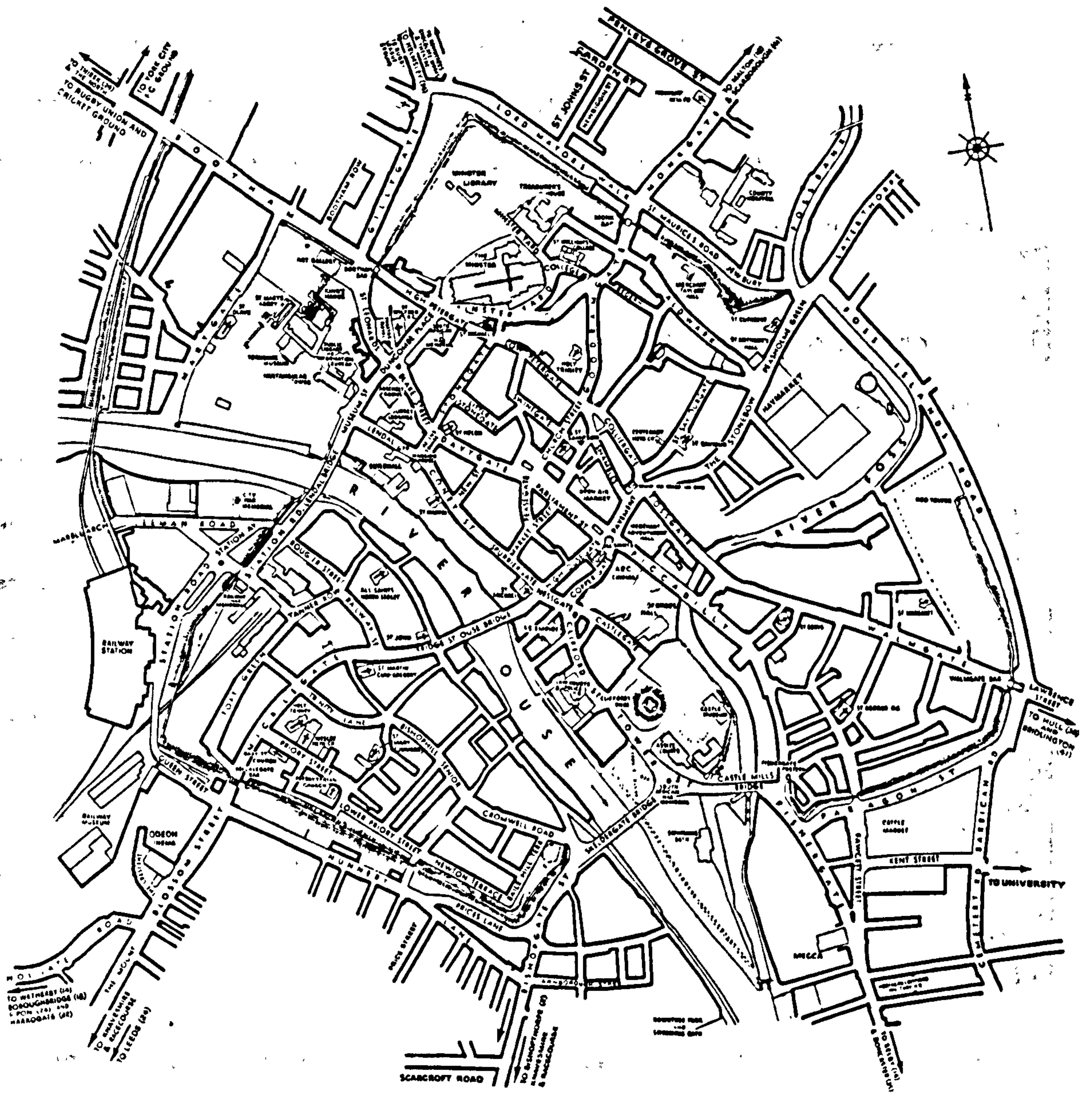


Fig.6.1 - York plan

for the pattern of transformation of the urban fabric. By comparing information provided by different authors, and backing it up with information available in maps, at times, I believe this chapter will be able to provide such a general feeling, with a minimum of inaccuracies.

The information from maps was available from the seventeenth century onwards (the maps used here date from: 1610, c.1650, c.1680, 1694, 1736, 1750, 1772, 1776, 1838, 1851, 1937, 1960) (see Appendix 5), with increasing accuracy and detail as we come to the nineteenth century, which is when the most radical transfigurations in the fabric occurred. Thus, the early maps complement the historical information available in books to attest the consolidated condition and non-changeability of urban spaces of York (during the period they refer to), whilst the later maps provide a more detailed information about changes that particular spaces underwent.

The Roman Legionary Fortress

Sometime between A.D.71 and A.D.74, the Roman Legionary Fortress at the origin of the city of York was founded.¹ *Eboracum*, as it was called, was located near the junction of the River Ouse with the River Foss. Such a location is acknowledged by authors such as Knight, or the Royal Commission on Historical Monuments, as being of major strategic importance.

For there the River Ouse cuts through a glacial moraine which forms a low but substantial natural causeway across the wide and marshy valley. The crossing not only affords easy access to the West Riding of Yorkshire and its dales, but furnishes the necessary south-westward connection with the Welsh March and the Roman legionary

1. Royal Commission on Historical Monuments (RCHM) (England), An Inventory of the Historical Monuments in the City of York. Volume 1. Ebyracvm, Roman York (Leicester: Gibbon, Ltd., 1962).



Fig.6.2 - Roman fortress (situation). Source: RCHM, 1988.

garrisons stationed along it. York is thus the key-position first for the control of the Brigantes, secondly for the surveillance of the hinterland of East Yorkshire and Lincolnshire and thirdly for connection with the western military area.²

The fortress was constructed in the exact position in which it could derive the maximum protective advantage from each of the two rivers. To have erected it further north would have lost the benefit of the river's defence; further south would scarcely have permitted the required dimensions of the fortress; further east or west it would have toppled over into one river or the other.³

This initial gesture of location of the Roman fortress deserves special emphasis in this dissertation, inasmuch as it had an overwhelming influence in the subsequent development of the spaces of York, as we shall see shortly.

The layout of the Roman fortress was a rectangle with rounded edges, and its size was determined by the size of a legion, formed by about 6,000 men.⁴ The importance of the two rivers, notably the River Ouse, is apparent in the orientation the fortress assumed, as one of the sides of the rectangle is parallel to that river, and one of the corners fits in the tongue of land that that river forms with the River Foss. As the fortress inserts itself into that space, it appears in the map as a diamond, with its corners aligned with the cardinal points of the compass (fig.6.2).

The internal arrangement of the Roman camp was basically articulated by two thoroughfares, which crossed at right angles near the centre of the rectangle. These were the *Via Principalis* which

2. Ibid., p.xxix.

3. Knight, C.B., A History of the City of York (York and London: Herald Printing Works, 1944), p. 8.

4. Nuttgens, P., York the Continuing City (London: Faber and Faber, 1976), p. 23.

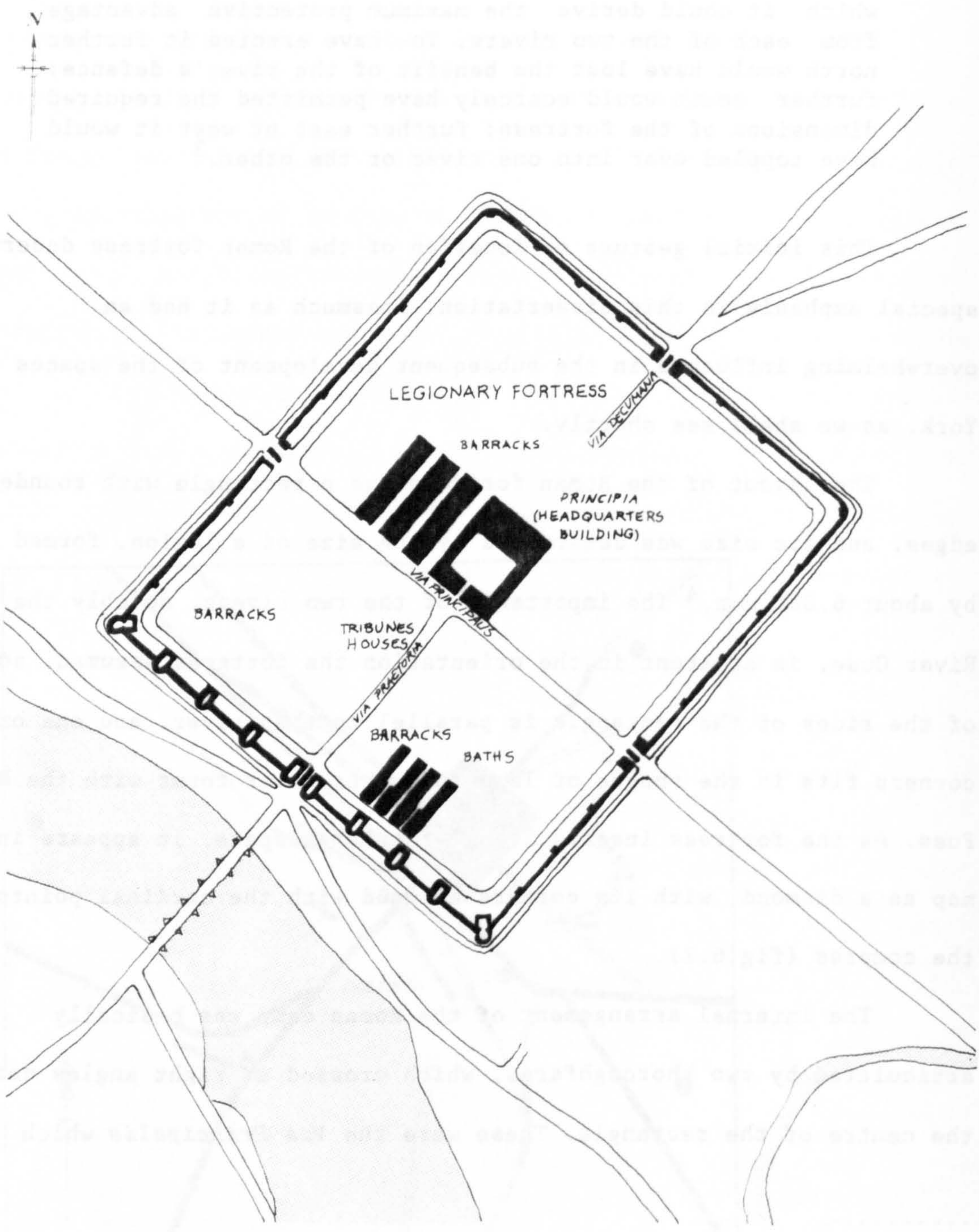


Fig.6.3 - Roman fortress (layout)

sliced the fortress in the north-east/south-west direction, creating two gates as it intercepted the fortified wall - the *Porta Principalis Dextra*, and the *Porta Principalis Sinistra*; and the *Via Praetoria*, which defined, as it ran through the wall, the *Porta Praetoria*. Facing the *Via Praetoria*, there stood the Roman headquarters, the *Principia*, whose remains can be seen today in the York Minster undercroft. From behind the *Principia* there ran another roadway, the *Via Decumana*, which defined in its junction with the wall a fourth gate: the *Porta Decumana*. Apart from the Roman headquarters, the fortress sheltered legionaries barracks, officers housing, and bath houses (fig.6.3).

Around the walled fortress, there established an extramural settlement, the *Canabae*, where shops, taverns, and market stalls developed.⁵ Despite the little archaeological work in the area, or scant visible remains, the findings of the Archaeological Trust are enough to suggest the following picture of such extramural settlement:

Along the River Ouse were wharves with large warehouses behind them for grain storage. There were also wharves along the banks of the river Foss. In the Nessgate/High Ousegate area, large stone foundations have been discovered during building works. These coupled with commemorative inscriptions and sculptures, suggest that this was the area of public buildings within the settlement, the area where the temples were to be found. Perhaps it was here also that the imperial palace recorded in the documentary sources was located, although it is possible that this was in the *colonia* across the river Ouse.⁶

The *colonia*, as described in the above fragment, developed on the opposite bank of the River Ouse, and it was linked by a bridge to

5. York Archaeological Trust, Roman and Anglian York. Ordnance Survey. Historical Map & Guide (1988).

6. Ibid..

the fortress and *canabae* (fig.6.2). The *colonia* is described as a civilian town, which unlike the extramural settlement (under military control), was a self-governing municipality, and from A.D. 213 the capital of the Province of *Britania Inferior* (northern Britain).⁷ Again here, archaeological evidences are scant. And the picture we get this time, based on some Archaeological Trust findings, as well as speculations, is of a settlement enclosed by defences, presumably underneath the earth rampart of the later medieval walls.

On the (Ouse) river front itself there appear to have been wharves and warehouses where merchants unloaded their goods, and on the terraces above were elegant stone-built town houses, the remains of which have been partially explored.⁸

If we come back to the Roman fortress and look at its development in history, we shall note that the early defences consisting of a turf bank topped by a timber palisade went through a process of consolidation, which culminated in them being rebuilt in stone by the Emperor Trajan.

The rebuilding of the defences and internal buildings in stone was part of a general consolidation applied to the three legionary fortresses of Britain in the first half of Trajan's reign. The operation had begun at Caerlon, the fortress of the Second Legion *Augusta*, in A.D. 99-100; it was in progress at Chester after A.D. 102, while at York it is recorded by an inscription of A.D. 107-8... The consolidation in stone, however, did not mark merely a routine repair: it signalled the final selection of the three fortresses in Britain as the permanent headquarters of their respective legions.⁹

7.Ibid..

8.Ibid..

9.RCHM, op.cit., p. xxxi.

Most of the work carried out at the time of Trajan, was to be replaced in the reign of the Emperor Severus, 'probably after A.D. 210 when he came to York to campaign against the Picts north of Hadrian's wall'.¹⁰ Yet another remodelling of the Roman fortress defences was to take place in about A.D. 305 ' when the whole river frontage was rebuilt in grandiose scale'.¹¹ Remains of such fortification improvement can still be seen today in the 'Multangular tower' (which once articulated the western corner of the Roman fortress), whose stone work partially dates from Roman times, and partially from the Medieval period.¹²

Another important remark, this time concerning the internal layout of the fortress (according to the RCHM), is that 'whatever the effect of the permission to marry granted to legionaries in the third century or of the reduction in size of legions in the fourth century... legionary barracks as are known to be occupied continue in much the same form as before...'¹³

In the second half of the fourth century the settlement of Eboracum experiences a decline, which is reflected in its buildings and streets falling into disrepair. Such a decline was to characterise the final period of Roman occupation in York.

The actual Roman departure happened sometime in the first half of the fifth century (authors such as Knight place it in A.D. 446).

10.Archaeological Trust, op.cit..

11.Ibid..

12.Ibid..

13.RCHM, op.cit., p. xxxi.

The Anglian Period

The Anglians came from southern Denmark and Northern Germany, in the late fifth or early sixth century.¹⁴ Their occupation of the settlement, by that time called Eoforwic, was marked by an expansion of the area of occupation, with the development of the portion of land between the Rivers Ouse and Foss. The centre of the settlement, however, was kept within the Roman walls (even if 'at first, the ruins of the Roman city had no particular attraction' for the Anglians), which housed Royal and Ecclesiastic activities.¹⁵

In relation to the built structure of the city, the Archaeological Trust conjectures that 'the survival of the walls and gates will have meant that the Roman street pattern survived, at least in part, inside the fortress'.¹⁶ On the other hand, there are evidences of Roman built structures that continued their existence through the Anglian Period, such as the great hall of the Roman headquarters building, which was still in use to the ninth century.¹⁷ Also at that time the Roman defences are believed to have been kept in a good condition of maintenance.¹⁸

Despite these evidences, it is hard to tell what transformations occurred in the urban fabric of York, or to say what period, for instance, witnessed the loss of rigidity of the Roman layout, giving rise to an organic layout. The argument that the 'Roman street pattern

14.Archaeological Trust, op.cit..

15.Ibid..

16.Ibid..

17.Ibid..

18.Ibid..

survived, at least in part' based on the survival of the gates, tells us little about the layout of the urban fabric in the Anglian period, inasmuch as streets may have kept their intersection with the walls unchanged whilst swinging and twisting in the space between gates, as it was indeed the case. Petergate and Stonegate are the living proofs of the sort of alteration described above. As pointed out by various authors, these streets roughly follow the same alignment of the *Via Principalis* and the *Via Praetoria*, respectively (meeting the gates at the same spots), although, in no way presenting the regular layout that the Roman streets did. The issue of when those transformations that characterise most of York's present physiognomy occurred is still a question mark.

Authors such as Knight talk about developments that would have taken place in the seventh century. That author relates the formation of York's organic urban fabric to the development of the fore mentioned civilian portion of the city, which came into existence to the south of the fortress walls (between the two rivers), and which would have had its own thoroughfare.

The natural features of the site compel the conclusion that this (thoroughfare) ran east to west from river to river; and here is probably the origin of Peaseholme Green, St. Saviourgate, Pavement, and High and Low Ousegate. ¹⁹

Further development of the fabric of the city, in the seventh century, may have taken place as the stone walls (described by a ninth century writer as neither firm nor strong²⁰) started giving way,

19.Knight, op.cit., p. 34.

20.Ibid., p. 50.

granting room for the formation of new pathways. Knight describes the following process of formation of spaces.

When the fortress declined from its primary purpose and its walls were ceasing to be firm and strong, the Angles of Edwin's day, or perhaps children or grandchildren, made cross-corner tracks through the fortress, following that natural instinct of Englishmen in all ages which prompts them to make a path across the corner of a field. Thus when the bastion at the southern angle of the fortress wall gave way - or perhaps a breach was purposely made - a diagonal track was made from this point to the *Via Principalis* (Petergate), thus forming the streets which we now call Feasegate, Finkle Street, and Grape Lane. Another diagonal road was formed from the *Porta Principalis Sinistra* in King's Square (or perhaps the Left Principal gate had disappeared by then) to a breach in the north-eastern wall at a point south-west of the *Porta Decumana*, and so Goodramgate came into being, together with Monkgate, leading to the eastern territory of Deira.

Yet a third diagonal was made from the *Porta Praetoria* in St. Helen's Square to a point in Petergate near the *Porta Principalis Dextra* along what are now Blake Street and Duncombe Place (once top lane).²¹

The relevance of Knight's descriptions of the formation of the urban network seem to lie chiefly in the relationship they establish between the Roman fortress and the present urban layout, rather than in their historical accuracy (which does not match information provided by other sources): developments that Knight places in the Anglian period, according authors such Nuttgens and the Archaeological Trust, would have taken place during the Viking period. An example of that mismatch is the appearance of a crossing where Ouse Bridge now stands (placed in the seventh century by Knight), which according to the Archaeological Trust would have taken place in the Viking period.

21.Ibid., pp. 50-1.

The Viking Period

Around the year 866, the Vikings took possession of Northumbria and settled in 'York'. 'Jorvik', as it was called, became their metropolis.

Little is known about the settlement when the Vikings arrived, except that they would have found a major Royal and Ecclesiastical centre in York. The Archaeological Trust talks about the cathedral founded in the seventh century. It also refers to the presence of the Royal Palace within the walls of the Roman legionary fortress; and outside the walls, there would have still stood, between the two rivers, the civilian estate (trading centre) mentioned earlier on.²²

A number of important changes in the layout of the city were introduced at that period. As the Vikings settled in York, the Anglian trading centre was abandoned, and they shifted the centre of gravity of the settlement to the old Roman fortress and the area immediately surrounding it to the south.²³ Defences around that area were probably incremented, as the north-east and north-west sections of the Roman fortress were further raised with an earth rampart of 5.5m and 10.7m wide, and topped up with a timber palisade. These defences would have been extended by earth ramparts up to the two rivers (enclosing approximately 35 hectares). The defences of the Roman *colonia* would have also been strengthened by the Vikings.²⁴

A new river crossing on the site of the present Ouse Bridge appeared (according to the Archaeological Trust), leading to the

22. York Archaeological Trust, Viking and Medieval York. Ordnance Survey Historical Map & Guide (RCHM England: 1988).

23. Ibid..

24. Ibid..

articulation of a new network of streets. Many of these streets still present their Viking identity as their denomination ends with the suffix 'gate' (which is derived from the old Norse word 'gata' for street), like Micklegate.²⁵

A number of churches punctuated the townscape of York at the time the Vikings arrived. The largest of them was the early Minster, which stood on the site of the medieval building we see today. Of that early building no remains are left (apart from grave covers, which can be seen in the undercroft of the Minster), making it hard to make detailed statements about its location and its relationship with the surrounding urban fabric.²⁶

Many more churches were founded or rebuilt, and 'in some of them fragments of Viking Age stone crosses and grave slabs can still be seen, as at St. Mary Bishophill Junior (whose tower probably predates the Norman conquest), St. Martin-cum-Gregory, Micklegate, Holy Trinity, Micklegate, All Saints, Pavement, and St. Mary, Castlegate'.²⁷

Another change in the townscape of York, effected by the Vikings, was the erection of a palace on the site where King's Square now stands (its name being an indication of that).

Another important aspect of the Viking settlement were the building materials employed, which were stone in the case of churches and residences of kings and earls, and wood for the majority of dwellings (as confirmed by excavations in Coppergate between 1976 and

25.Ibid..

26.Ibid..

27.Ibid..

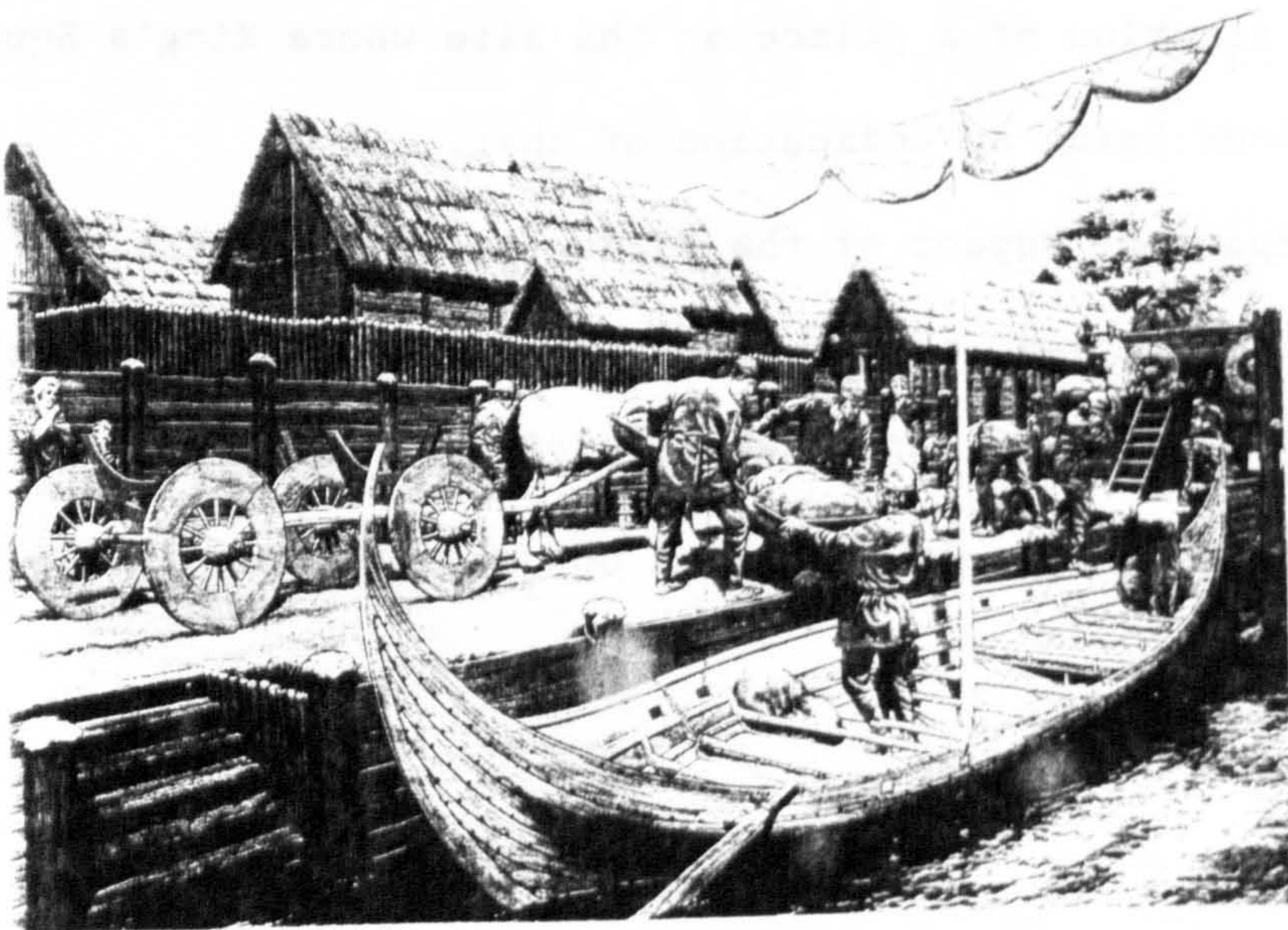


Fig.6.4 - Viking settlement. Source: RHCM, 1988.

1981, which uncovered four dwellings built with post and wattle²⁸). The image that the Archaeological Trust depicts of the settlement of Jorvik is of clusters of timber houses with thatched roofs, punctuated by stone buildings of churches and palaces (fig.6.4).

As to the population of the settlement, authors such as Nuttgens estimate it as being of 10,000 (a figure which gives an average density of occupation of 70 people per acre):

... a very crowded site. For that density is acceptable with two- and three-storey housing. With one-storey houses throughout (as it is believed to have been the case in Jorvik), it means that, allowing for roads between rows of houses, reasonable but not large strips between houses, with just enough space for a few sheds and piggeries and some patches of land for workshops, the whole city must have been densely developed...²⁹

The Earls of Northumbria

Before the turn of the 10th century the Viking kingdom came to an end. From that time to the Norman Conquest in 1066, the territory of Northumbria was administered for the Kings of England by the Earls of Northumbria. And at that stage we witness another important shift in the centre of gravity of the settlement towards the north-east, as the Earl's mansion was erected at the lower end of Marygate near the River Ouse.³⁰

The Norman Conquest and Later Medieval York

The Norman Conquest brought violence, blood, and destruction to

28. Ibid..

29. Nuttgens, op.cit., pp. 33-4.

30. Knight, C.B., This is York (York and London: Herald Printing Works, 1951), p. xvii.



Fig.6.5 - York Castle evolution. Source: RHCM, 1973.

York. That conflict of many battles maybe achieved its most destructive stage, as William the Conqueror counterattacking an invasion of the settlement by the men from Northumbria 'came from the south unawares upon them in York, with an overwhelming host, and put them to flight, and slew those who could not escape - there were many hundreds of men - and harried the town, and put to shame St. Peter's Minster, and also harried and outraged all the others (the monastery of Holy Trinity and other pre-conquest establishments)'.³¹

Not long after William the Conqueror returned to the south, the Danish King Sweyn allied to the Earls of Gospatrick and Walthrof, among others, sailed up the Humber and resolved to march upon York.

The Norman garrison of the city, in making ready to withstand the coming assault, thought it prudent to fire some of the houses in the vicinity of the Minster, which might have given shelter to the enemy. The flames got out of control and destroyed a considerable portion of the city, together with the Minster... The famous Library of York... was also destroyed...³²

That destroyed site provided the background for the realisation of further transformations in the spaces and buildings of York. The fabric of the settlement itself (according to the works consulted here) would have already assumed its characteristic layout, which was to undergo little changes until the nineteenth century. On that urban fabric with piles of debris and burnt buildings, a number of new urban features were to emerge.

Among these new features were two castles on either side of the River Ouse. One of these castles, the 'Old Bailey', remains only as a

31. William Mallet, quoted by Knight (1944), p. 120.

32. Ibid., p. 121.

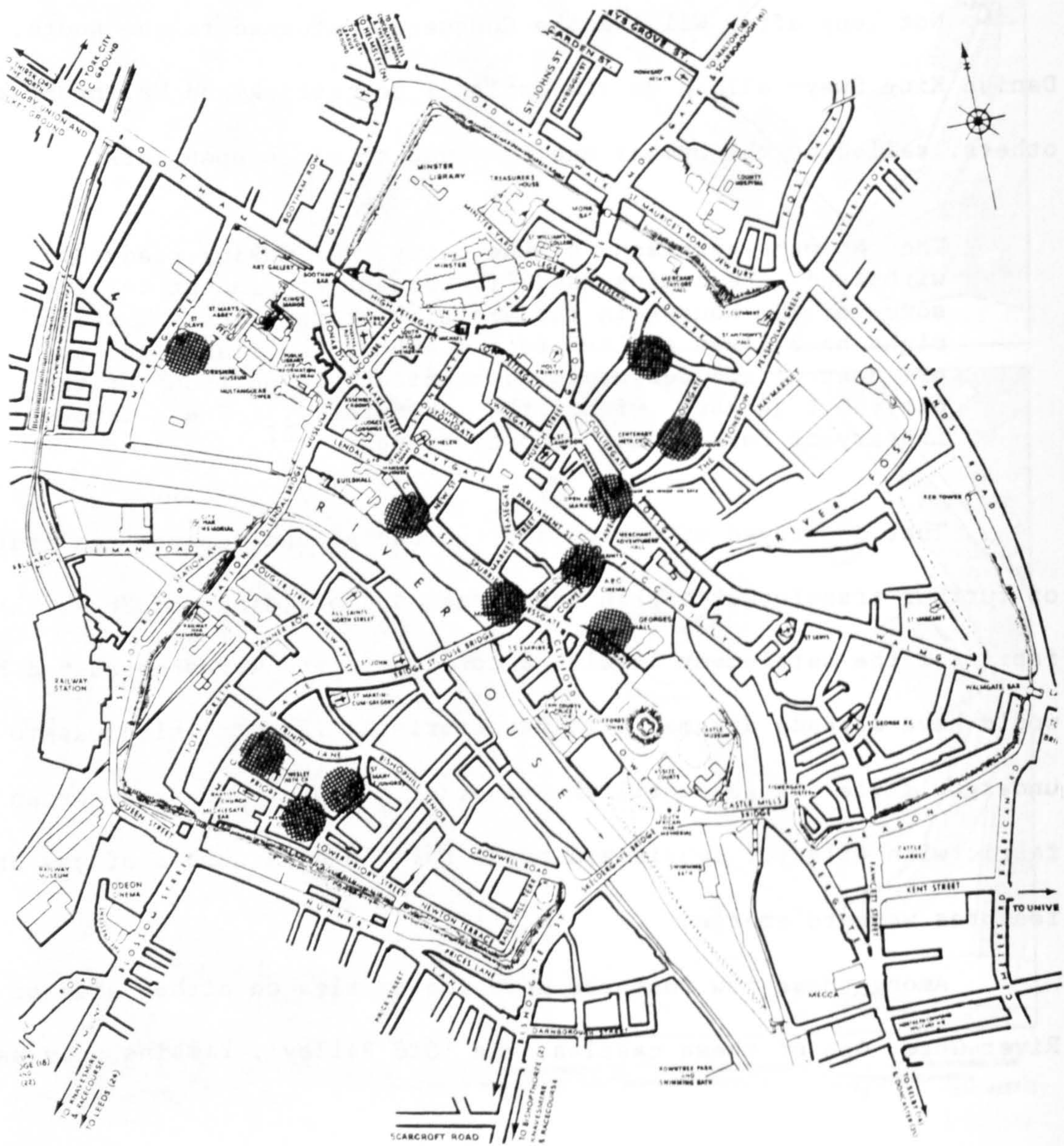


Fig.6.6 - Pre-conquest churches (map)

mound. The other, York Castle went through a number of transformations, falling into abandonment and disrepair, and subsequently being extended through the construction of the Debtor's Prison in 1701-5, the Assize Courts in 1773-7, the Female Prison in 1780 and 1803, and P.F. Robinson and G.T. Andrews' Prison extension building in 1826-35 (which was to survive only until 1935).³³ From the medieval fortification, however, only what we know as Clifford's Tower is left. This roofless structure, sitting on a mound, was once the keep of the motte-bailey configuration of the medieval York Castle (fig.6.5).

Another important change in the townscape of medieval York occurred as the River Foss was dammed for the creation of a moat around York Castle. A large lake was thus formed: 'the King's Fish-pond, as this was known, remained a significant feature in the topography of York until the River Foss was canalised in the eighteenth century'.³⁴

Noteworthy is also the proliferation of religious establishments. York Minster (also known as the Cathedral of St. Peter) was rebuilt during the 1080s by Archbishop Thomas of Bayeux. The new building assumed the traditional east-west alignment. Another major religious building erected at that time, on the site where once stood the mansion of the Earls of Northumbria (at the lower end of Marygate), was St. Mary's Abbey, 'which was to become the richest northern Benedictine house'.³⁵

Although many parish churches existed in York in Pre-conquest days, most of them were rebuilt by the Normans, and more were erected

33.RCHM (England), York Castle (London: Her Majesty's Stationery Office, 1973), pp. 65-6.

34.Archaeological Trust, op.cit..

35.Ibid..

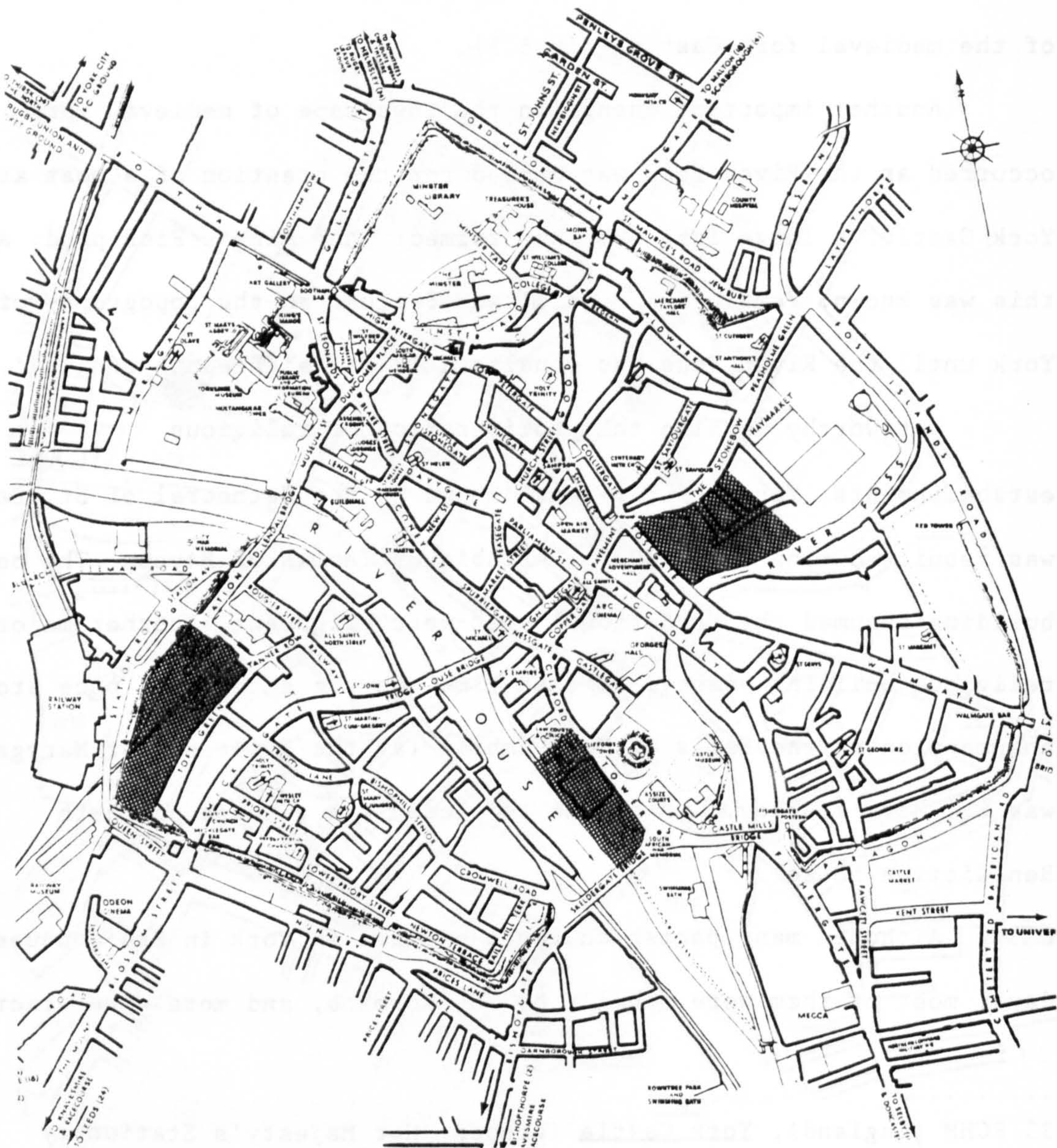


Fig.6.7 - Mendicant orders (location)

subsequently.³⁶ Knight tells us that the Domesday Survey of 1087 and other contemporary documents mention the following churches: St. Andrew, All Saints (Pavement), All Hallows (Fishergate), St. Crux (Pavement), St. Helen (Fishergate), Holy Trinity (Micklegate), St. Michael (Spurriergate), St. Martin (Coney Street), St. Mary (Castlegate), St. Mary (Bishophill Senior), St. Mary (Bishophill Junior), St. Olave (Marygate), and St. Saviour (fig.6.6).³⁷

New hospitals and almshouses were built, including that of St. Leonard's (lying on a site west of the Minster) which was to become the largest in the north, housing up to 500 poor.³⁸

York also saw the arrival of the Mendicant Orders of Friars, which established themselves within the walled area. The Franciscans occupied a site between York Castle and the River Ouse in 1243,³⁹ the Dominicans settled on Toft Green, the Carmelites headquarters sat on land between Fossgate and Hungate (fig.6.7). According to Knight, all these sites, and that of St. Leonard's Hospital, St. Mary's Abbey, and the Minster Yards, had their own protective enclosure.⁴⁰

During the Medieval period, York Minster and most of the Parish Churches were extended or rebuilt in stone. The Minster was subjected to gradual and continuous enlargement (from the erection of the crossing of the transepts to the construction of the old library (figs.6.8 & 6.9).

36.Ibid..

37.Knight (1944), op.cit., p. 125.

38.Archaeological Trust, op.cit..

39.Ibid..

40.Knight (1944), op.cit., p. 202.

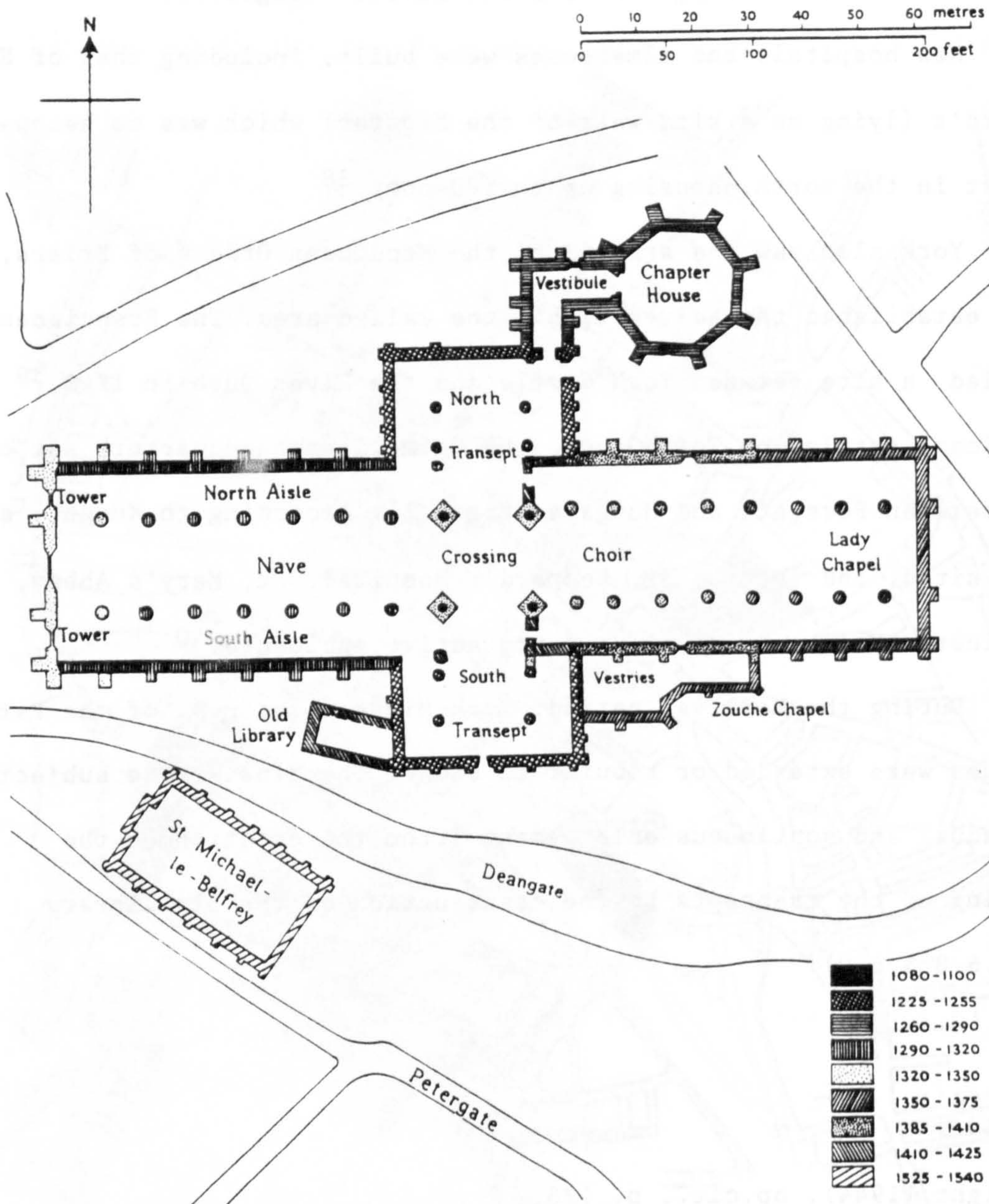


Fig.6.8 - Periods of construction of York Minster. Source: RHCM, 1985.

Other buildings (religious or of communal use) punctuated the townscape of York, some of which still survive today. Among these we find St. William's College (which survives almost intact), founded by Archbishop George Neville in 1461 as a residence for the Minster Chantry Priests, the Guildhall near St. Helen's Square (built from 1447 to 1459), and the Merchant Adventurers' Hall in Fossgate (1357-1361).⁴¹

The City Wall presents itself to us nowadays, to a great extent in its medieval form.

The defensive bank which had surrounded the Viking town was heightened after the Conquest and extended during the twelfth century to encompass the Walmgate area. The bars or gateways were constructed in stone also in the twelfth century but it was not until stone walls rose above the earthen bank during the latter half of the thirteenth century that the city first achieved its characteristic appearance. The walls around the Walmgate area are later still.⁴²

The Ouse Bridge stood at that time on its present site.

In terms of economic development, medieval York was a prosperous place (remaining the second city of England for much of its life, with a population of between 8,000 and 15,000⁴³).

By the end of the medieval period, however, York had begun to decline. The process was accelerated through King Henry the VIII's administrative reforms in the Church. In 1539, an Act of Parliament called for the suppression of monastic establishments in England. The impact of that act in York was translated in the destruction of a number of religious buildings, including St. Mary's Abbey. Also doomed

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41. Archaeological Trust, op.cit..

42. Ibid..

43. Ibid..

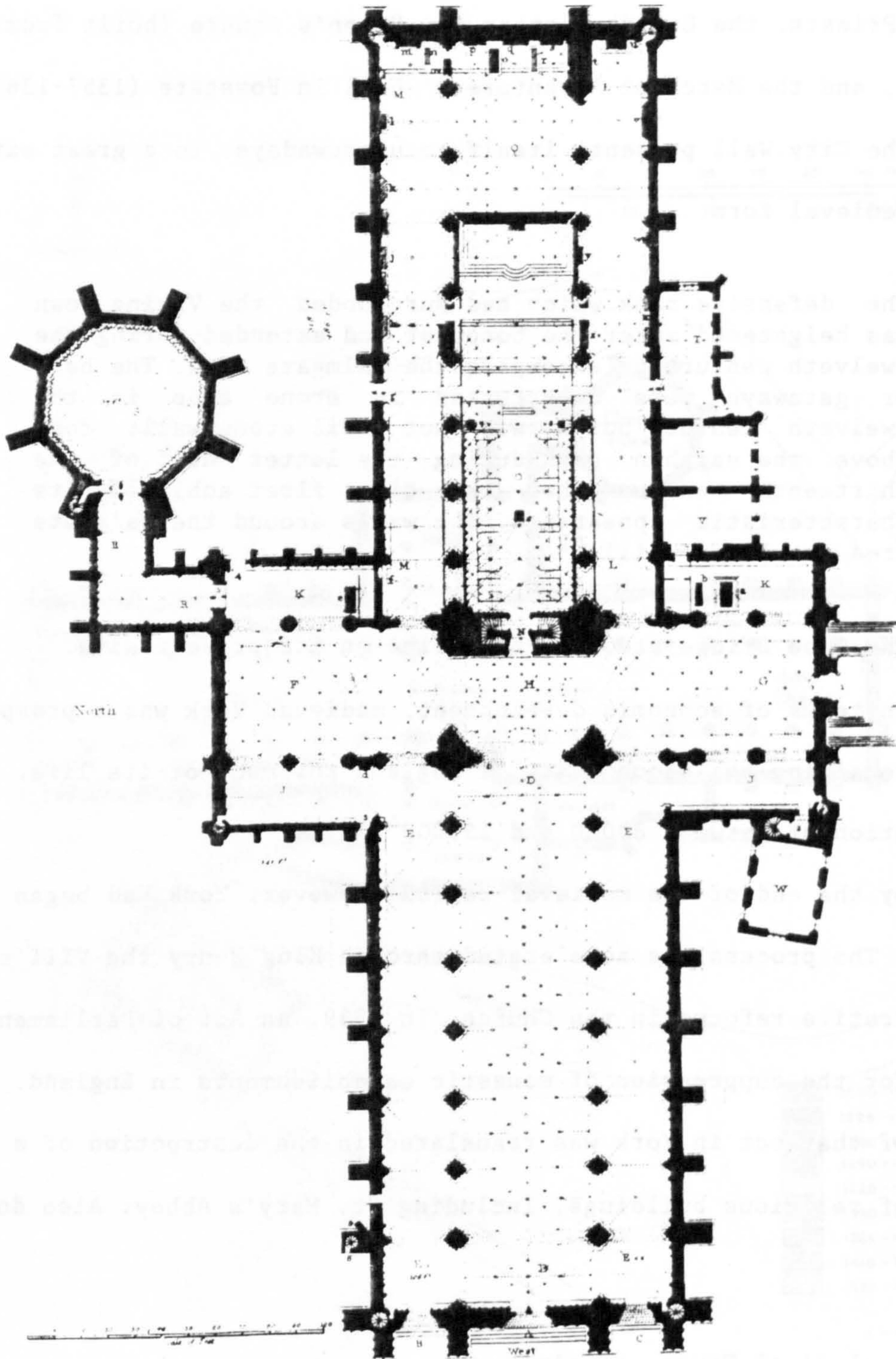


Fig.6.9 - York Minster (plan). Source: RHCM, 1985.

to extinction were the Mendicant Orders of Friars, which vacated the areas they occupied within the city walls.

In 1547, another Act of Parliament was passed for uniting various parishes in York. Such a decision led to ordering the destruction of a number of parish churches considered 'superfluous'. According to Knight such a destruction took place in the next few years, terminating the existence of fifteen churches, namely: All Saints (Fishergate), St. Andrew (St. Andrewgate), St. Gregory (Micklegate), St. George (Fishergate), St. Helen (Fishergate), John (Hungate), Peter-le-Willows (Willow Street - near Walmgate Bar), Wilfrid (Blake Street), All Saints (Haymarket), St. Edward (Lawrence Street), St. Giles (Gillygate), St. Helen (on the Walls in Aldwark), John-del-Pyke (Ogleforth), St. Mary (Layerthorpe), and St. Peter the Little (Peter Lane off High Ousegate).⁴⁴

As to the Minster, a major alteration took place, not to its fabric proper, but to its relation with the surrounding urban spaces, as the wall of the Minster Close, erected in 1285, (which segregated the space of the Minster Yards from the rest of the city) was taken down.

This wall abutted on the north-east side of Petergate from Bootham Bar to a point nearly opposite the end of Grape Lane; it then turned at right angles and continued to the junction of Vicar Lane (College Street) with Goodramgate; thence diagonally bisecting Ogleforth, it ran as far as the City Wall near the site of the former *Porta Decumana*.⁴⁵

44.Knight (1944), op.cit., p. 389.

45.Knight (1944), op.cit., p. 395.

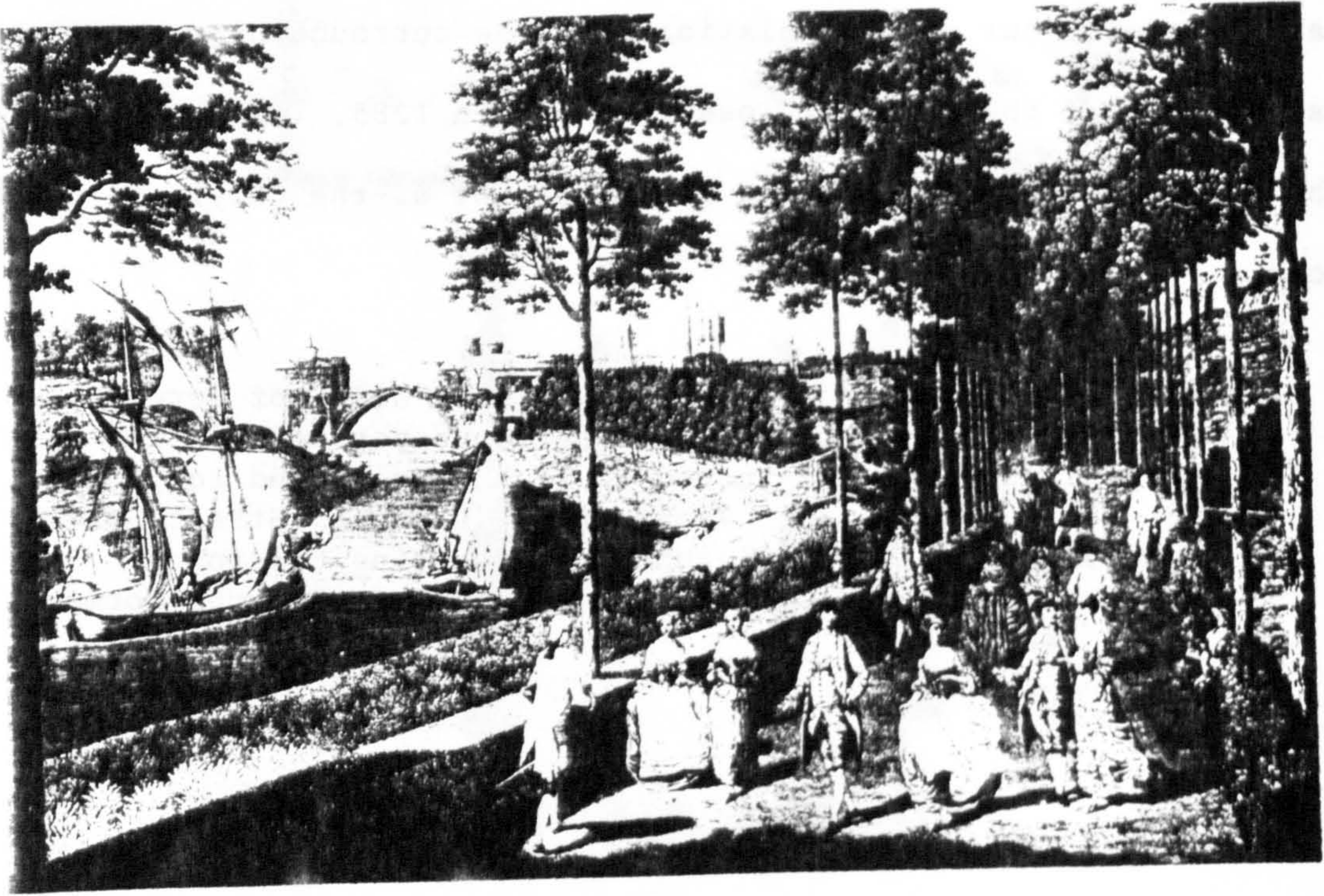


Fig.6.10 - New Walk. Source: Tillott, 1961.

Late sixteenth to eighteenth Century York

During that period (late sixteenth to eighteenth century) York went through a period of stagnation, marked by a retrogression in its trading activities. The population of the settlement did not increase significantly in that period; it actually suffered reduction at stages, as by the occasion of an outbreak of plague in the year 1550-1, which would have killed, according to Knight's estimate, over 4,000 people.⁴⁶

The decadence of the settlement was reflected in the pattern of transformation of its urban spaces. On the one hand, there was neglect and decay, which began to be felt already by the second half of the sixteenth century as York Castle started a process of deterioration, which was to last until the eighteenth century. Also at the same time, the King's Fishpool began to deteriorate.

On the other hand, changes in the urban fabric were few or of secondary nature, if compared to nineteenth century interventions.

In 1671, some houses 'which stood near All Saints' church were bought and pulled down to enlarge the street of Pavement'⁴⁷. And in 1672 the 'Archbishop Sterne authorised a portion of All Saints' churchyard being added to the street, and a Market Cross, or sort of Market Hall, was erected by the Corporation (of York)...'⁴⁸

Buildings like the King's Manor, the former house of the Abbot of St. Mary's, went through a continuous process of transformation (already started in medieval times) through the sixteenth, seventeenth, and eighteenth centuries.

46. Ibid., p. 395.

47. Ibid., p. 494.

48. Ibid..

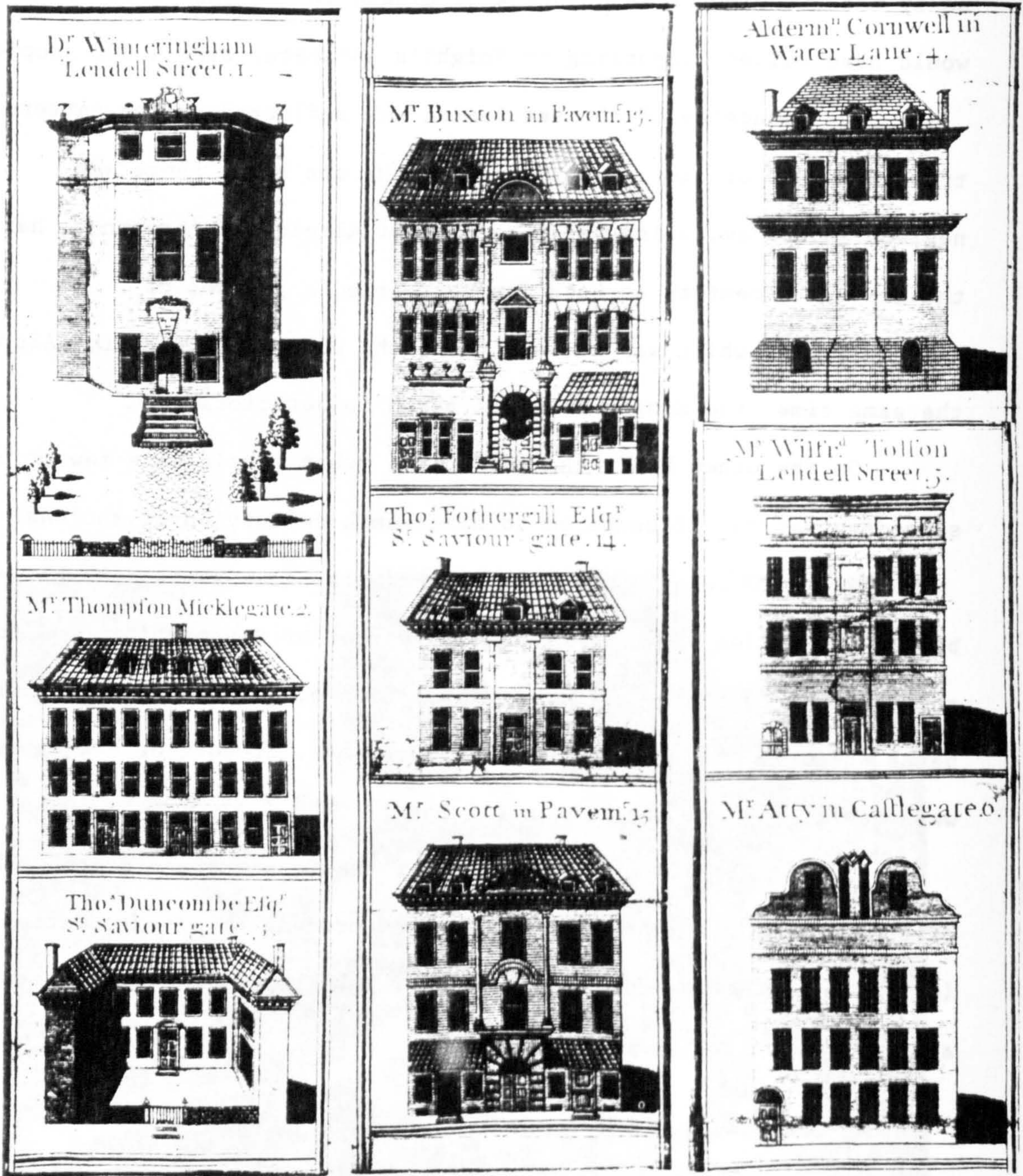


Fig.6.11 - Town houses. Source: Tillott, 1961.

In 1732, a Palladian building - the Assembly Rooms - was erected to house a weekly Assembly that had been happening since the end of the seventeenth century.

Also in the 1730's, York Corporation projected and laid out the so-called 'New Walk', which was basically a promenade running along the east bank of the River Ouse, where once stood the Franciscan friary (fig.6.10).⁴⁹

In 1743, the churchyard of St. Helen, Stonegate, which presented a protuberance that extended into the space of St. Helen's Square - thus creating difficulties for the passage of carriages to the new Assembly Rooms in Blake Street - was removed and lowered to the level of the surrounding streets, becoming a public space, and configurating the above mentioned square.⁵⁰

In 1746, a street (New Street) was created, linking Coney Street to Davygate.

As Knight tells us, a number of street 'improvements' took place in the kingdom of George III (1760-1820), involving aspects ranging from the cleansing of streets, or restrictions to the depositing of building materials in public spaces, and slaughtering of animals, or regulation of vehicular traffic, to more important interventions such as the widening of streets.

Streets such as Nessgate (in 1767), Goodramgate (in 1771), Spurriergate (in 1769), and King's Square (in 1768), and Pavement (in 1769) were enlarged.⁵¹

49.Ibid.. p. 538.

50.Ibid.. p. 527.

51.Ibid.. p. 580.

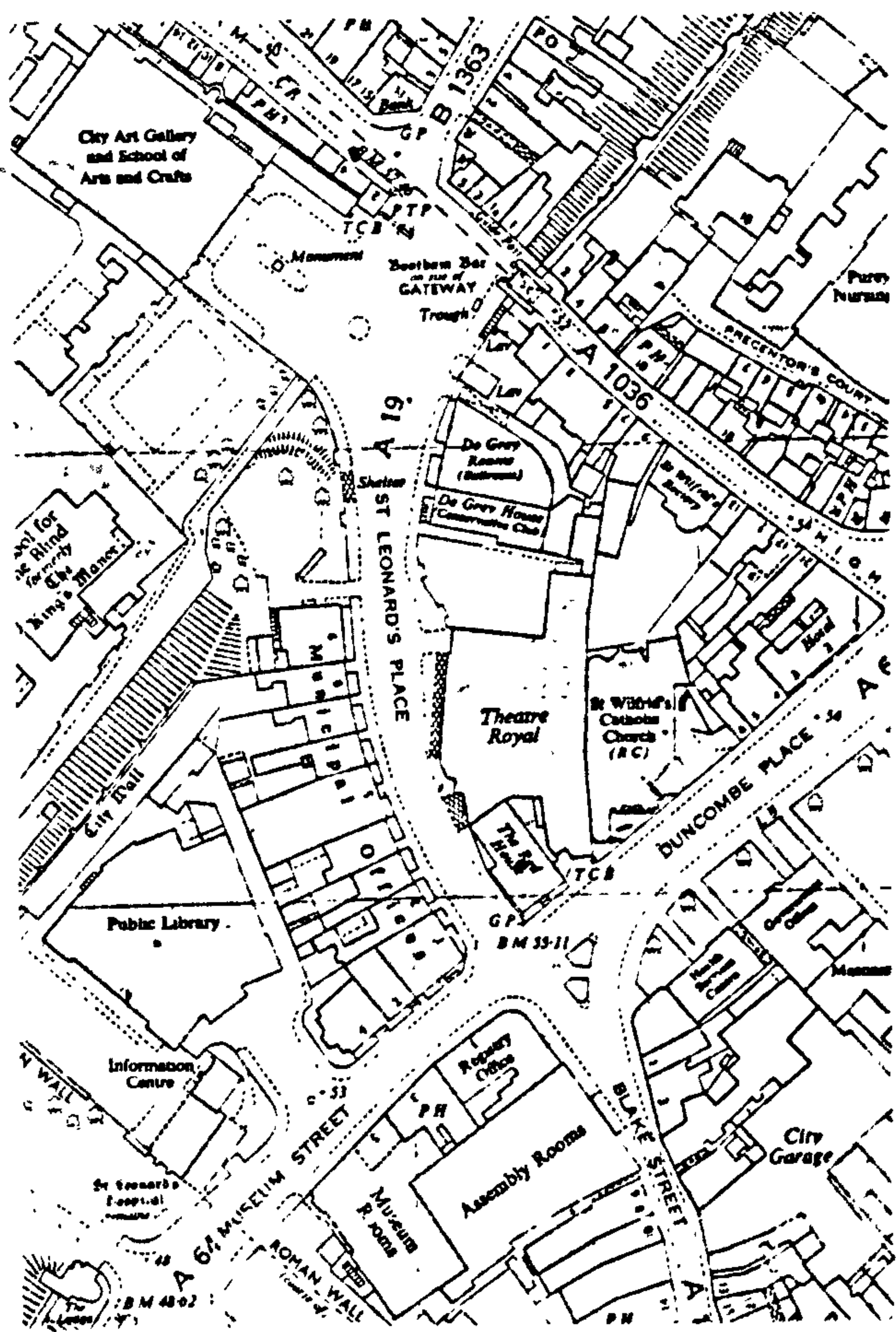


Fig.6.12 - St. Leonard's Place

In 1777, Coney Street was paved. By the end of the eighteenth century or beginning of the nineteenth 'the buttresses of the west side of St. Helen's church were taken down to widen the entrance of Davygate.⁵²

Also, the quality of the buildings that configurated the fabric went through a major change in the eighteenth century (fig.6.11). As Nuttgens tells us 'building in brick was made compulsory by York Corporation after the fires of the siege of 1644'⁵³. Despite that fact, according to the same author, 'brick houses were still rare in the townscape of York until the middle of the eighteenth century...'⁵⁴

Nineteenth and twentieth Century York

In the nineteenth century, important changes took place in the urban fabric of York.

In 1829 King's Square was enlarged. 1832 saw the creation of St. Leonard's Place, which appears in the form of a crescent continuing Blake Street and providing a new link to Bootham. One important result of such intervention was the destruction of a portion of the north-western section of the city walls (fig.6.12).

In 1832, a wide opening was cut through the urban fabric linking St. Sampson Square (which accommodated the Thursday Market) to Pavement, configurating what we know today as Parliament Street (fig.6.13). This open space was to house the expanded market for a long period, until it was transferred to its present (1990) location in

52.Ibid., p. 581.

53.Nuttgens, op.cit., p. 78.

54.Ibid..



Fig.6.13 - Parliament Street

Nessgate.

In 1846 another important alteration in the city's fabric took place, namely the realignment and widening of Museum Street (fig.6.14).

Apart from these more dramatic interventions, other urban 'surgeries' of minor scale or more peripheral location occurred; some of which are listed below:

1836 - Feasegate was widened. Jubbergate, which had been sliced through for the creation of Parliament Street, had its southern portion (now renamed Market Street) widened.

1838 - Saviourgate was widened.

1840 - Toft Green railway station was completed (causing the opening of two archways in the city walls. Spurriergate was widened.

1843 - Railway Street was created, linking Micklegate to Tanner Row.

1860 - The foundation stone of Lendal Bridge was laid.

1877 - The new railway station (outside the city walls was opened).

1881 - Skeldergate Bridge was open to the public.

1887 - St. Crux Church, Pavement, was demolished.⁵⁵

By the end of the nineteenth century another important urban intervention was effected, namely the creation of Clifford's Street (1881) (fig.6.15).⁵⁶

The twentieth century contributed with two major alterations in the layout of the walled city: the cutting of Deangate, from Petergate

55.Knight (1944), op.cit..

56.RCHM (1973), op.cit., p. 66.



Fig.6.14 - Dumcombe place. Source: author, & Tillott, 1961.

to Goodramgate in 1903,⁵⁷ the creation of Piccadilly prolonging Parliament Street towards the south-eastern section of the wall (fig.6.16); and the laying out of Stonebow, which continues on the alignment of the Pavement towards the north-eastern section of the city-walls (fig.6.17).

SUMMARY AND COMMENTS

This summary proposes to provide a more concise account of the development of York, and comment upon some of its main features. I shall start by referring to the initial gesture of location of the fortress, performed by the Romans around the year A.D. 71. Such a gesture defined a basic relationship between the settlement topography, presenting the valley where the initial nucleus was laid, the junction of the River Ouse and the Foss, and Bishophill on the opposite bank of that river, where the *colonia* was to develop. Such a relationship with the surroundings, as we saw earlier on, was determined by the strategic advantages that it offered. From such an strategic interest, followed the orientation of the fortress (with its corner's aligned with the cardinal points of the compass). The initial Roman legionary settlement underwent transformation subsequently, through the creation of a new network of pathways and the alteration of the layout of existing thoroughfares. Such transformations, as argued in detail by Knight, bear a direct relationship with the initial layout of the Roman fortress: for instance by existing alignments (such as *Via Principalis* and *Via Praetoria*) affecting the layout of future thoroughfares

57. Tillott, P.M. (ed.), A History of Yorkshire. The City of York. The Victoria History of the Counties of England, R.b. Pugh (general editor) (London: Oxford U.P., 1961), p.340.

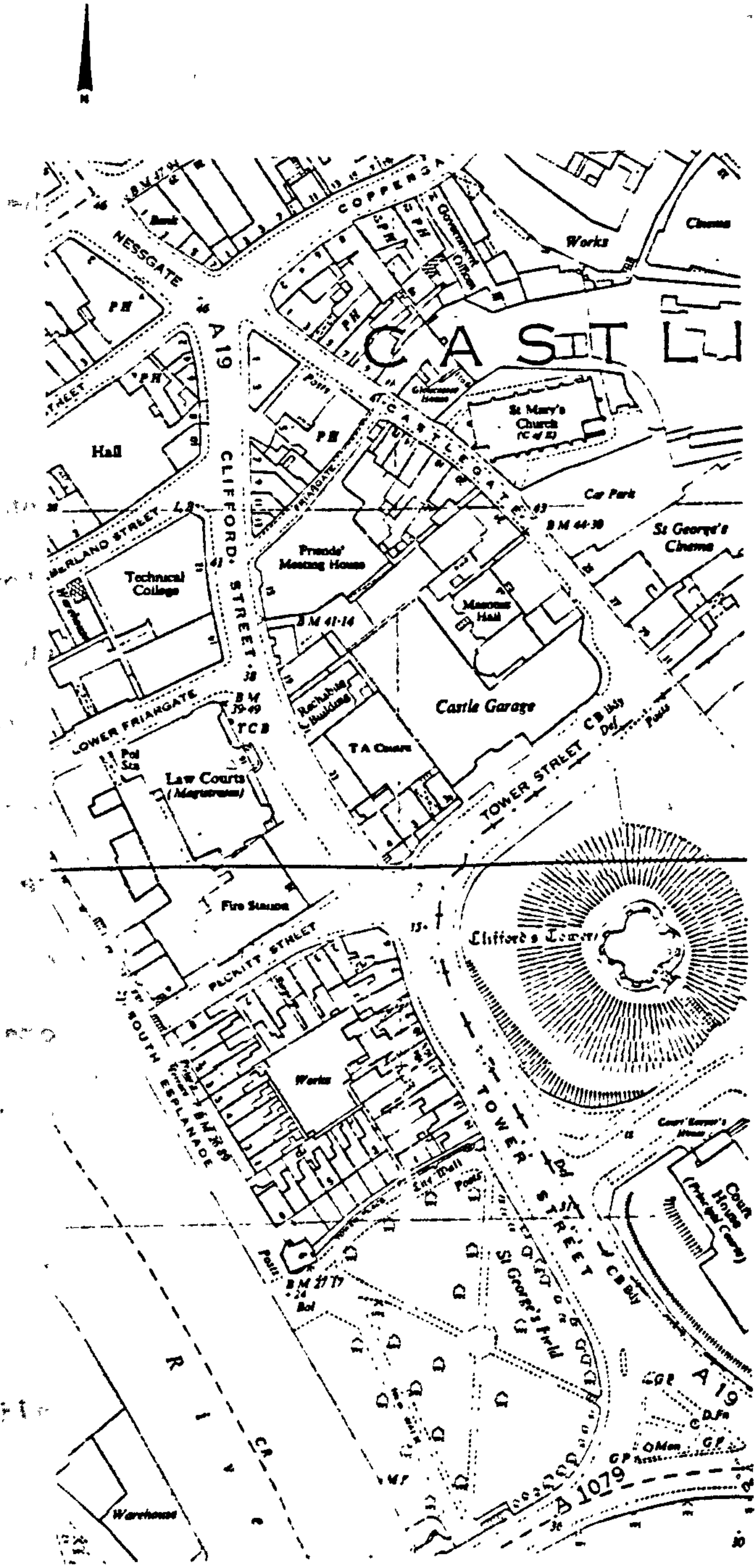


Fig.6.15 - Clifford's Street

(Petergate and Stonegate, respectively); or by the prolongation of the existing Roman layout (e.g. Bootham, Monkgate, and Colliergate); or else, by the persistence of built structures such as the north-east and north-west sections of the City Walls, which (although now Medieval) have continuously maintained their position up to the present days.

A characteristic urban fabric, much of which still survives, was gradually consolidated (probably in the Viking period). Although bearing a close relation with the layout of the Roman fortress, the new urban fabric of York was the product of a *process of accommodation and negotiation, which happened in time through the contribution of a variety of individuals.*

As that urban fabric evolved, it was punctuated by a number of planned buildings, which followed more or less the layout of the Roman settlement. The most important of such interventions was the Minster, whose creation has a close relationship with the layout of the legionary fortress, as it sits on the site of the former Roman headquarters. Or, the Roman headquarters came about as a consequence of the geometry of the Roman fortress (which authors such as Knight claim to be a standard plan repeated throughout the Roman colonies); and the fortress's location in its turn, was determined by strategic reasons. From that it follows that the location of the Roman headquarters was the result of a mechanical process triggered off by the fore mentioned strategic concern; i.e. there was not such a thing as a choice for the best site for the headquarters. The location of the Minster, inasmuch as it was a gesture of perpetuation of a site of focal importance, not of a geometric Roman fortress anymore, but a new settlement which expanded in its particular way, disfiguring the initial (rigid) Roman layout (even if hinting at some of this layout's features in its

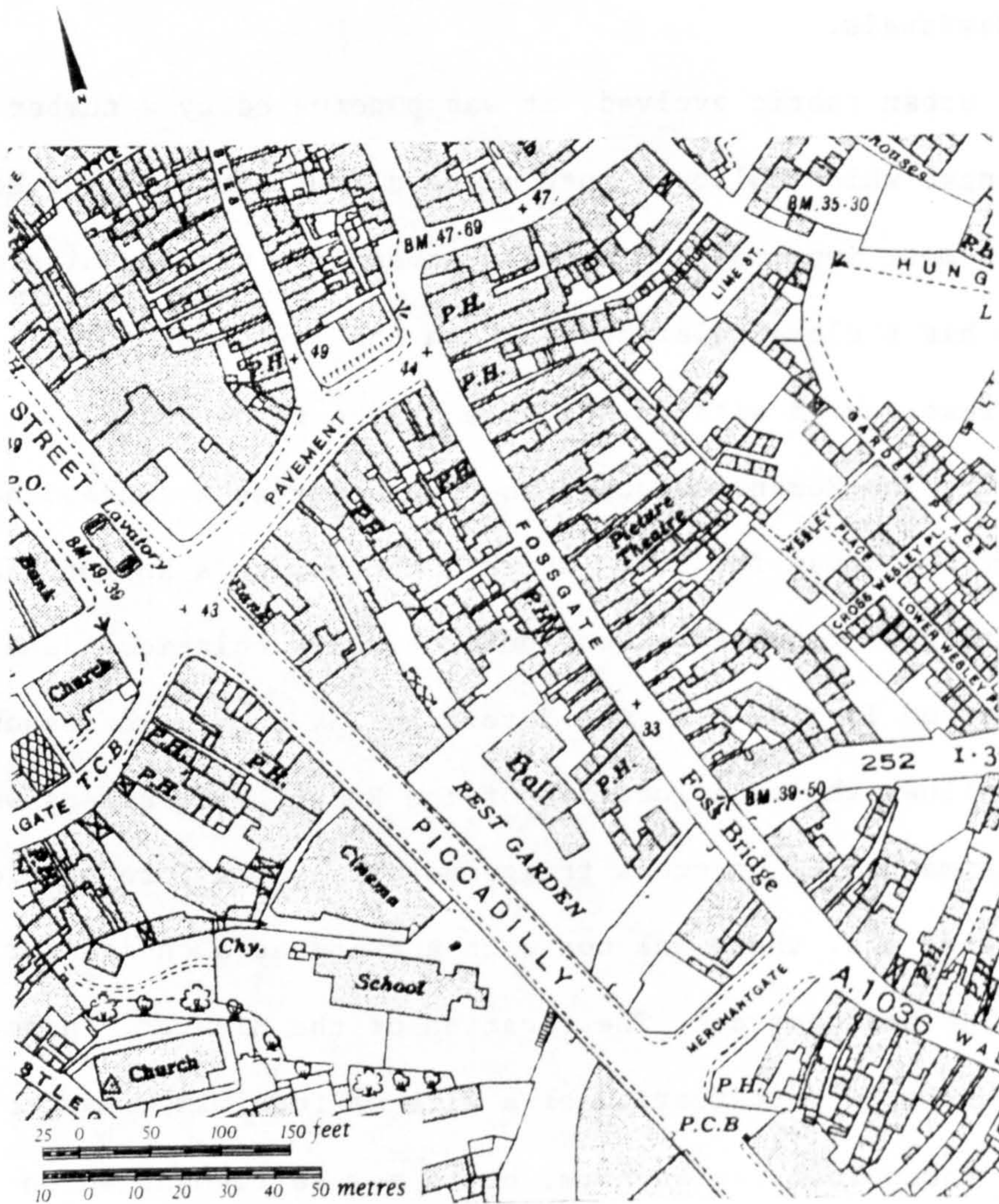


Fig.6.16 - Picadilly

physiognomy), shifting a few times its centre of gravity; gave continuity to that mechanical process which lead to the location of the Roman headquarters (fig.6.18). This process, to be sure, begs the question: what would be the best site for the erection of a building of the monumental importance of the Minster? In relation to such a question, I shall present some comments about the topography of the York region made by Esher (1968):

Micklegate Bar, which stands at the crest of what seems a considerable hill, is only 40 feet above the banks of the Ouse, and the Minster precinct 13 feet lower. So topographically the Minster gets no help, and in fact in spite of its immensity it by no means dominates the historic core; it stands back in its Victorian precinct, is glimpsed at the end of narrow streets or above roof tops and is seldom seen from the ground level except fragmentarily.⁵⁸

Another important aspect in relation to the location of the Minster is the east-west alignment that it assumed already in the 1080s as Archbishop Thomas of Bayeux rebuilt it (fig.6.18). The relationship that the Roman headquarters kept with the *Via Principalis* and the *Via Praetoria*, following the same alignment of the former and facing the later, was totally different from the relationship that the new Minster established with Petergate, and Stonegate, which, as we saw earlier on, followed the alignment of the *Via Principalis* and *Via Praetoria* respectively. As the Minster was enlarged, such a relationship gained further importance. If we look at it more closely, we shall observe that initially it took the form of a segregation which was embodied in the erection of a wall enclosing the Minster precinct. When it was removed, houses were built in its place, which gave

58. Esher, V., York a Study in Conservation (London: St. Clements Fosh & Cross Ltd., 1968), p. 13.

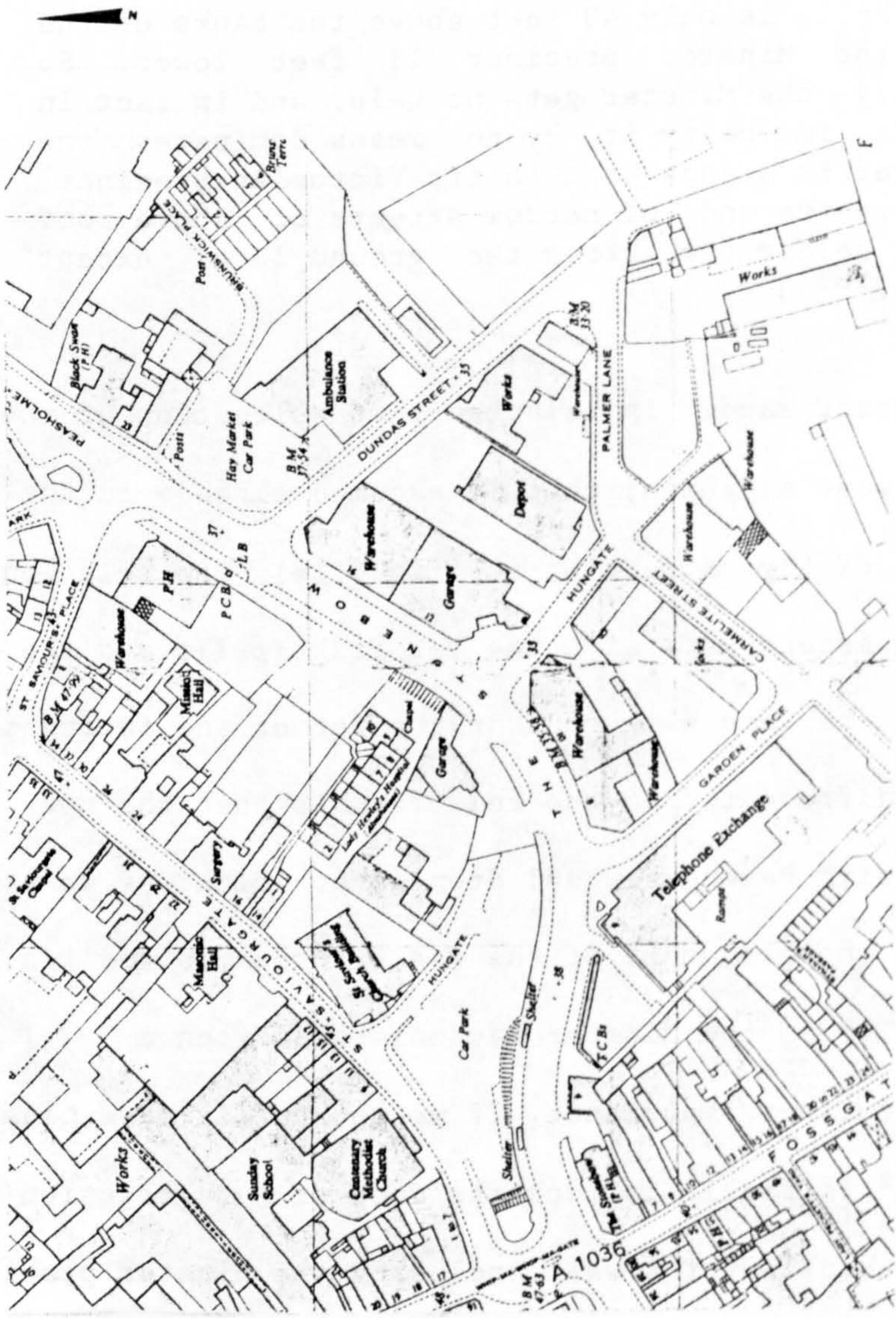


Fig.6.17 - Stonebow

continuity to the above mentioned segregation. Such a relationship changed only when those houses dividing the space of Petergate from the Minster precinct were taken down in the nineteenth century. At that moment, the massive building of the Minster emerged, almost reaching Petergate, and forming two small triangular open spaces facing the Minster's east facade and the south-eastern portion of the central nave.

By the eighteenth century, the urban spaces of York further consolidated, as brick buildings started replacing the wooden structures that existed before. It is also expected that this replacement would have brought about a change in the proportions of the streets, as the houses raised to three-four storeys. In the nineteenth century, the network of spaces, which had gradually been transformed throughout a number of centuries, underwent a few radical transformations, as 'street improvements' took place. Such street improvements disfigured most of the urban fabric only through minor street widening and enlargements in many cases. In other circumstances, however, the changes in the urban fabric were much more radical, as they involved the creation of new streets, or the removal of clusters of houses (e.g. Parliament street, and St. Leonard's Place, among others). These alterations, as we saw, were also carried through in the twentieth century (though in a more limited scope), with the appearance of Piccadilly and Stonebow.

Now that a historical overview of the development of York has been presented, we are in a better position to describe and analyse its urban spaces. Such a description and analysis will initially refer to the city as a whole, and to some of the spaces of the settlement that were saved from the impact of planned interventions. Major

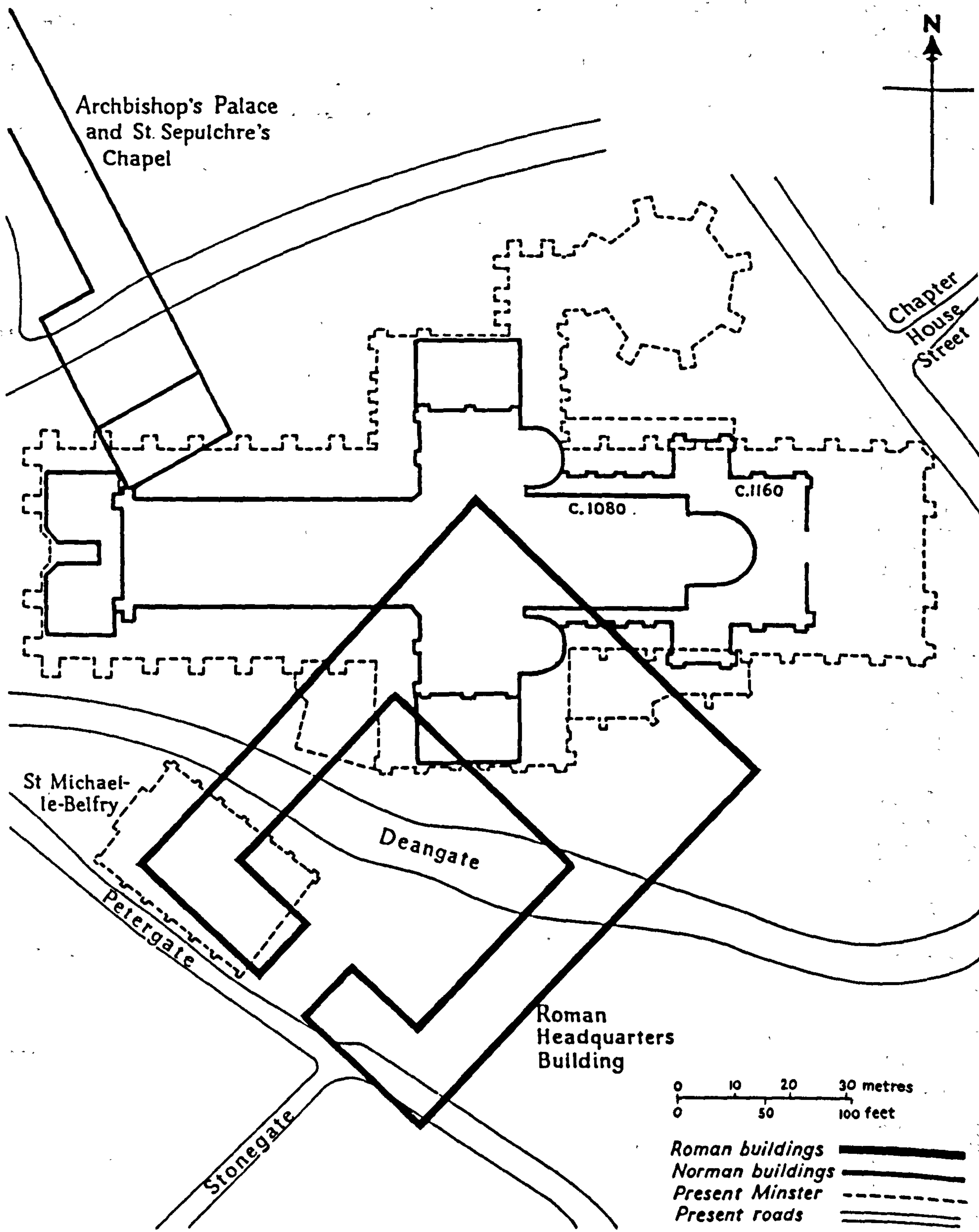


Fig.6.18 - Roman headquarters/Minster plan. Source: RCHM, 1985.

attention, however, will be paid to some of those planned interventions, contrasting them with what existed before, analysing the impact they may have on their users, and proposing alternative ways of arranging the urban spaces in question. Four areas have been the subject of more detailed study. They are: the Minster/Petergate area, Exhibition Square (and St. Leonard's Place), Parliament Street, and St. Helen's Square.

URBAN DESCRIPTION

Let us arrive at York by train, and walk to and about the walled city, highlighting some of its features (fig.6.19 shows the route we are going to follow).

As we step out of the 'new' rail station building (erected in the 1870s), we can already perceive the city Wall, as a section of its external face appears in front of us. The flavour of inaccessability is accentuated by the presence of another isolating device, this time not a Medieval structure intended for defensive purposes, but a twentieth century highway (Station Road), loaded with heavy traffic, which prevents an easy access to the Wall on the opposite side of the road.

Once we have gone across the road, and passed through a gateway in the Wall, our first glimpse is that of self imposing modern buildings, framing the entrance to Rougier Street (fig.6.20).

Lendal bridge is now in our field of vision. Once on it, we are able to see the northern portion of the Ouse water front, which reveals a rich composition of buildings of different materials and ages, which are nevertheless consistently integrated as they align themselves along the river (fig.6.21).

Stretching on the other side of Lendal Bridge is Museum Street;

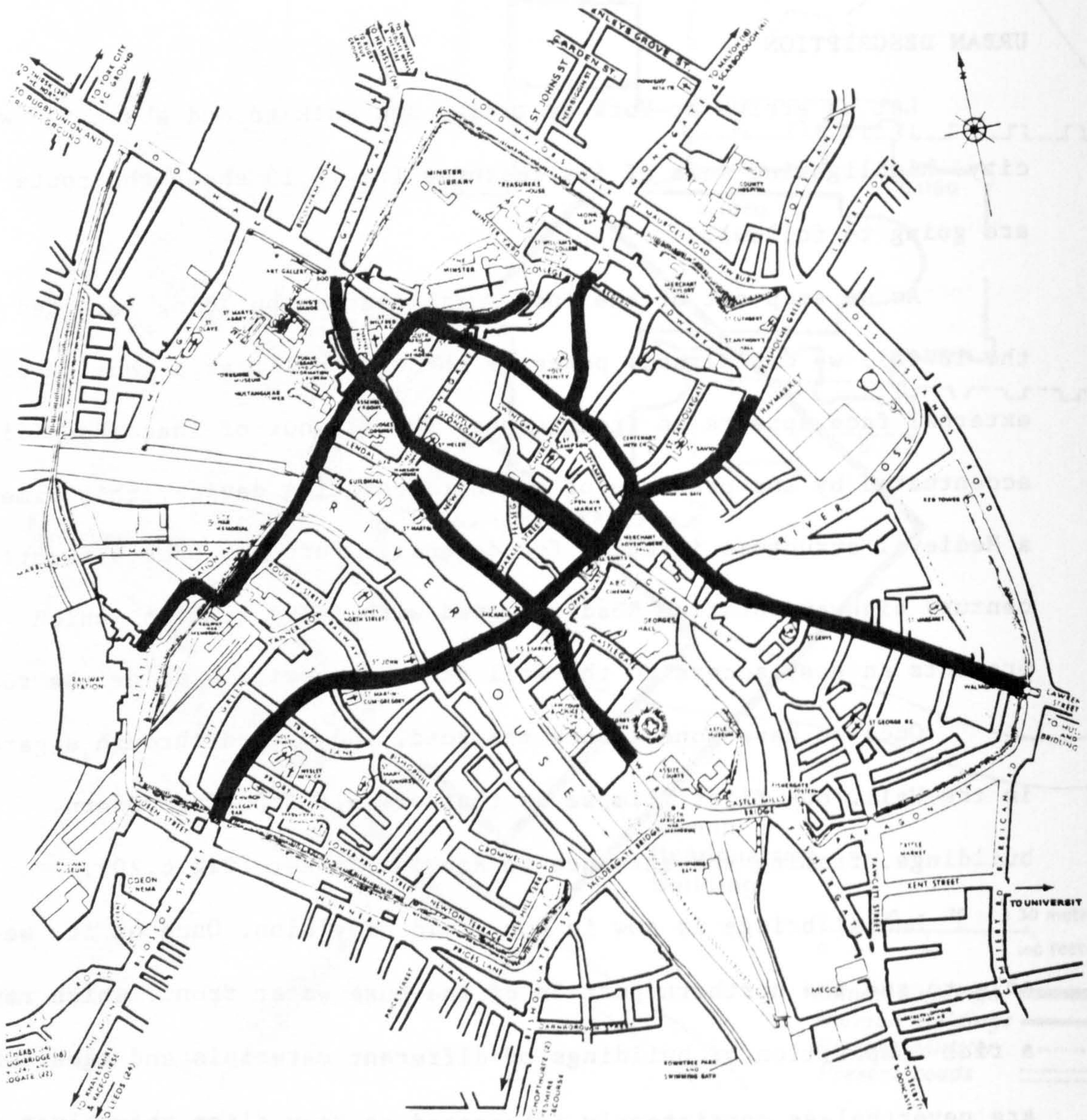


Fig.6.19 - Route followed for describing York

which we shall follow to get to our first interface with the medieval fabric of York - now revealed as we look south-east at Lendal. In front of us, on the other hand, there opens a sequence of spaces, which does not totally gather in the form of a street, as more recent buildings (nineteenth and twentieth centuries), such as the public library, or the City Treasury, recede into the background, providing an adjacent space to Museum Street (used for car parking), or as that street becomes twice as wide as it crosses St. Leonard's Place. Such a widening marks the transition to Duncombe Place, which in its expanded width, however, does not allow for further space for circulation along the roadway. In that space, the gardens of the two nineteenth century buildings raise above the pavement (by one foot) and project into the space of Duncombe Place (fig.6.14b).

By that stage (and even earlier) the Minster can be seen. Its appearance is nevertheless subtle, as it is partially screened by a mass of trees, and also, as it presents a an angle of 135 degrees in relation to our route of approach. As we near the Minster, the space further widens. Again the alignment of buildings recede to our right, and once more, such a sideways expansion does not allow for an actual expansion of movement of people moving along the roadway. The reason for such a contention of movement, like the earlier one, is the presence of gardens raised above the pavement, following the alignment of those we passed by a minute ago.

At a closer interface, the Minster fully reveals its monumental scale, even more so given the constricted nature of the public spaces that surround it. Petergate cuts our approaching route transversally and conforms together with the frontal facade of the Minster, and a row of brick buildings facing the latter, a squeezed triangle. Such a

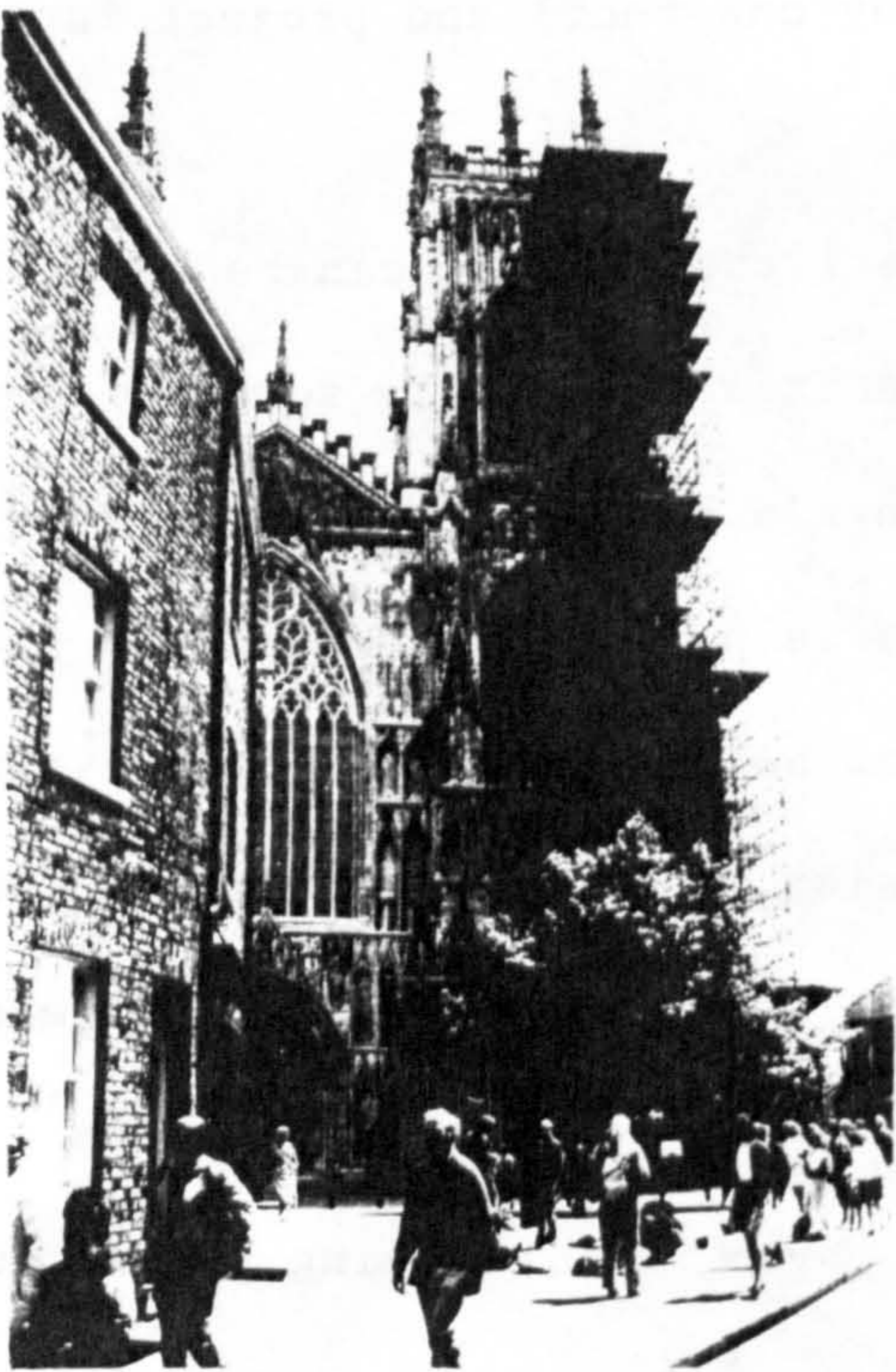
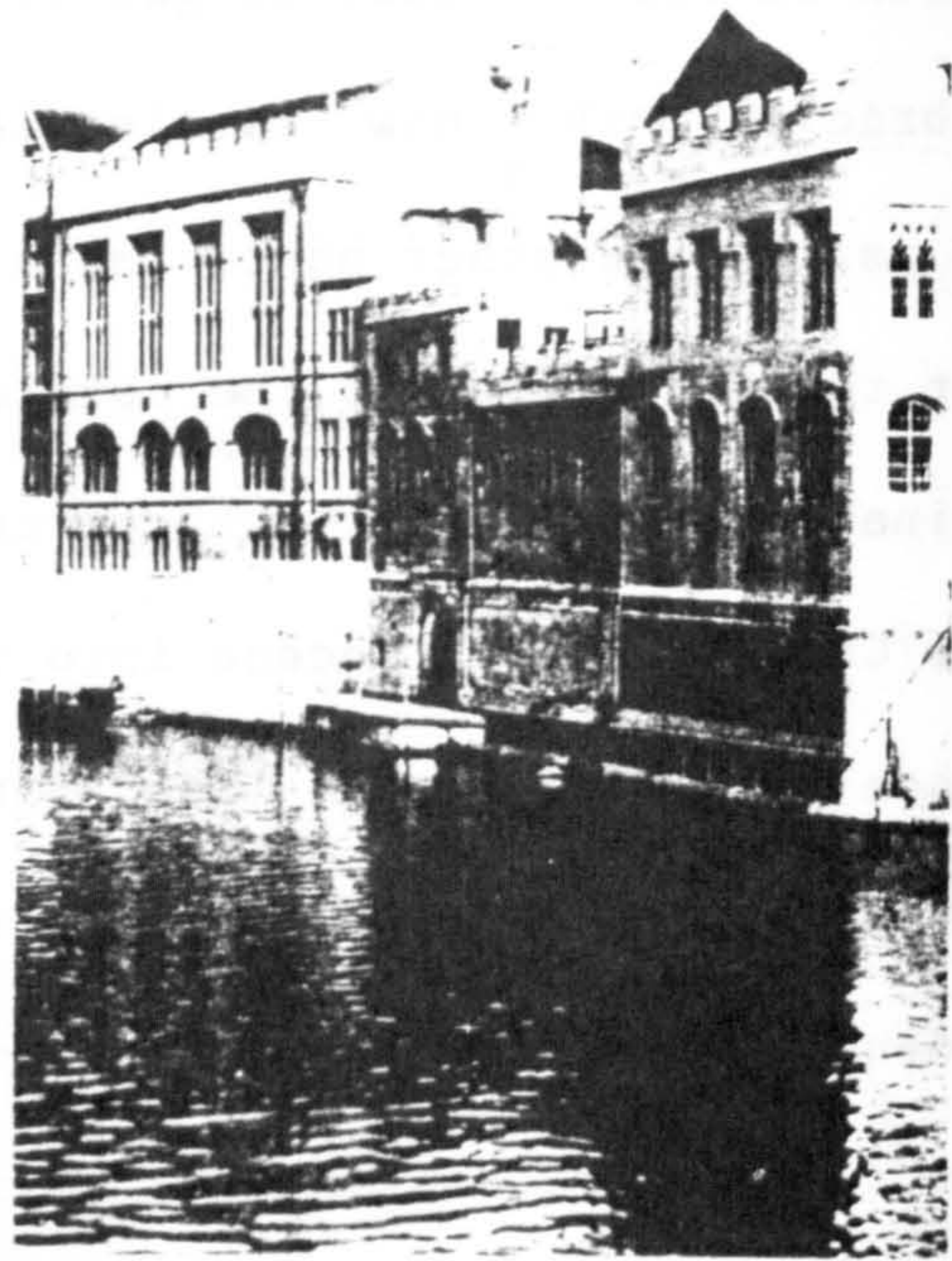
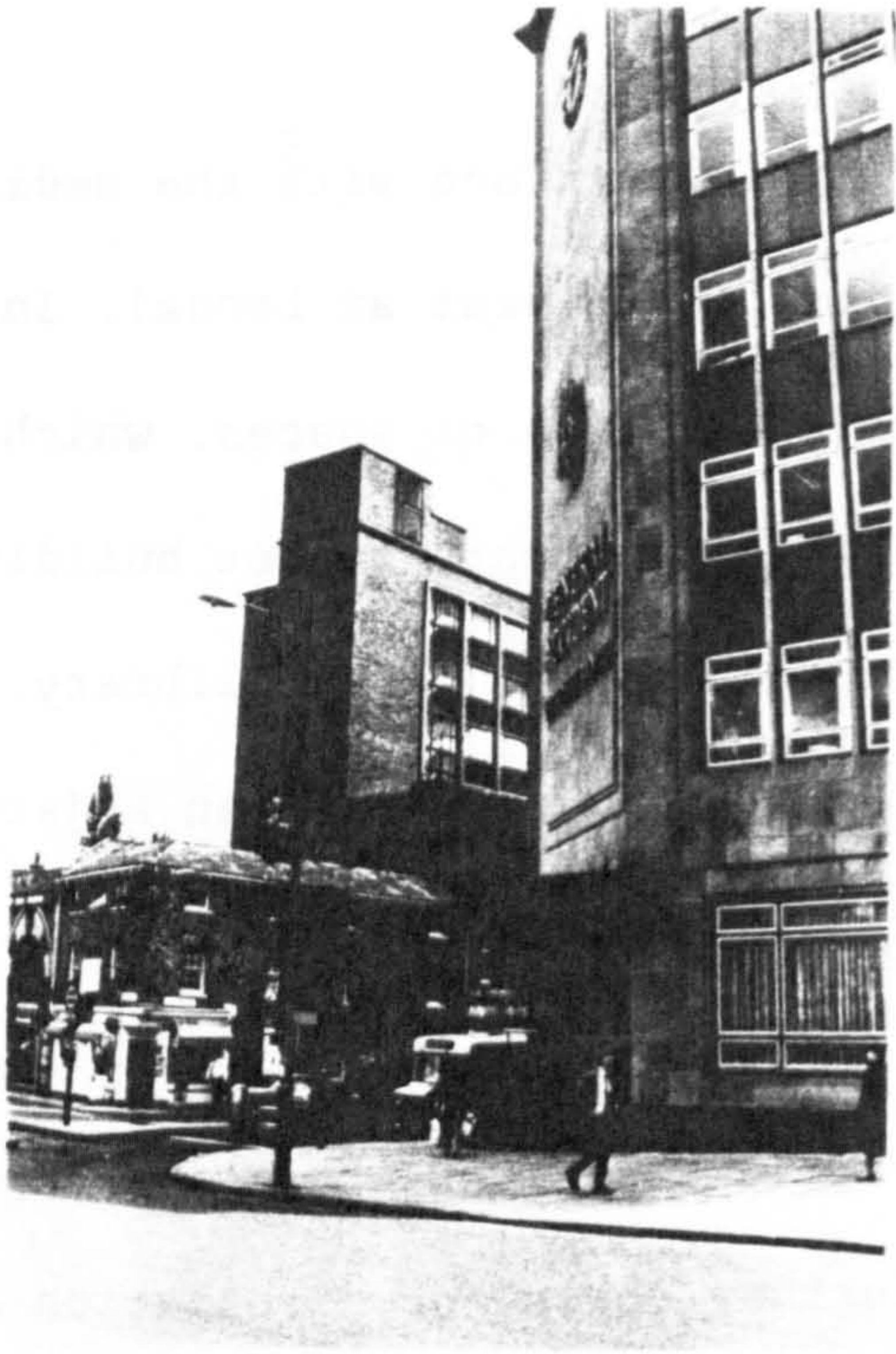


Fig.6.20 - Rougier Street

Fig.6.21 - River water front. Source: Tillott, 1961.

Fig.6.22 - Space in front of York Minster. Source: author.

Fig.6.23 - Stonegate. Source: author.

triangle, by its exiguousness, is little in tune with the monumental character of the Gothic building that stands in front of us, (fig.6.22) which one would rather tend to see in association with a large frontal space where people may be provided room to gather, and appreciate from a distance a full view of the frontal facade with its twin towers. Adjacent to that triangle, there is yet another triangle, this time even smaller, which is configurated by Petergate, the south (lateral) facade of the Minster and the Church of St. Michael. This adjacent triangle makes an even smaller concession to pedestrian gathering, as it is sliced by Deangate⁵⁹. A walk along the south facade of the Minster is marked still by claustrophobia. The alignment of buildings next to it squeezes the space for circulation, with more or less vigour (as buildings recede behind iron fences - such as the Minster School). The street then splits up creating a momentary widening. Further contribution for that feeling of claustrophobia comes from the set of buttresses (of the southern facade) which project into that lateral space.

If instead of following Deangate, we choose to go along Petergate, then we are given a taste of the medieval fabric of the city, with its numerous buildings dating from different periods. The organic layout is clearly manifested (more than one could predict by looking at a plan of the area), as the street not only twists and swirls, but also the buildings that conform it present variations of alignment, and sometimes incline in the vertical direction (breaking away from the usual vertical arrangement). It is indeed astonishing how

59. That state of affairs has been remedied, to some extent, by the recent closure of the above mentioned roadway to motorised traffic (although asphalt pavement still remains, now punctuated by large plant pots and sided by a raised pedestrian pavement.

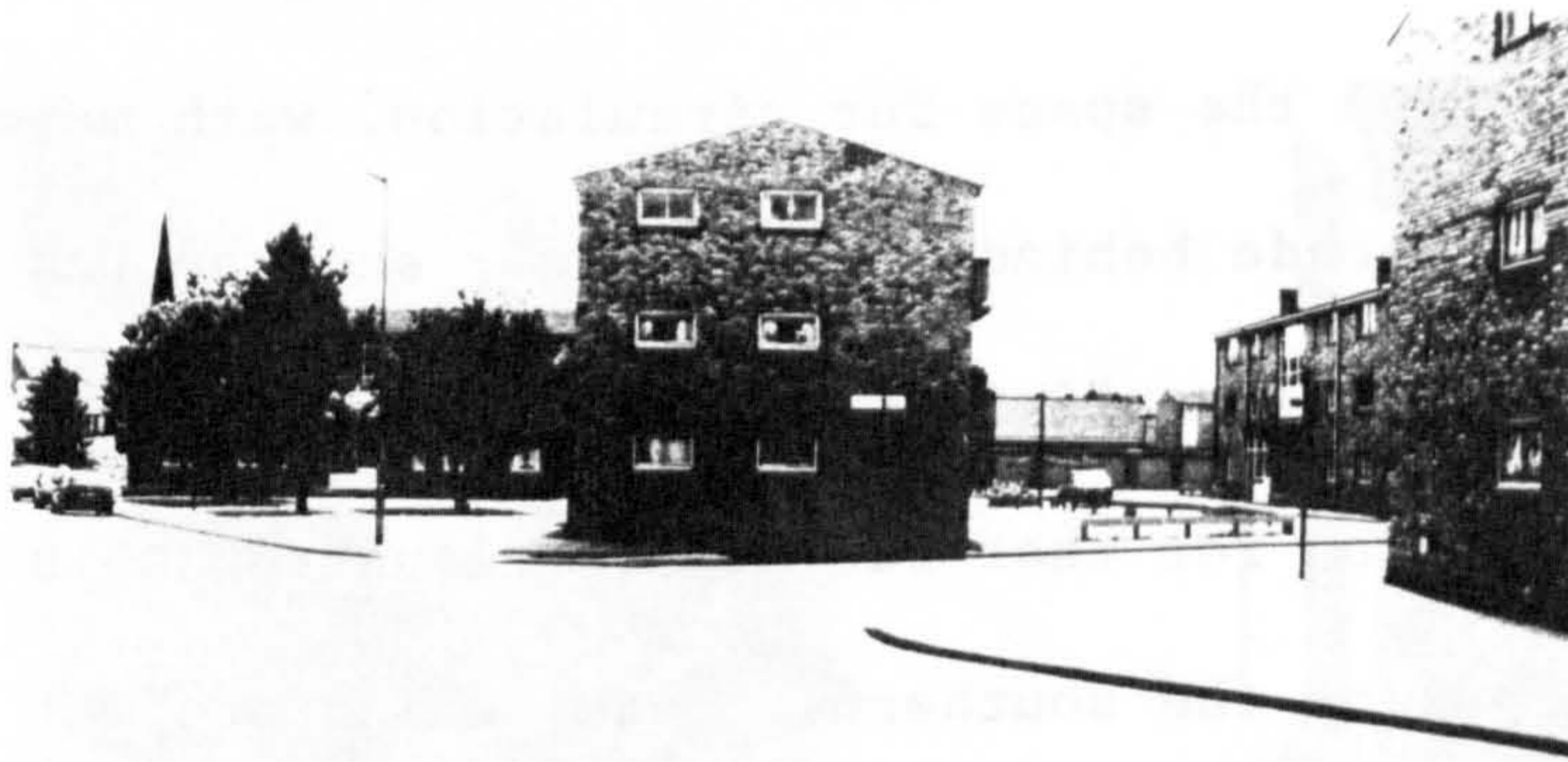
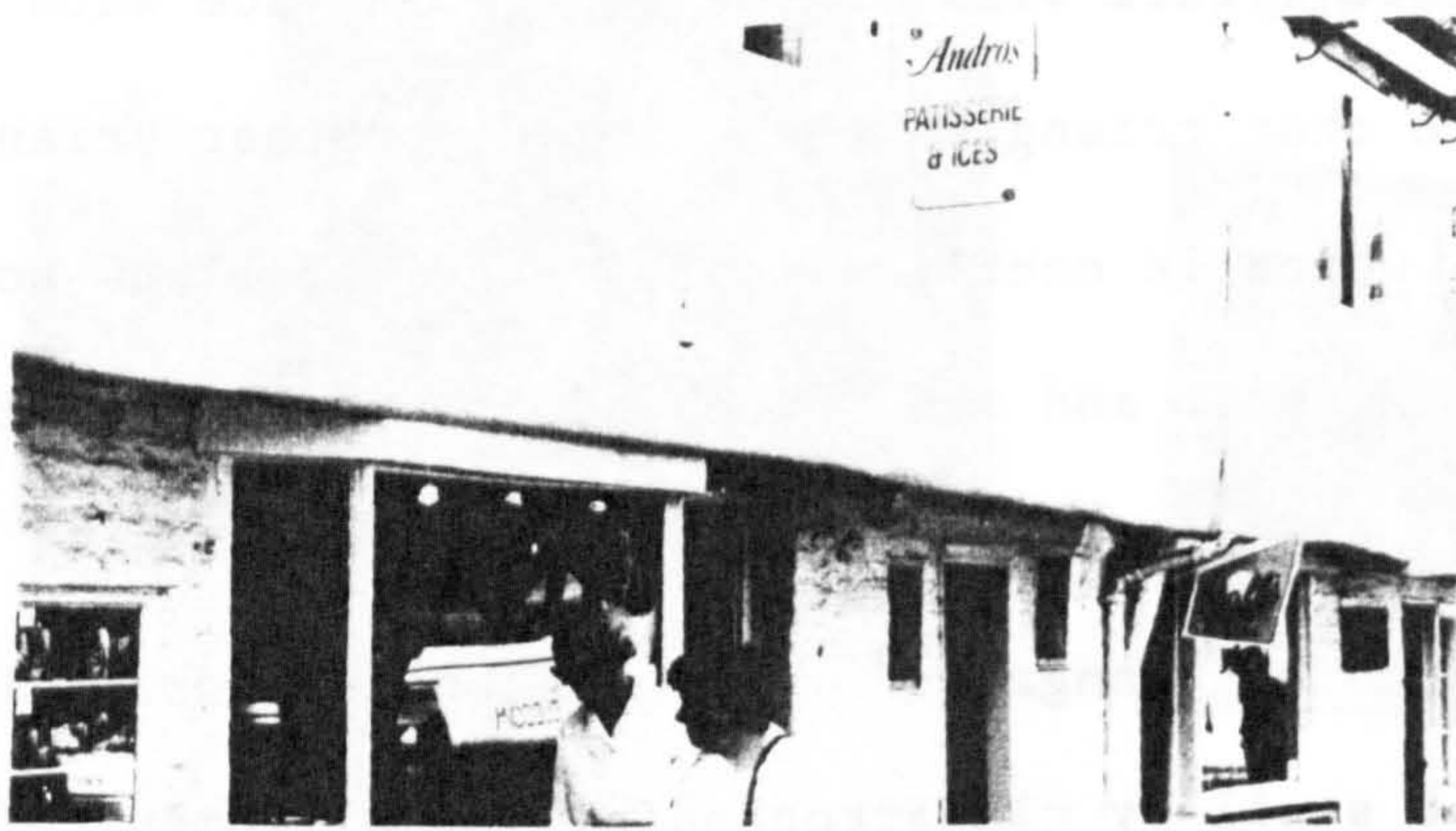
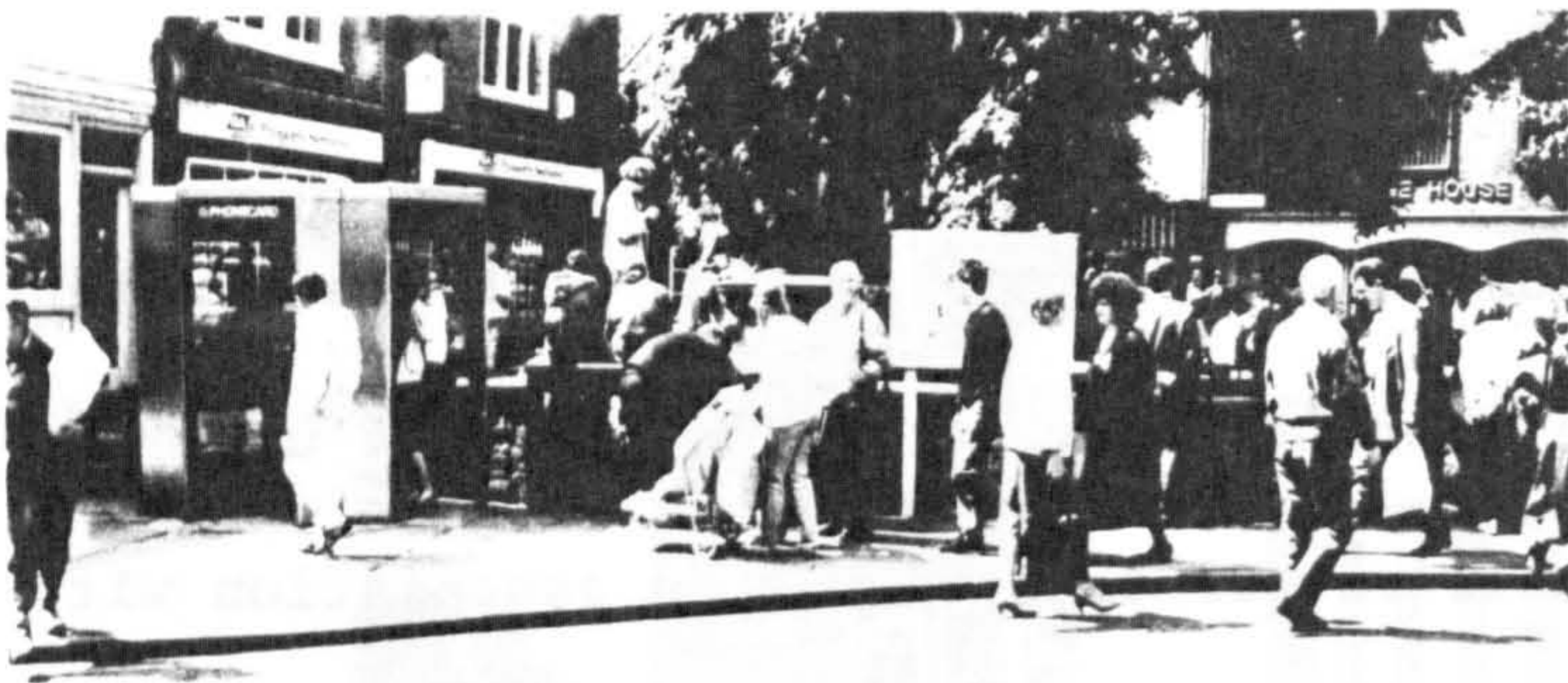


Fig.6.24 - King's Square. Source: author.

Fig.6.25 - Lady Row. Source: author.

Fig.6.26 - Walmgate housing development. Source: author.

Fig.6.27 - Stonebow. Source: author.

buildings of such variety can achieve such a neat integrity in the urban spaces they conform.

Looking south-west (to our right), we now see Stonegate, which combines the richness and integrity described above maybe to an even greater extent (fig.6.23). We could walk along it and enjoy the full taste of what York has to offer in terms of vernacular spaces; but let us restrain ourselves from doing that, and instead follow along Petergate, where we shall also find a stimulating environment. Further along that street lies King's Square, which provides an almost complete flavour of a medieval square - almost, because the layout of the pavement (which is raised in its central portion) and the presence of intruding structures (such as pieces of street furniture, telephone boxes, catering wagons, etc.) actually make it uncomfortable for people to gather, interchange, and perform activities⁶⁰ (fig.6.24).

We may now have a quick exploration of Goodramgate, which presents a number of medieval vernacular buildings, as attested by the terrace of fourteenth century timber framed houses known as *Lady Row* (fig.6.25).

After that quick diversion, we come back to King's Square, and from here we may follow along through Colliergate, or through the picturesque Shambles (with its narrow spaces, accentuated by the layout of the timber framed buildings that incline inwards as they go up). Either way, we get to the Pavement, where the fabric widening which once accommodated a market is now used for the efficient traffic of automobiles.

.....
60. The raised pavement is probably a remnant of Christ Church (still appearing in the 1851 map), which in the past ate away a significant portion of King's Square.

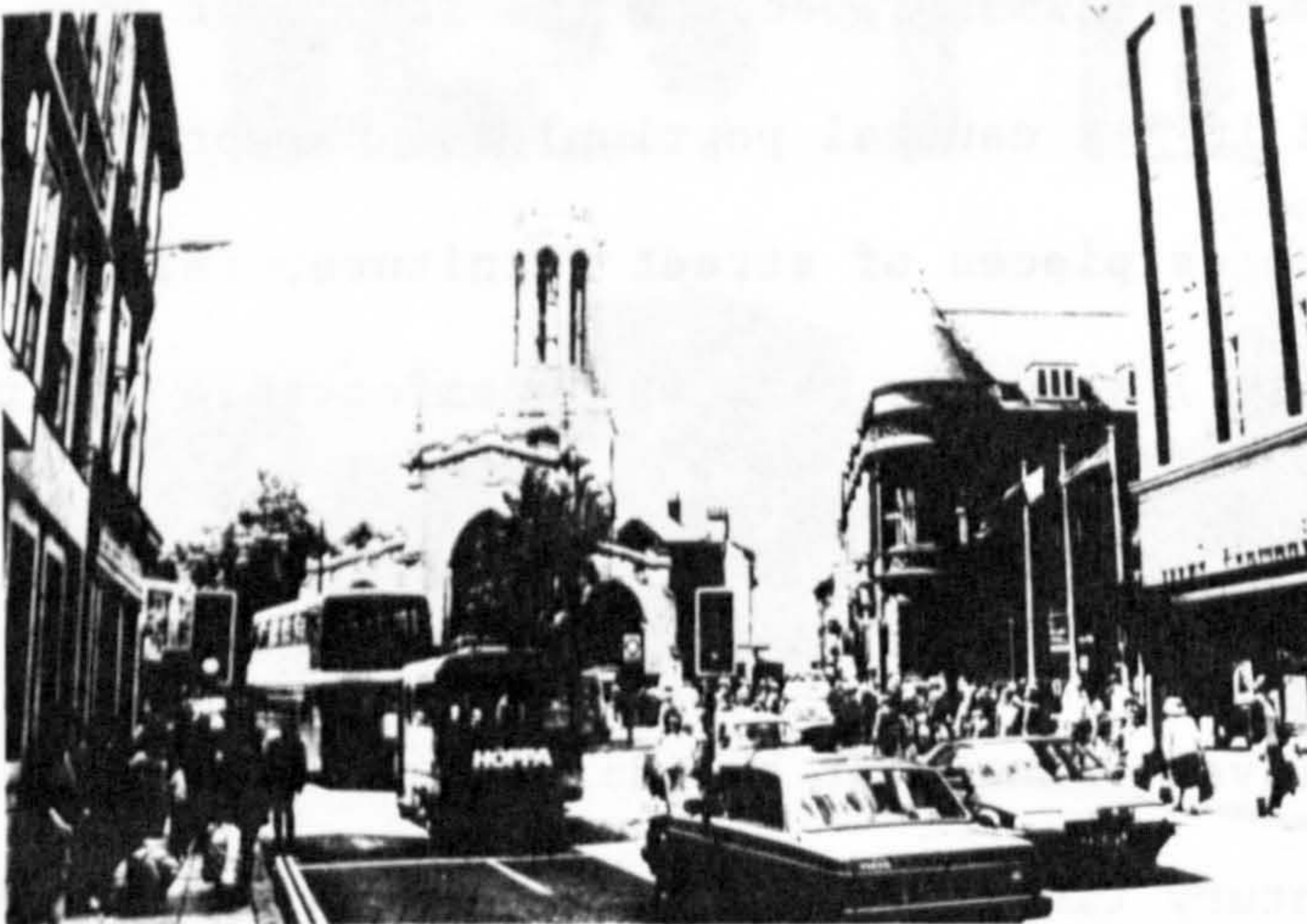


Fig.6.28 - Pavement. Source: Walton (1836 lithograph), author.

Fig.6.29 - Parliament. Source: author.

From that point we may follow Fossgate, to enjoy for a bit longer the continuity of the vernacular fabric, only to see it gradually lose its integrity as we get into Walmgate. Such a loss of integrity culminates with the new housing developments by Walmgate Bar, which bear little relation to the layout of the street (fig.6.26).

Otherwise, we may follow the Pavement and then Stonebow, towards the north-east portion of the city Wall to witness the above mentioned loss of integrity of the urban fabric happening in a more dramatic fashion. In fact, only a glimpse in that direction, revealing in the foreground *Stonebow House* (a 1960s modern building), epitomises the quality of spaces that follow along that route (fig.6.27).

A more interesting option is to follow on in the opposite direction towards All Saints Church - and as we cover that distance, we must keep well clear of the middle of the street space, which is dominated by motorised vehicular traffic. We now get to a busy connection between Parliament and Piccadilly, where cars appear in the spotlight, as they run on the focal space of the street connection. The feeling of an expanded opening in front of a church, which once arose in pre-nineteenth century times, is now totally absent, as the 'street improvements' that took place after 1830, destroyed the character of enclosure of the Pavement (fig.6.28).

A brief contemplation of Piccadilly is already sufficient to reveal a radical change of space layout: the scale changes as the enormous brick buildings of the Coppergate complex and Marks and Spencer stand to the south-west. That new scale is not matched by the layout of the opposite buildings, notably the Merchants Adventurers Hall, which sinks into its terrain, and recedes almost 20 metres away from the alignment of buildings lying north-west of it.

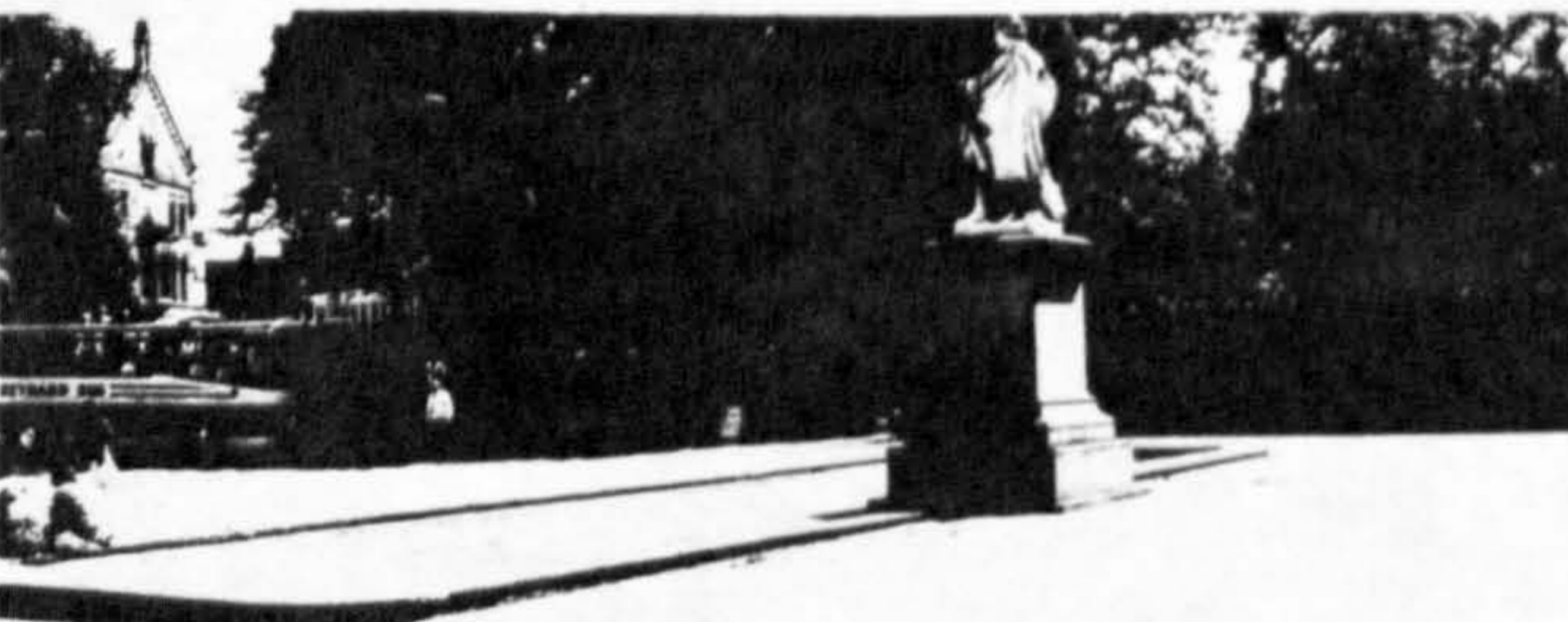
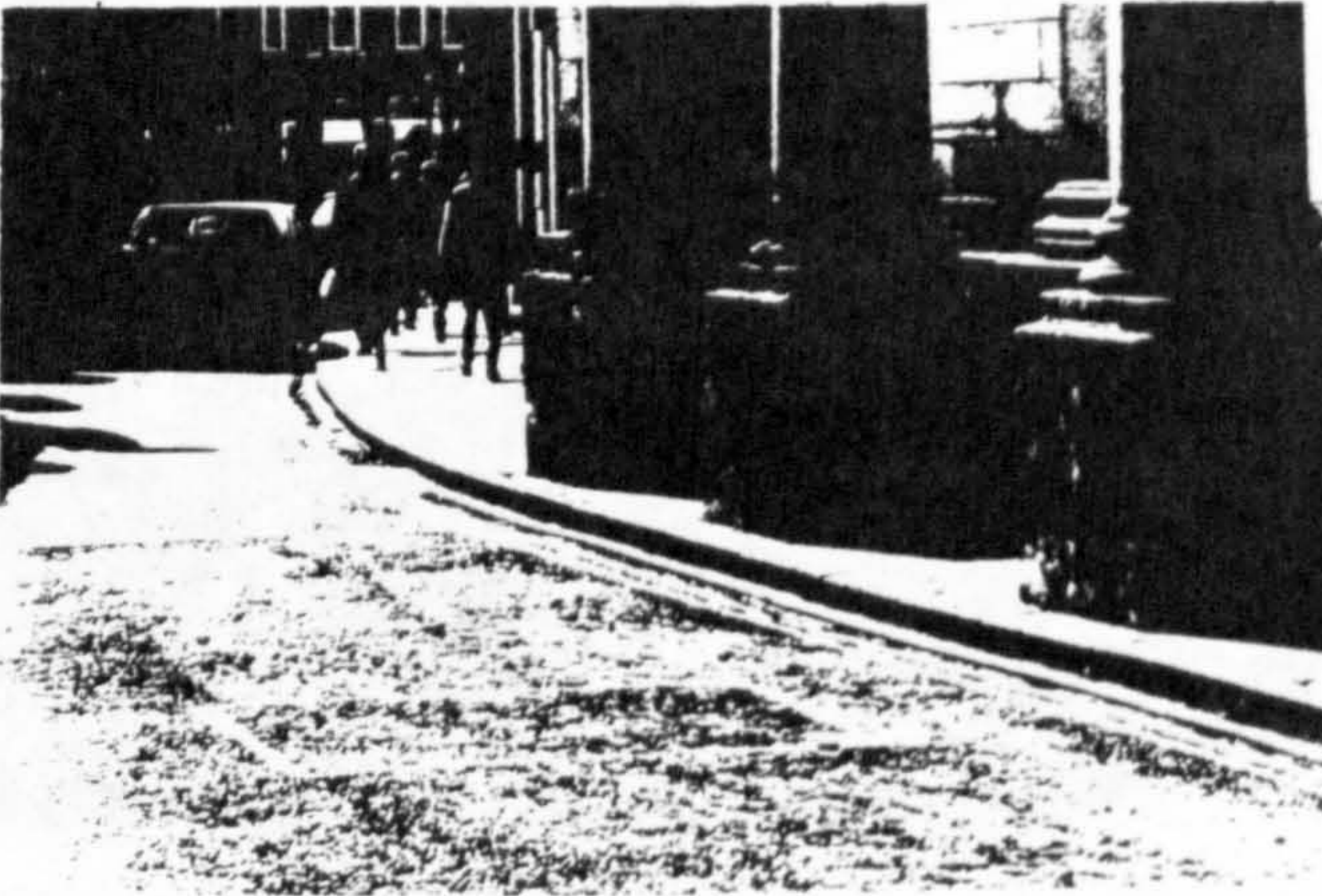
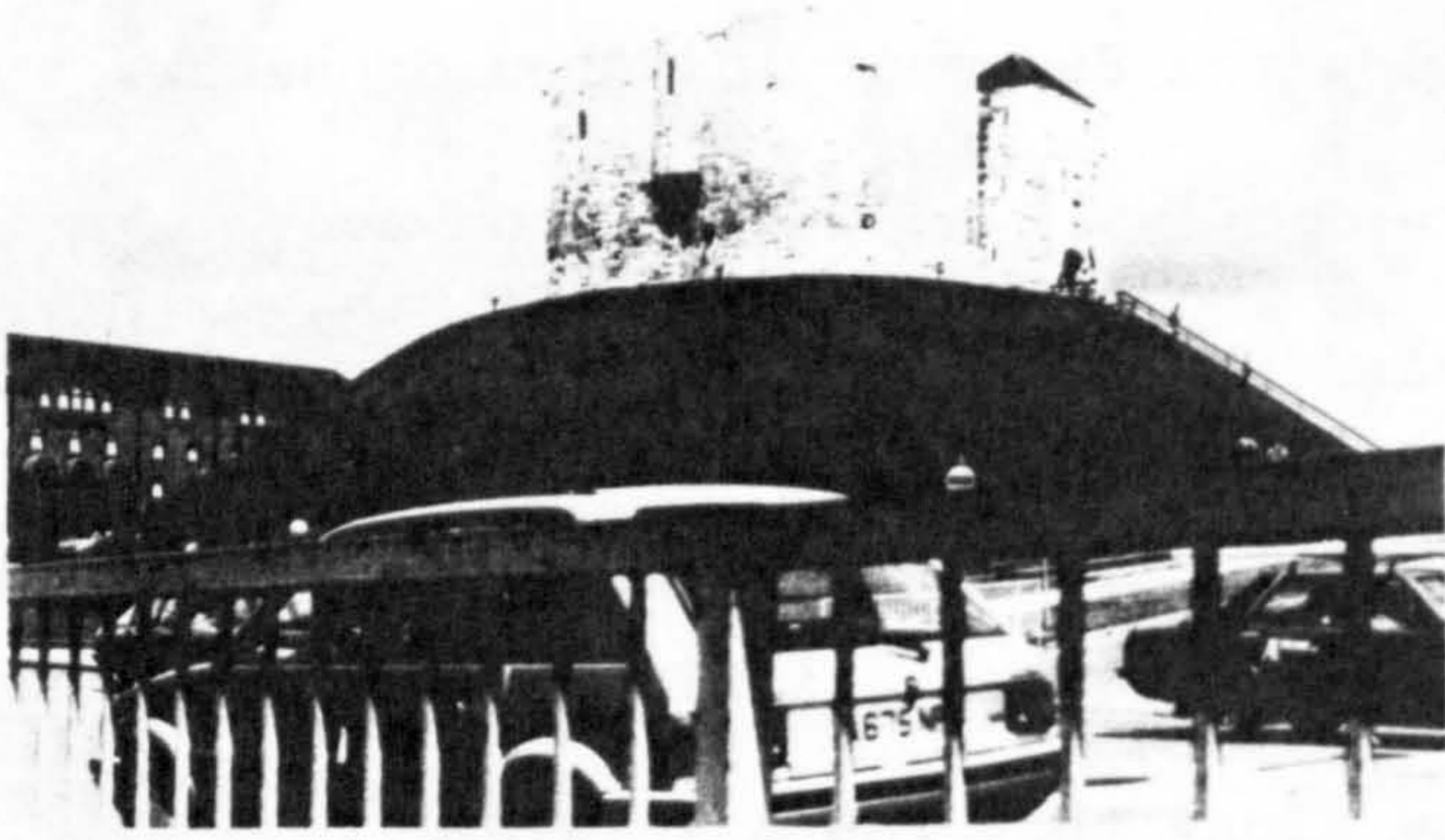


Fig.6.30 - Micklegate.

Fig.6.31 - Clifford's Tower. Source: author.

Fig.6.32 - Assembly Rooms. Source: author.

Fig.6.33 - Exhibition Square. Source: author.

Looking at Parliament Street from that connection, we can see its long narrow layout, cluttered with bicycle racks, lamp posts, benches, rubbish bins, among other things (occupying the central portion of Parliament Street) (fig.6.28), which excludes ourselves from the use of its space. That feeling of exclusion is further accentuated as the pavement of Parliament Street raises in a concave layout towards the opposite end (the layout is that of the slope of a low mound curving downwards) (fig.6.29).

If we follow on through high Ousegate, the integrity of the urban fabric is retrieved, and maintained as we turn to the north-west, following Coney Street. If we carry along Low Ousegate, we shall come to Ouse Bridge, which provides a less attractive view of the river waterfront, this time populated by derelict warehouses in the process of urban renewal⁶¹ (fig.6.30).

Across the River Ouse lies Micklegate, which presently undergoes urban renewal at its lower portion, but which maintains much of the flavour of its vernacular fabric in its upper portion, with St. Mary's Church, and Holy Trinity Priory set back from the street space, at the same time as they harmoniously integrate with such a space.

If we now go back to the connection between High Ousegate, Coney Street, and Nessgate, the scenario is a quite different one. Let us follow Nessgate and Clifford Street (which prolongs it). Here we shall experience, once more, an increasing loss of integrity of the urban fabric, as the Law of Courts building and the Fire Station recede from the alignment of the street creating a space which is chiefly for the

61. There may be reservations, however, in relation to some of these new developments in what concerns their scale, which occasionally sharply contrasts with that of the surrounding fabric.

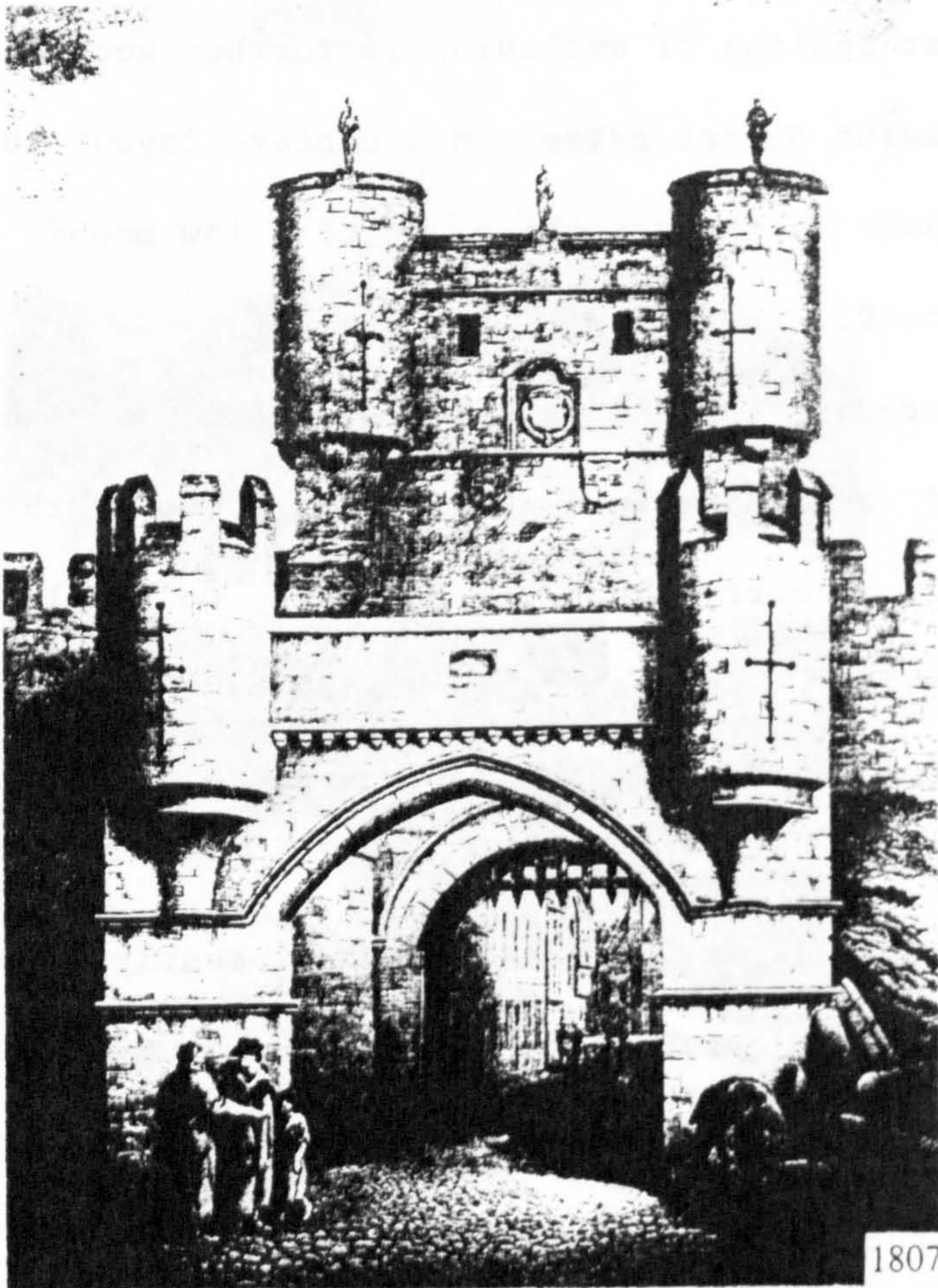


Fig.6.34 - Bootham Bar. Source: Palliser, 1979, & author.

circulation of motorised vehicles. Further along, in Tower Street, the circulation of automobiles becomes even more important, and takes more space of the urban fabric. Clifford's Tower now appears on its motte isolated by the highways and car park that surround it (fig.6.31).

We may now come back to Parliament Street and walk along it, and observe the clumsiness of the articulation of its buildings, which do not quite follow a straight layout, presenting instead, minor variations, that attempt to conform to the imposed rectilinear discipline. Here, unlike in Stonegate or Petergate, we do not see a dynamic movement of protuberances and set backs that contributes to create further interest and stimulation in the observer.

At the north-western end of Parliament Street we shall find St. Sampson's Square, which may be said to have lost in the 1830s (with the creation of Parliament Street) the right of receiving such a qualification. As it lost one of its conforming facades, St. Sampson's Square stopped being an enclosure, it lost its unity as a square, becoming an appendix of Parliament Street.

If we follow along towards the north-west, we enter Davygate, where a number of modern buildings (of a larger size) appear, imposing a different scale. We next pass by St. Helen's Square, and follow through Blake Street, where the Assembly Rooms building heralds its presence, as its portico steps into the space of the street (fig.6.32). At that stage, Blake Street presents a widening, which, however, is not large enough to accommodate the scale of the monumental structure that opens to it.

We now cross Museum Street and walk along St. Leonard's Place, which assumes a form of crescent in the Georgian style, with the characteristic frontal iron fence and basement accesses, segregating

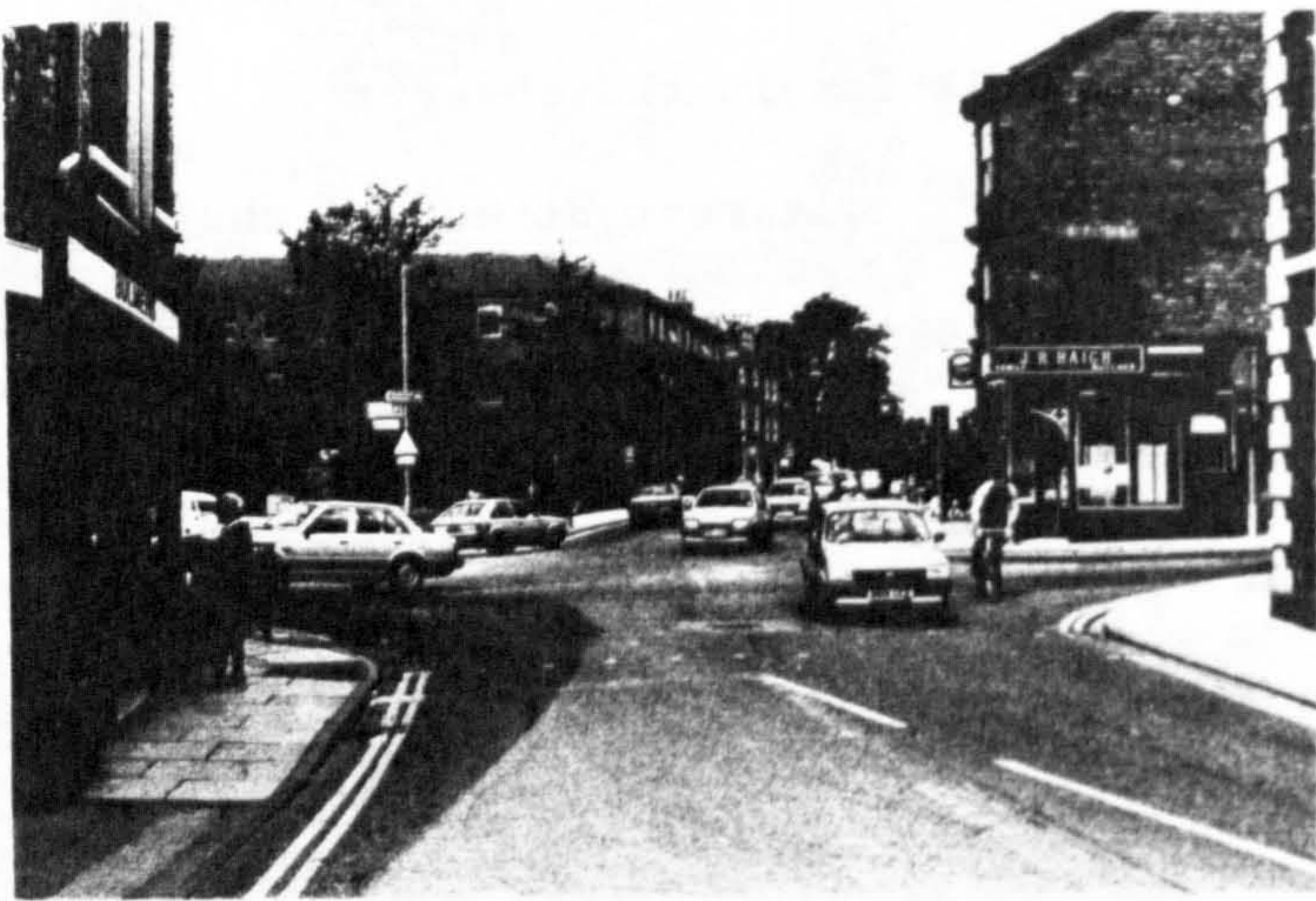


Fig.6.35 - Monkgate. Source: author.

Fig.6.36 - Peaseholm Green. Source: author.

the building from the street space. Across the roadway, stands the Theatre Royal with its modern extension integrated to the nineteenth century stone building. At the north end of St. Leonard's Place, we find an expanded space, where a number of elements seem to concur in its definition, namely: the Art Gallery, the iron fence of the King's Manor precinct, the King's Manor building in the background, De Grey Rooms, and a portion of the wall of the old St. Mary's Abbey close. Such elements, however, as they relate to each other, seem not to work effectively in the definition of such a space. There seems to be an ambiguity about it (which I shall explore in more detail when we come to the urban analysis) (fig.6.33).

Now that we covered the most characteristic spaces of the medieval fabric of York (with its more recent interventions), we may get a picture of the city as a whole: that of a city which, on the one hand presents a richness of urban layouts; and on the other hand is insular in its vernacular manifestations, as repeated planned interventions appear in its peripheral areas, already within the walled city, which cause a loss of integrity of the characteristic medieval urban fabric. And further, such a deleterious process is also present in many central areas (such as Parliament Street).

URBAN ANALYSIS AND PROPOSALS⁶²

The first thing to be said about the present endeavour of analysis is that it relies on maps which depict York already at a developed stage. The maps used here date from: 1610, c. 1650, c. 1680.

62. The urban proposals put forward here will in most cases involve pedestrianisation. In that way there has been no consideration about the traffic of motorised vehicles.

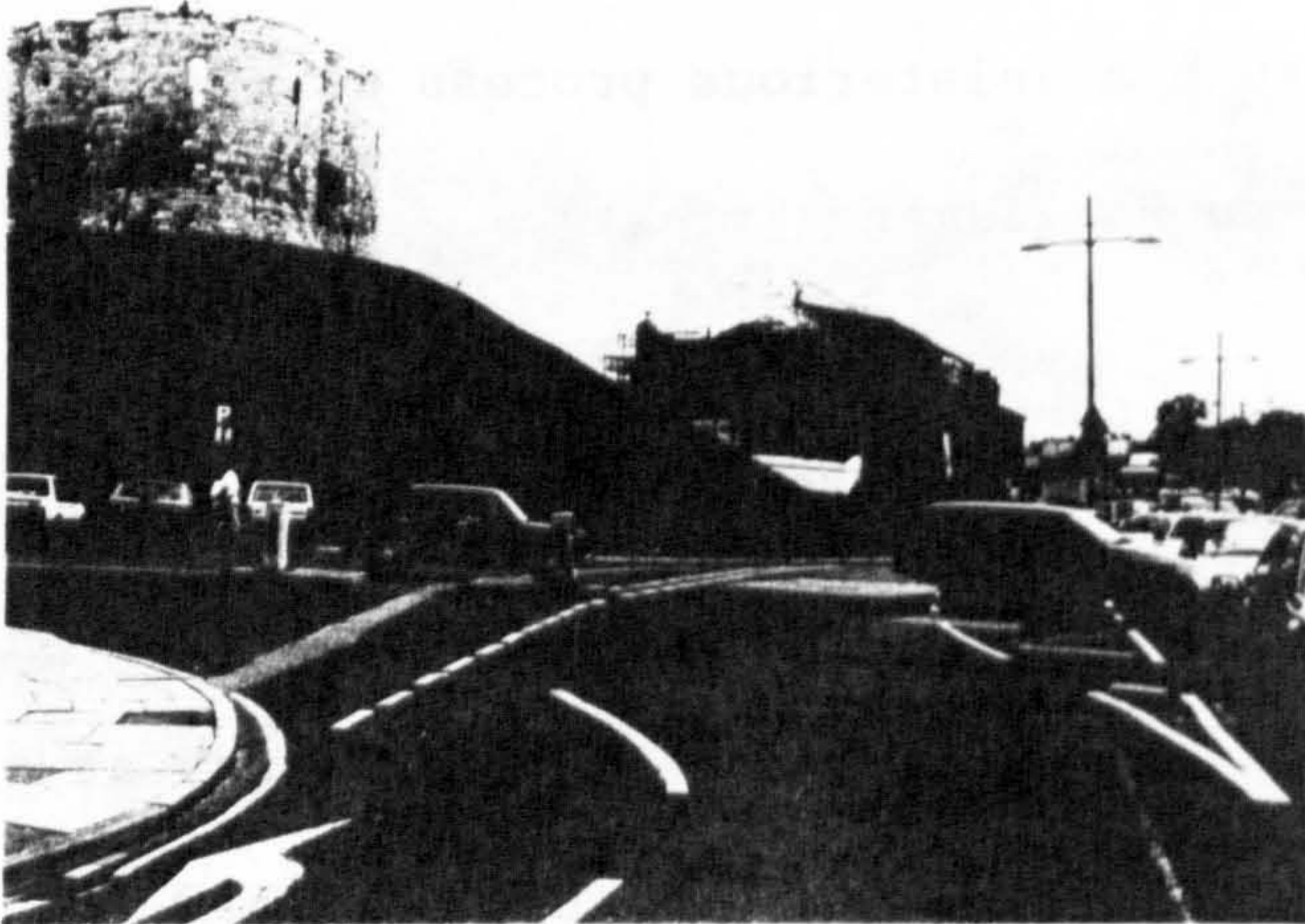


Fig.6.37 - Walmgate Bar.

Fig.6.38 - Skeldergate Bridge area. Source: author.

1694, 1736, 1750, 1772, 1776, 1838, 1851, 1937, and 1960. Moreover, early maps (first half of the seventeenth century) are rather schematic, thus contributing to further limit the urban analysis. Added to that fact, York already had most of its fabric laid out before the Norman Conquest, which leads to the need to hypothesise (on the basis of archaeological evidence and other data) in many instances about the development of spaces.

I shall first deal with the walled city as a whole and then refer to particular areas.

As rightly remarked by Esher (1968), the city walls, if not spectacular, clearly identify the historic core of the city of York⁶³. There is indeed a segregation of the vernacular city, by the city walls, which contributes for the identification of it as a unit⁶⁴.

As pointed out in the urban description, the walled city lost its integrity as such, as dramatic alterations have been effected on its fabric. The loss of integrity may be said to have occurred at three levels: in the city centre, on the periphery of the walled area, and at the connection of this walled area with its surrounding estates. Something has been said already about the first two areas, and a more detailed analysis of the city centre will follow as we look at particular areas. Let us now focus on the third level, which refers to the connection between the walled city and its surroundings. No detailed analysis is presented, but only a brief sketch concerning the main entrances to the city, notably the *bars* (gates).

63. Esher, V., York a Study in Conservation (London: Her Majesty's Stationary Office, 1968), p. 13.

64. It should be remarked at this stage that the walled city considered the present study includes St. Mary's Abbey precinct.



Fig.6.39 - Micklegate Bar (views). Source: Tillott, 1961, author.

Where there seems to be the most continuity between a bar and its surrounding space is in the Bootham area. Here the wall of St. Mary's Abbey precinct stops some 25 metres before reaching the city Wall (segregating the space of Exhibition Square earlier commented upon), providing a smooth continuity with the alignment of Bootham Bar. The compactness of the buildings on both sides of Bootham further contributes to the above mentioned continuity.

A look at the 1694 and 1750 maps shows a gradual development of that area, as a row of buildings appear opposite St. Mary's Abbey wall, configurating a street in the space they form with that wall. Such a continuity was essentially kept, until the intervention which brought about St. Leonard's Place (1832), which led to the destruction of a portion of the above mentioned section of the Abbey's wall. Such an intervention, however, had its most disrupting effect on Exhibition Square, affecting to a lesser extent the continuity between Bootham Bar and Bootham (fig.6.34). (More about Exhibition Square will follow shortly).

The connection between Monkgate and Monkgate Bar does not present the same continuity as that of Bootham area. Here, a green square (yard or park) appears on the north-western side of the connection, breaking the integrity of the linear space of Monkgate (fig.6.35). If we look back into the history of that space, we shall observe that at a very early stage (as the 1610 map attests) there stood St. Maurice's church just where the green yard presently is. The 1610 map shows a row of houses partially enclosing the old church yard. The same row of houses is present in the 1680, 1750, 1766, and 1772 maps. The last three maps, besides displaying that feature, also show a new row of houses parallel to it, developing along the city

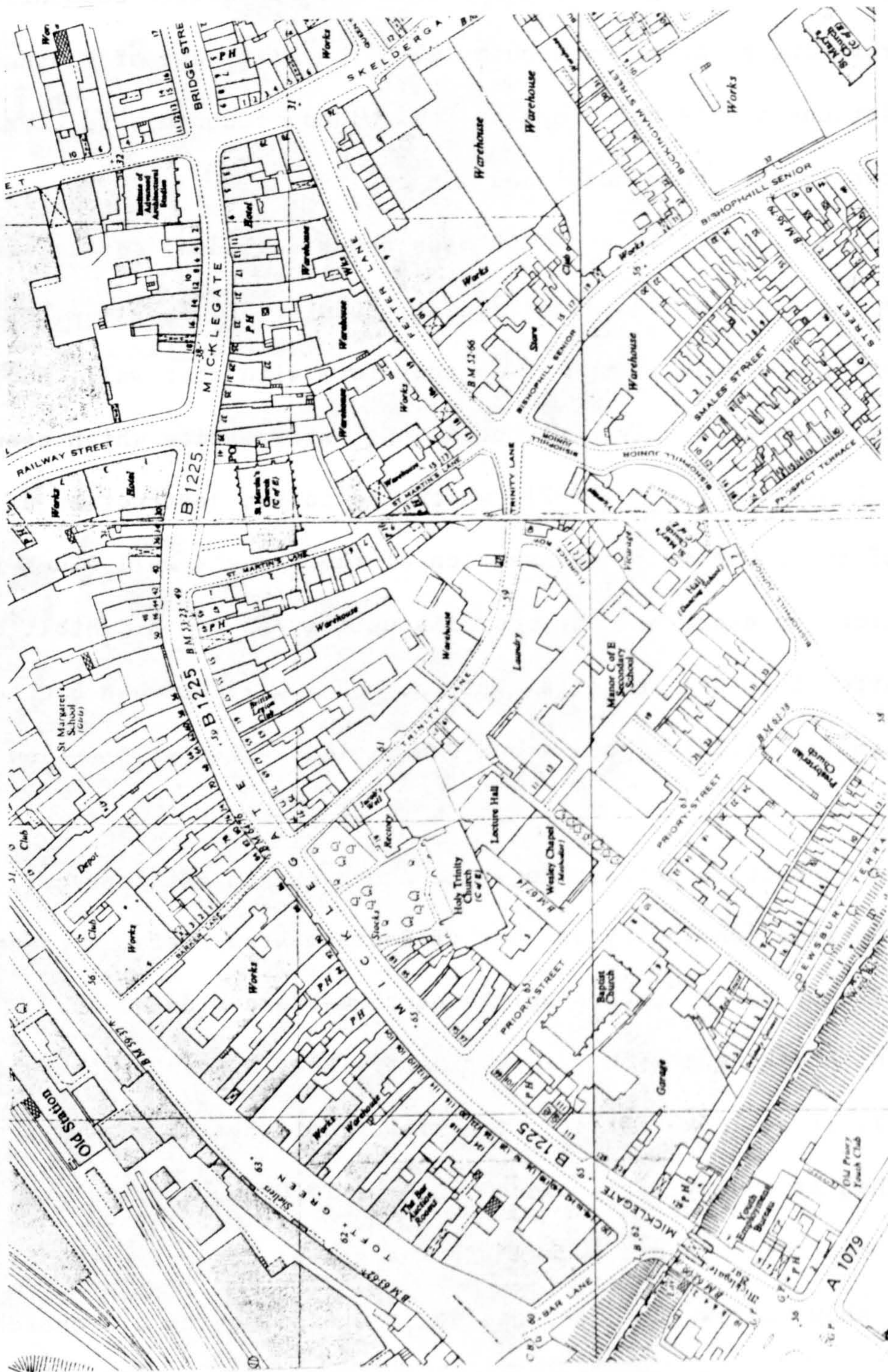


Fig.6.40 - Micklegate (plan)

Wall. In the 1937 map, such a row further consolidates, stretching towards the north-west, and turning at a right angle to meet Monkbar. The pulling down of St. Maurice's Church did not take place until after 1960. The map of that date still shows it in its original location. This time, however, (as well as in the 1937 map) the church's increase in size has called for the demolition of part of the row of houses next to it.

The next connection to be considered here is that of Peaseholme Green area. Peaseholm Green stands next to the area of the old King's fishpond. This connection is marked by the busy traffic of automobiles, large buildings (such as a multistorey car park, garages, and DIY shops, among others) (fig.6.36), and a loose layout of buildings with lots of vacant space between them. There is not here, however, a contrast between a medieval fabric and a new pattern of development, since such a new pattern of development appears already within the walled area.

An historical analysis of the evolution of that connection reveals that at one stage there was a smooth continuity between the urban fabric and the countryside, with the former gradually dying away into the latter. This is clearly visible in the 1610 map, which shows Peaseholm Green punctuated by a gateway leading to a bridge (of approximately the same width), and then two parallel rows of houses enclosing a street for a little longer. These rows of houses gradually become more scattered and then the roadway continues dotted by trees. The gateway is still present in the 1694, 1736, 1750, 1766, and 1772 maps. In the 1851 map the gate has disappeared. On the other side of the bridge, there stands (at this stage) a scattered set of houses, with some large open spaces like that of Stone Yard. In the 1937 map

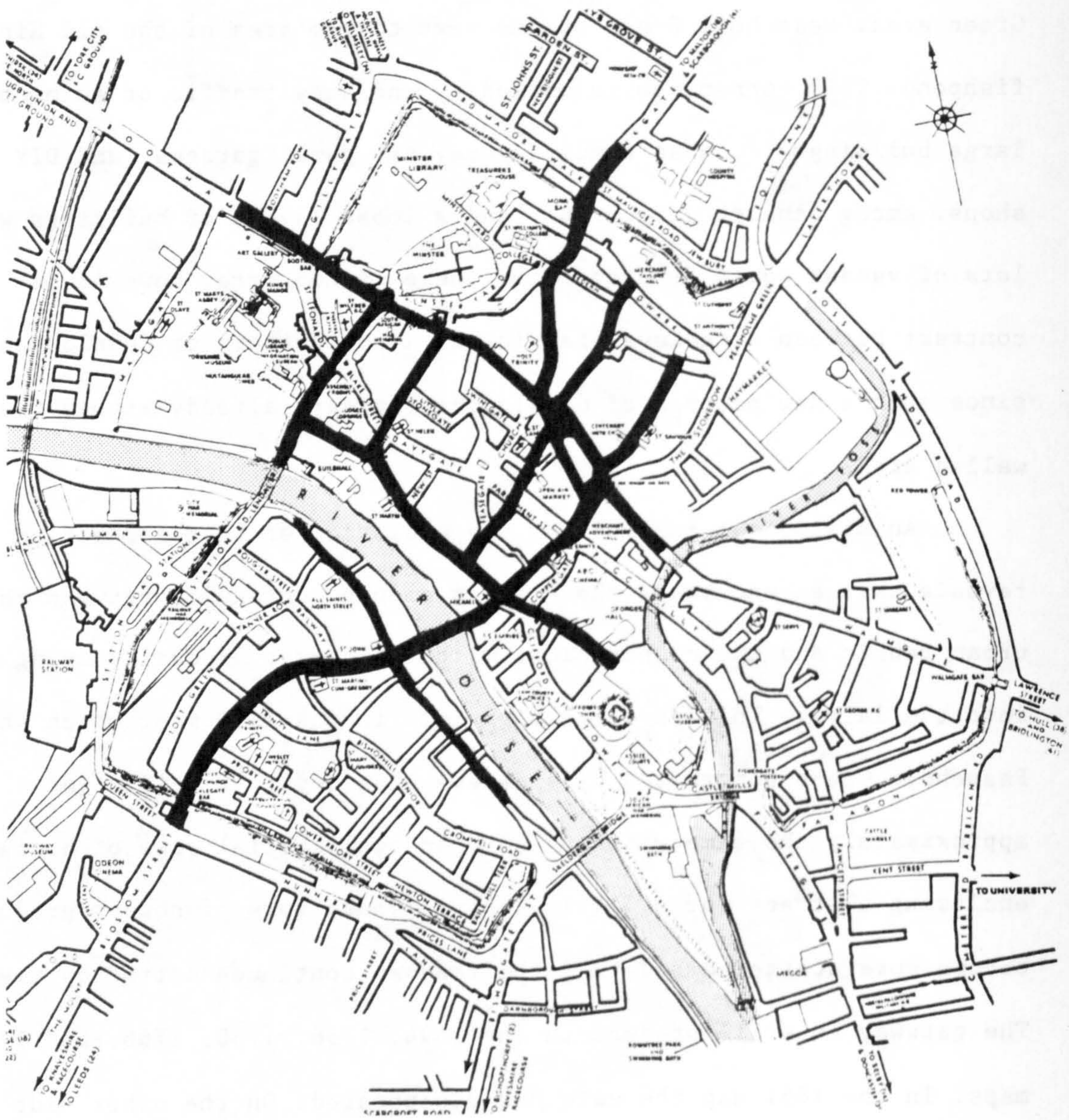


Fig.6.41 - Network of pathways

that yard has been built upon, but still, the feeling of dispersion and lack of definition persists, this time stronger as new roadways have appeared (such as Fossbank) and the bridge has been widened.

Walmgate Bar is the next connection to be considered in this analysis. Here too there appears the busy traffic of motorised vehicles, which segregates the pedestrian flow from within the walls to the peripheral areas. The layout of buildings is certainly not as loose as that of Peaseholme Green, but also does not present the integrity of the Bootham connection, for instance (fig.6.37b). Here too, the loss of integrity of the vernacular fabric does not happen at the Bar area, but at a much earlier stage within the walled city.

An historical overview of the Walmgate connection reveals its continuity with the countryside (1610), as well as the fragility of such a continuity (and also the fragility of the integrity of the street space of Walmgate), by it being further away from the city centre, and less consolidated as an urban space. Already in 1610 there lies a wide roadway following the contour of the city Wall (where today stand Paragon Street and Barbican Road). Such a roadway, however, does not follow on across Lawrence Street, it is contained by a row of houses transversal to it (fig.6.37a). The 1937 map already shows Foss Islands Road continuing from Barbican Road, producing in that way a cross connection with Lawrence Street outside Walmgate Bar.

The Skeldergate Bridge area, is heavily dominated by the traffic of automobiles, and presents a lack of definition of space, as the Court House is set back and aligned with Tower Street. Clifford's Tower stands isolated on the top of its motte. St. George's Field opens the view to the south-west, and the large car park discloses a perspective to the south-east (fig.6.38). A study of the 1610 map shows York Castle

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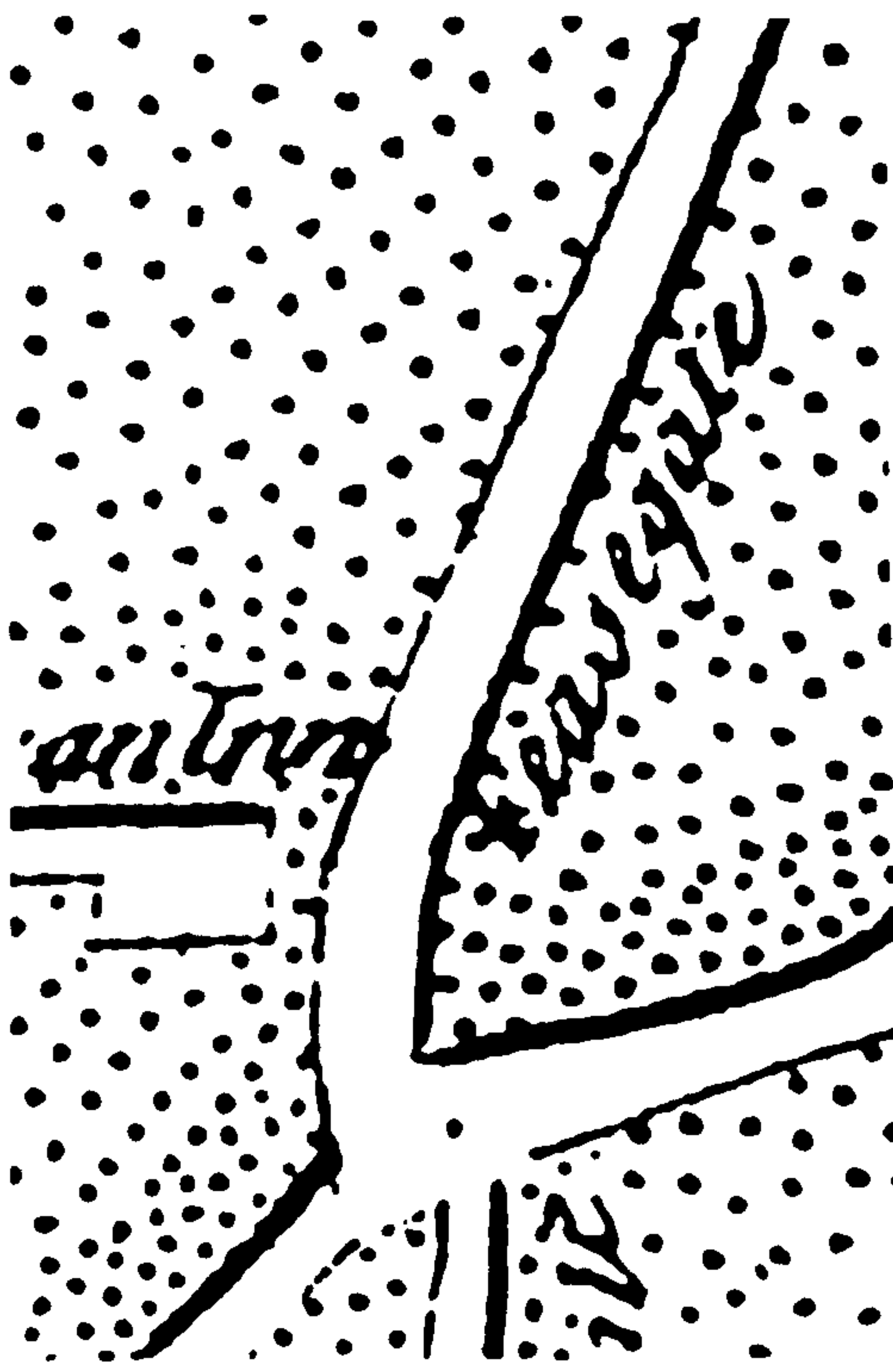
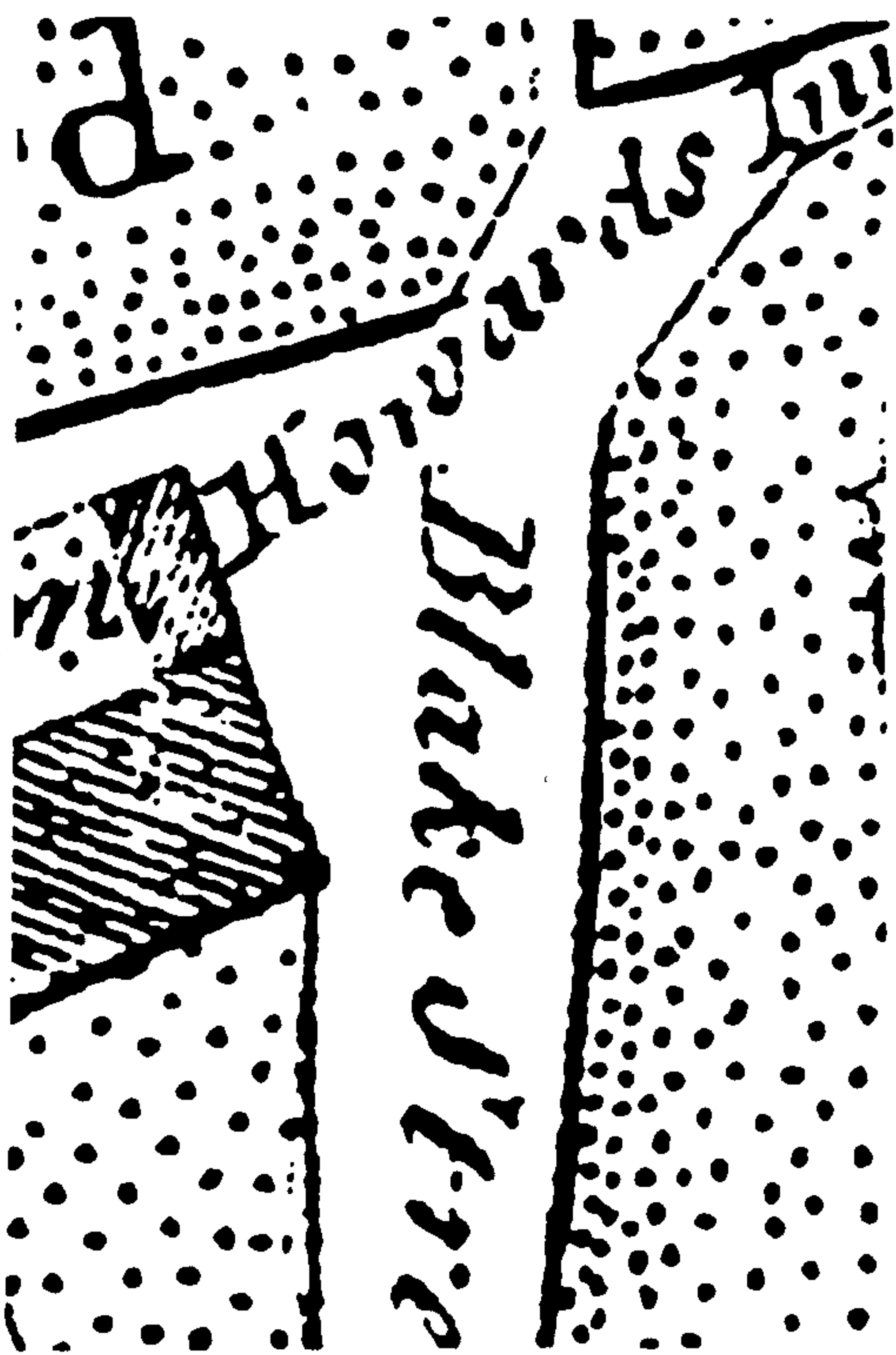
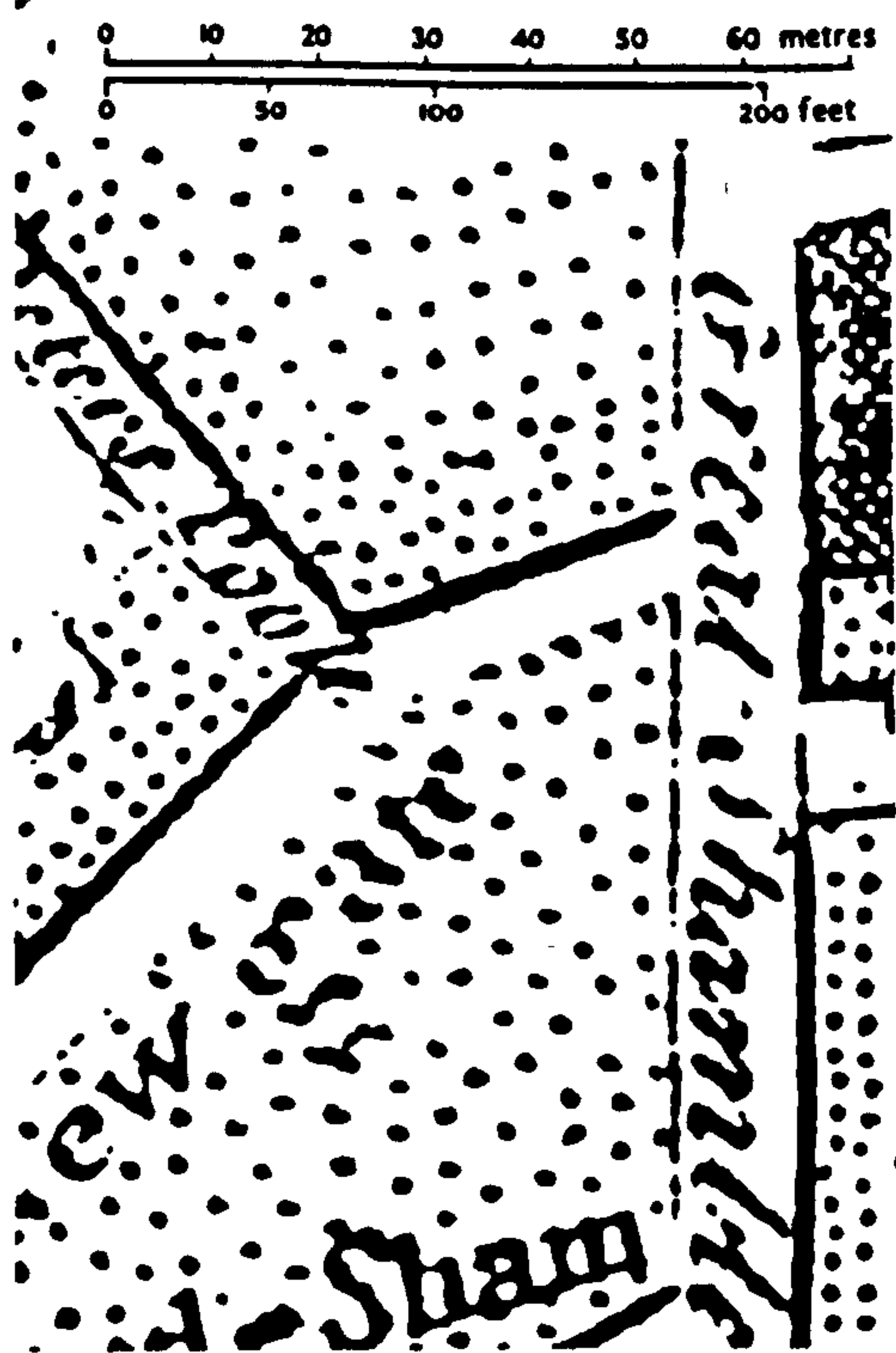
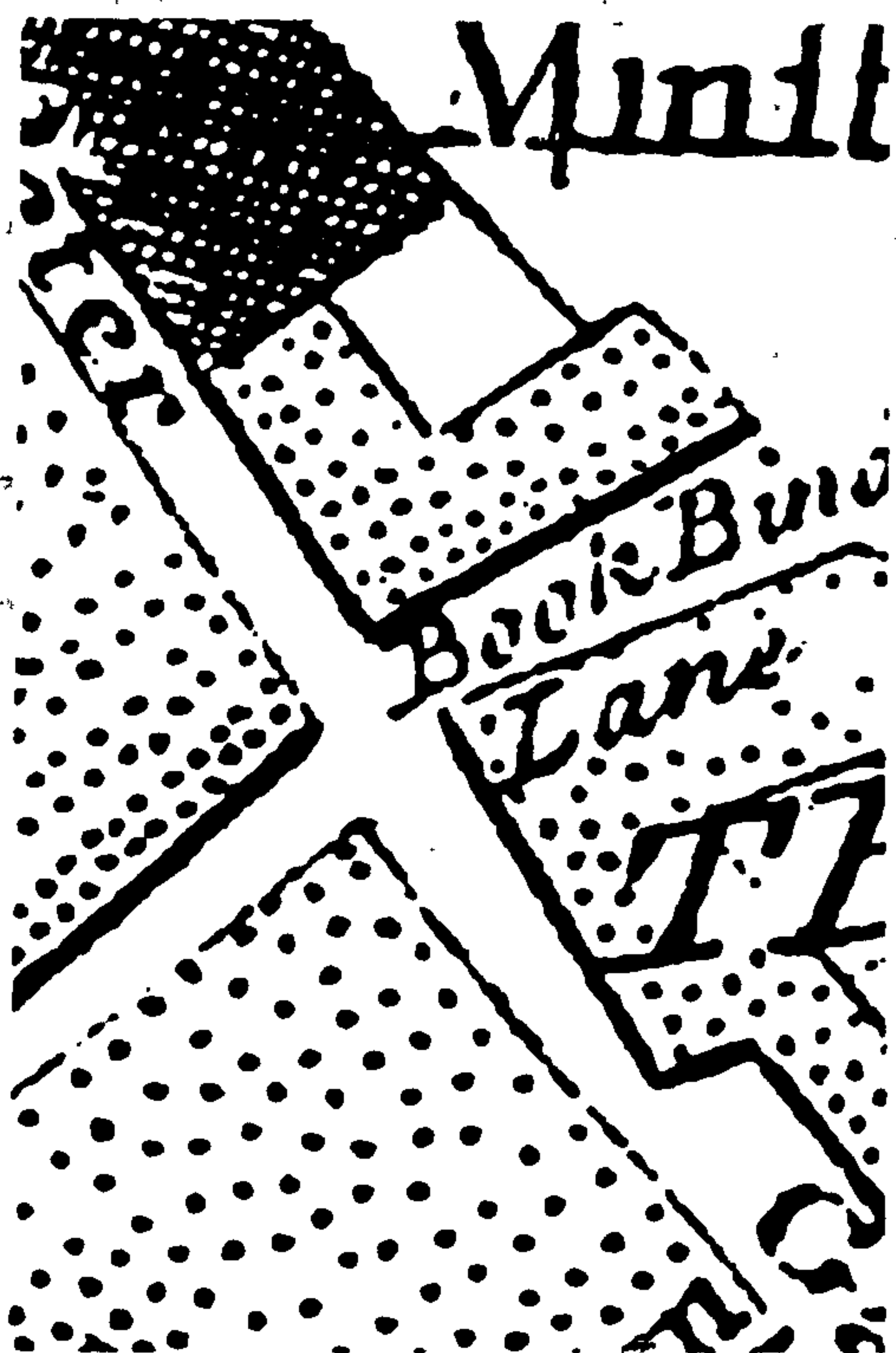


Fig.6.42 - Connections

segregated from its surroundings by a fortified wall and open space. The area is faintly occupied. This condition of segregation and scattered occupation persists through the seventeenth and eighteenth centuries (as attested by the 1694, 1736, 1750, 1766, and 1772 maps). These maps also depict an extended garden in the vicinity of York Castle. The 1851 map shows that further erection of buildings has taken place mainly within the castle area (at that stage fully walled off). This map also presents Tower Street with its expanded width. With the construction of Skeldergate Bridge, the network of roads becomes more complex. A triangular connection originally stood (as shown in the 1937 map) where the roundabout presently is.

Last, I shall refer to Micklegate Bar connection, which sketches a continuity with its surroundings, as two parallel rows of buildings follow the roadway immediately outside the bar. Such a continuity is, however, quickly interrupted as Queen Street, Blossom Street, and Nunnery Lane, concur to form a cross junction with Micklegate, contributing with a heavy load of traffic (fig.6.39). The widening of Blossom Street and its straight alignment, which follows from Micklegate, does not help in the integration between the walled city and its surroundings, as the view tends to disperse in the distance (fig.6.39c).

The 1610 map shows what seems a rather wide gap between Micklegate Bar and the parallel row of houses that align to conform Blossom Street. The 1750 map shows a new group of houses between the city Wall and Blossom Street at the south-east side of it, thus granting more continuity between the Bar and that street. The 1851 map shows that another row of houses has appeared on the opposite side of Blossom Street. The continuity of the connecting space at that stage

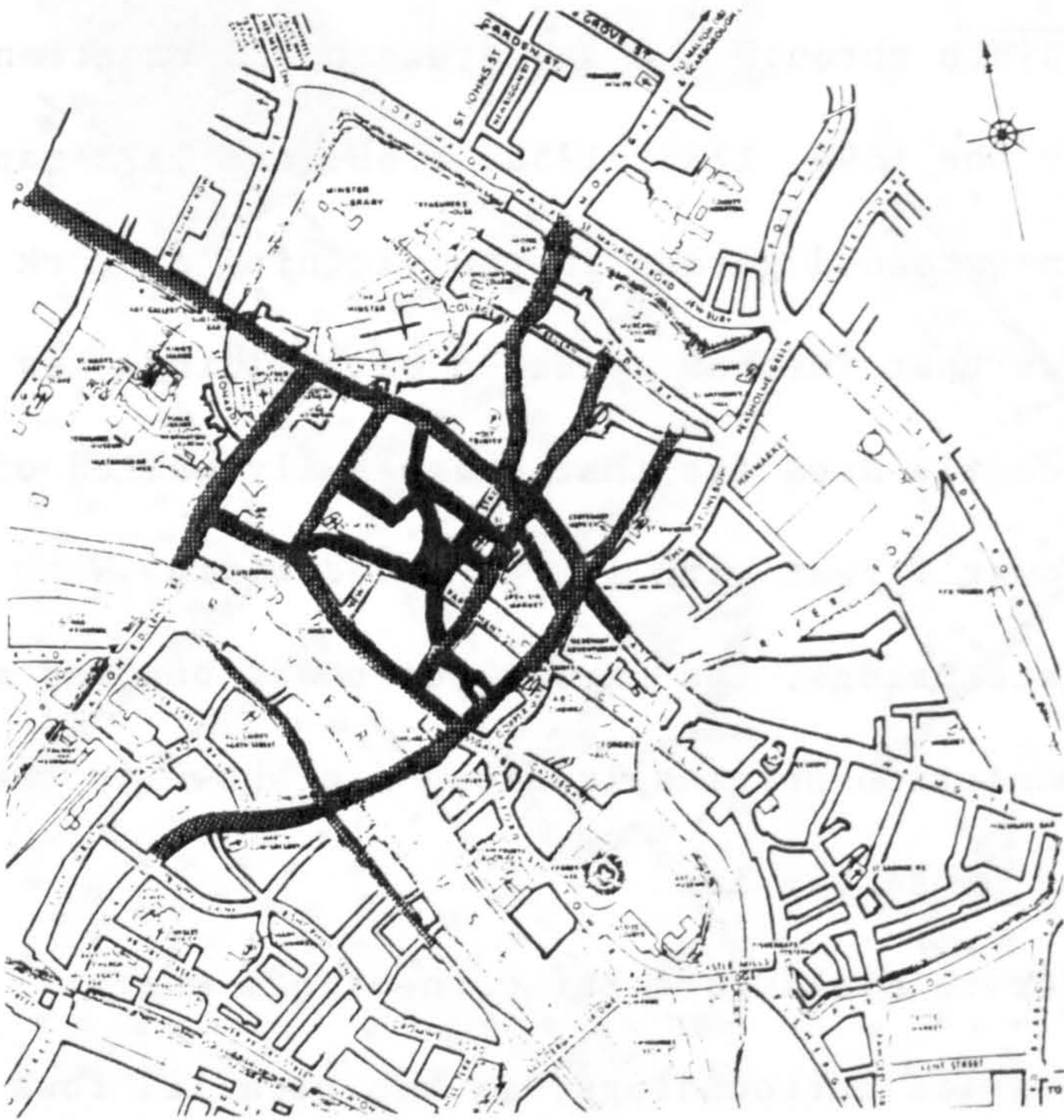
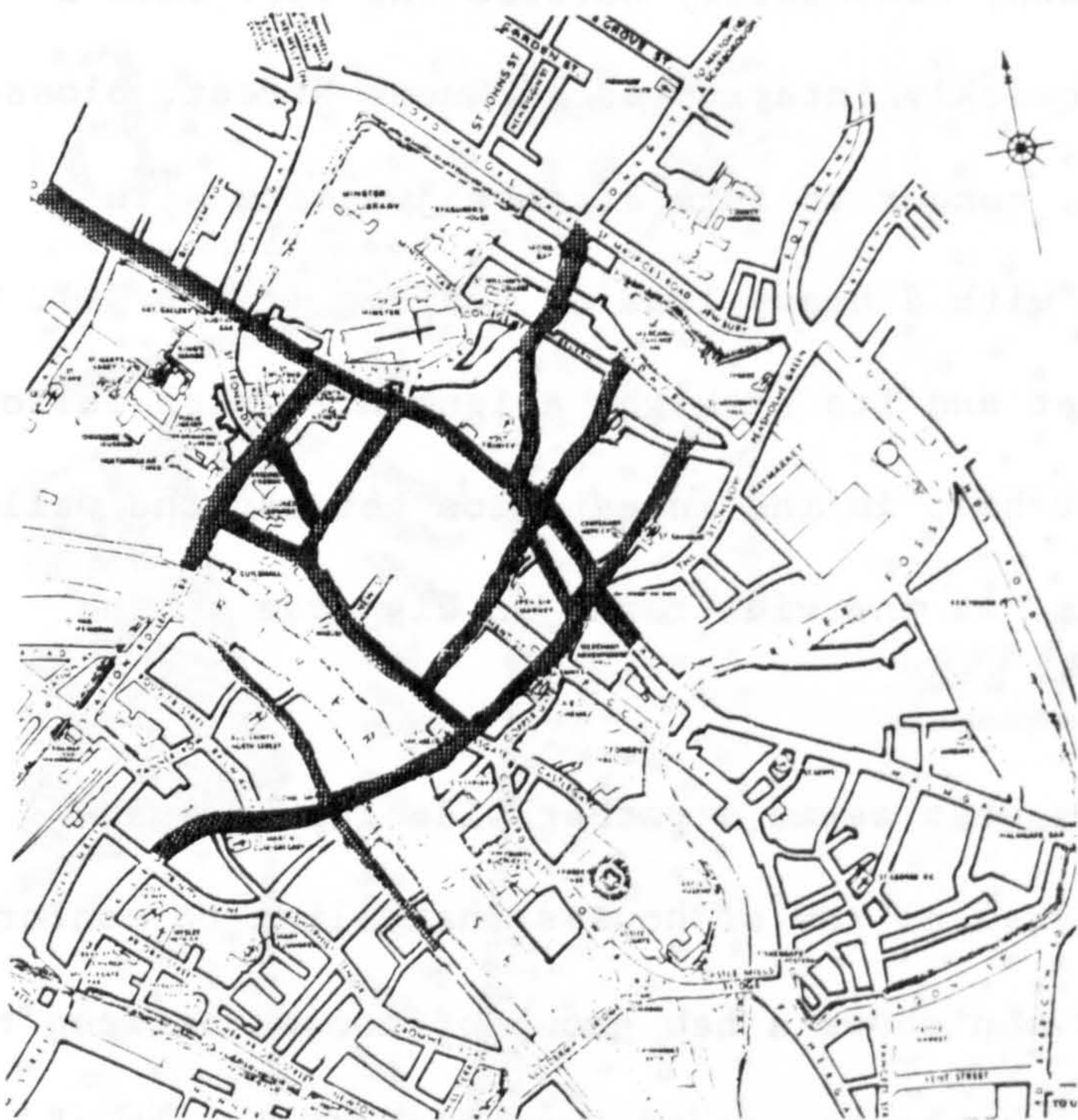


Fig.6.43 - St. Sampson's fragmentation

Fig.6.44 - Blake Street fragmentation



seems to have reached its smoother state (fig.6.40). We should also note in that map that the two streets that lay outside the walls, namely Nunnery Lane and Queen Street are not aligned (thus not yet creating a cross junction). The 1937 map on the other hand, shows the appearance of such a cross junction, as Queen Street is widened to accommodate the traffic to the new rail station.

To sum up, the relationship between the walled city and its surroundings, in its past presented a much greater degree of continuity than its present layout does. Such a past relationship would have been defined through a process of densification of the urban area, and a centrifugal growth which led to a rarefication of the fabric in its peripheral area. Such a rarefication, however, did not lead to the formation of ruptures, and fissures in such a fabric, as is the case of the current layout.

In terms of proposals each connection would need to receive a special treatment. In general terms I would say that, in relation to the connections of the walled city with its surroundings, in the cases where the medieval fabric loses its integrity, namely Monkgate and Blossom Street, the proposal is to retrieve such an integrity by configurating the space of these streets in the traditional fashion (as a space which does not afford sideways movements) following in the alignment of the Bars, and maintaining the same scale as the street inside the walled area (i.e. Goodramgate and Micklegate respectively).

In the other cases where the integrity of the medieval fabric is already lost inside the walled city, we first need to reintroduce such an integrity, and then propose connections in consonance with the interventions within the walled area. In the case of Walmgate Bar, for instance, the proposal is similar to the ones described above, that is:

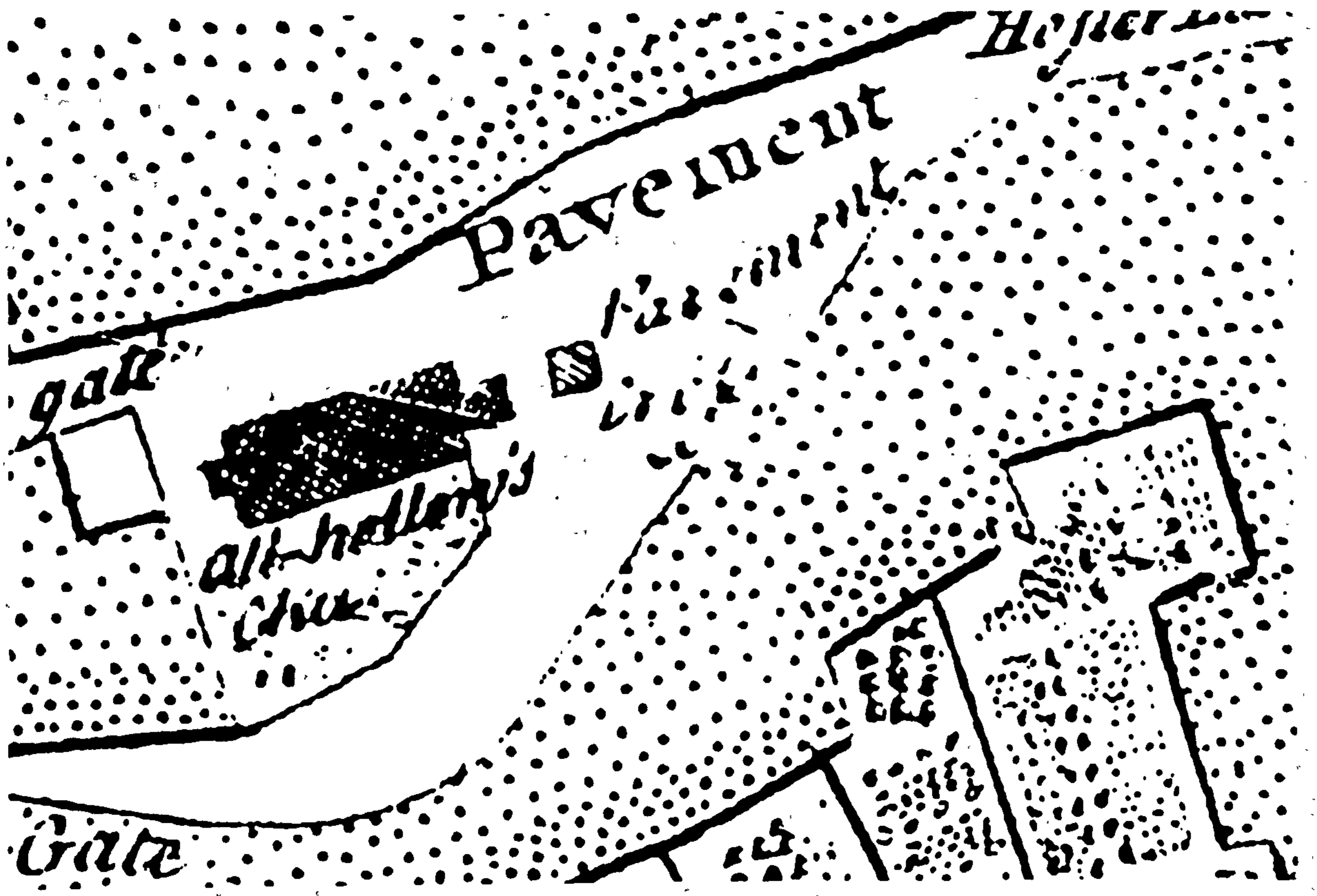
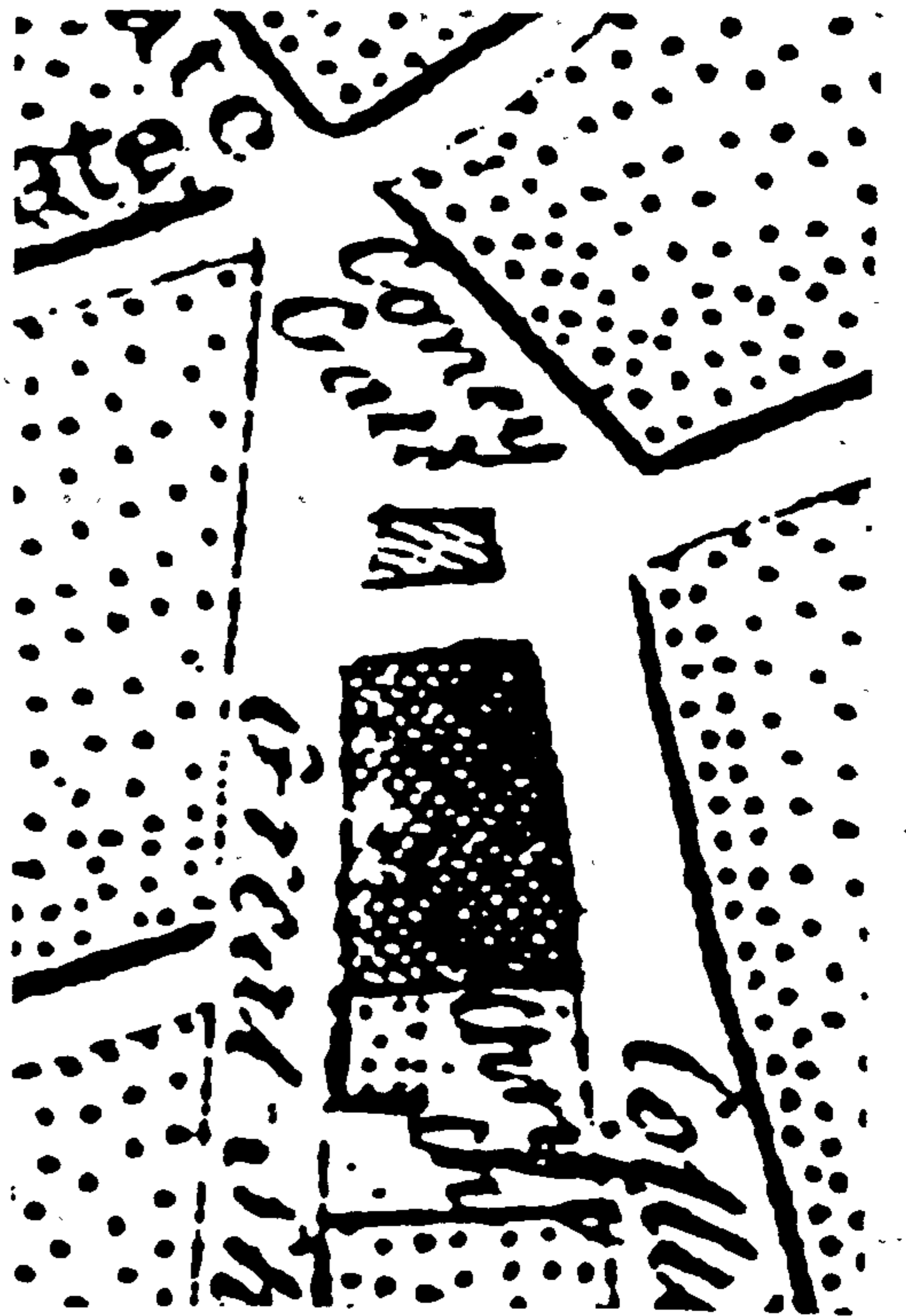
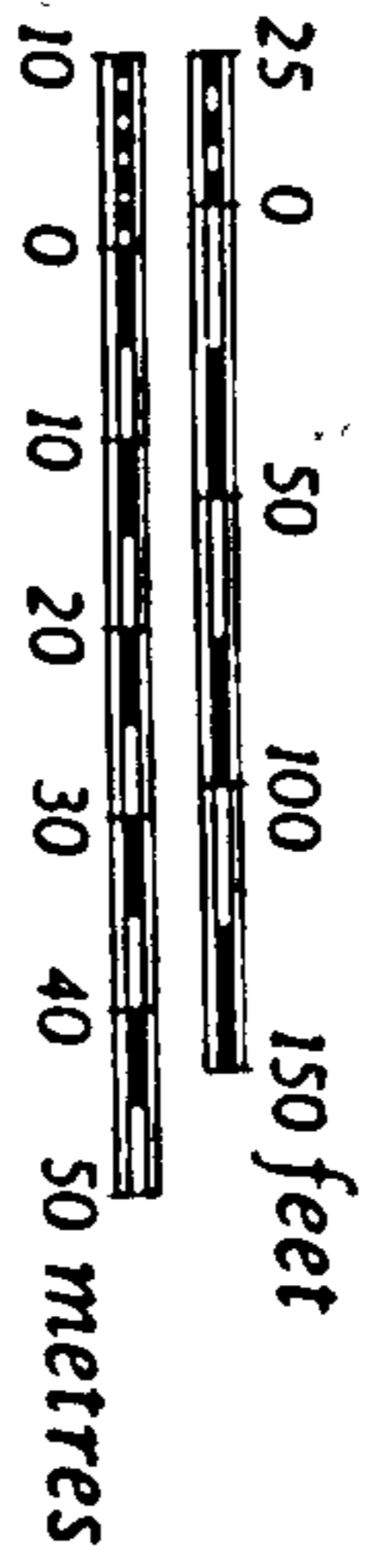
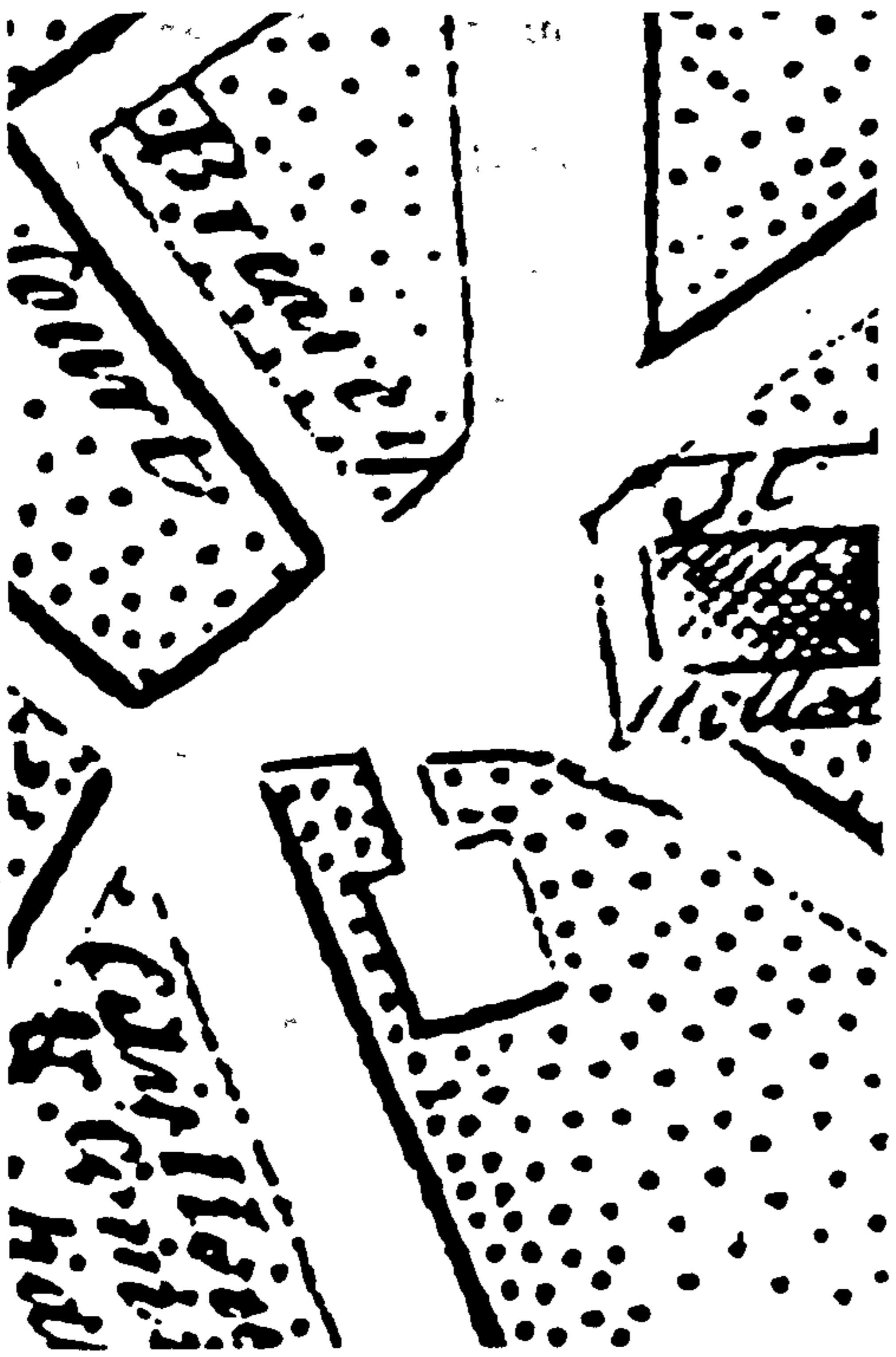


Fig. 6:45 - 'Y' junctions

laying out the space of Lawrence Street in continuity with Walmgate to the medieval scale, together with a restoration of the integrity of the space of Walmgate itself.

In relation to the other connections, the situation is more complex, inasmuch as there needs to be a radical alteration of spaces inside the walled city in these areas. I shall not address, in this dissertation, the alteration of these spaces - In view of the limited time and space available here, I shall not deal with all the spaces of the walled city, nor shall I propose to re-establish the integrity of urban spaces of the historic core. Instead, I propose to concentrate on particular spaces believed to be of major importance in the context of York, such as the Minster precinct, or Parliament Street.

Let us now consider the development of the walled city. We earlier saw earlier an effort by Knight to describe how elements of the urban fabric came into being. I shall now present my own version about how such a development may have taken place, by combining historical and archaeological data, with some insights gained from the analysis of the previous case studies.

The Walled City

We start with the Roman fortress and the layout of the main thoroughfares. As shown in fig.6.3, besides the Via Principalis, Via Praetoria, and Via Decumana, there was another street internal to the fortress, following along the fortified wall. Outside the wall roadways stretched in a straight line away from the four gates. Outside the Porta Praetoria, we see the confluence of two other roads (running along the River Ouse) with the external road that continues Via Praetoria. This layout provides us with a network which would

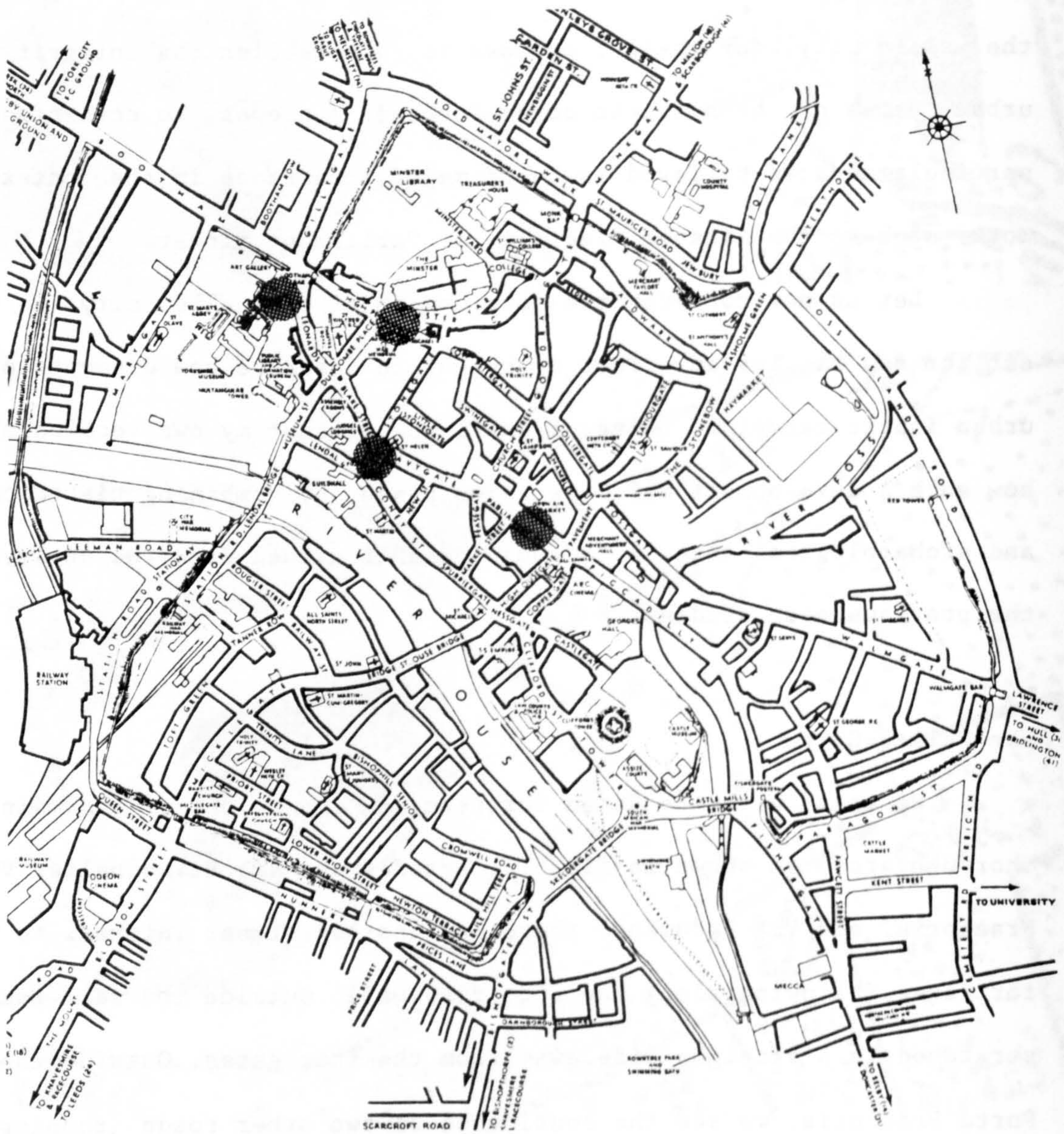


Fig.6.46 - Areas of intervention

approximate that of Petergate, Stonegate (the Shambles possibly appearing as a ramification of Stonegate), and House Street (at the back of the Minster), inside the wall. And Bootham, King's Square, Lendal, Coney Street, Spurriergate, and Tanner Row (on the opposite bank of the River Ouse).

Let us now add to that basic network further elements, such as the axis formed by Market Street, Jubbergate, Newgate, and St. Andrewgate (running along a line immediately outside the place where the south-eastern portion of the wall of the Roman fortress once stood), linking to Coney Street at one end; and the Duncombe Place/Museum Street axis (leading to the Minster gates). And a further main axis is formed along the alignment of Ouse Bridge, with Low Ousegate, High Ousegate, Pavement and Stonebow Lane, which in the seventeenth and eighteenth century maps seem to have the same width as St. Saviourgate⁶⁵. St. Saviourgate, in its turn, prolongs that axis further, linking at its north-eastern end with Peaseholme Green.

Another important connection appears linking Micklegate Bar to King's Square⁶⁶. With the developments of these axes, which would have been completed in the Viking times, we are left with a network which gathers the main roadways of circulation in the settlement - a network which was to persist until the nineteenth century (fig.6.41). The principal status of these roadways is not only reflected in their width (which is actually an aspect that is not very reliable, as the accuracy of seventeenth and eighteenth century maps is doubtful), but also, and

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65. Whether Ouse Bridge caused the development of the axis or vice-versa, is difficult to say. I shall not here address that question as I believe that it is of secondary importance to this discussion.

66. Again the question about the Bar came before the axis shall not be addressed here.

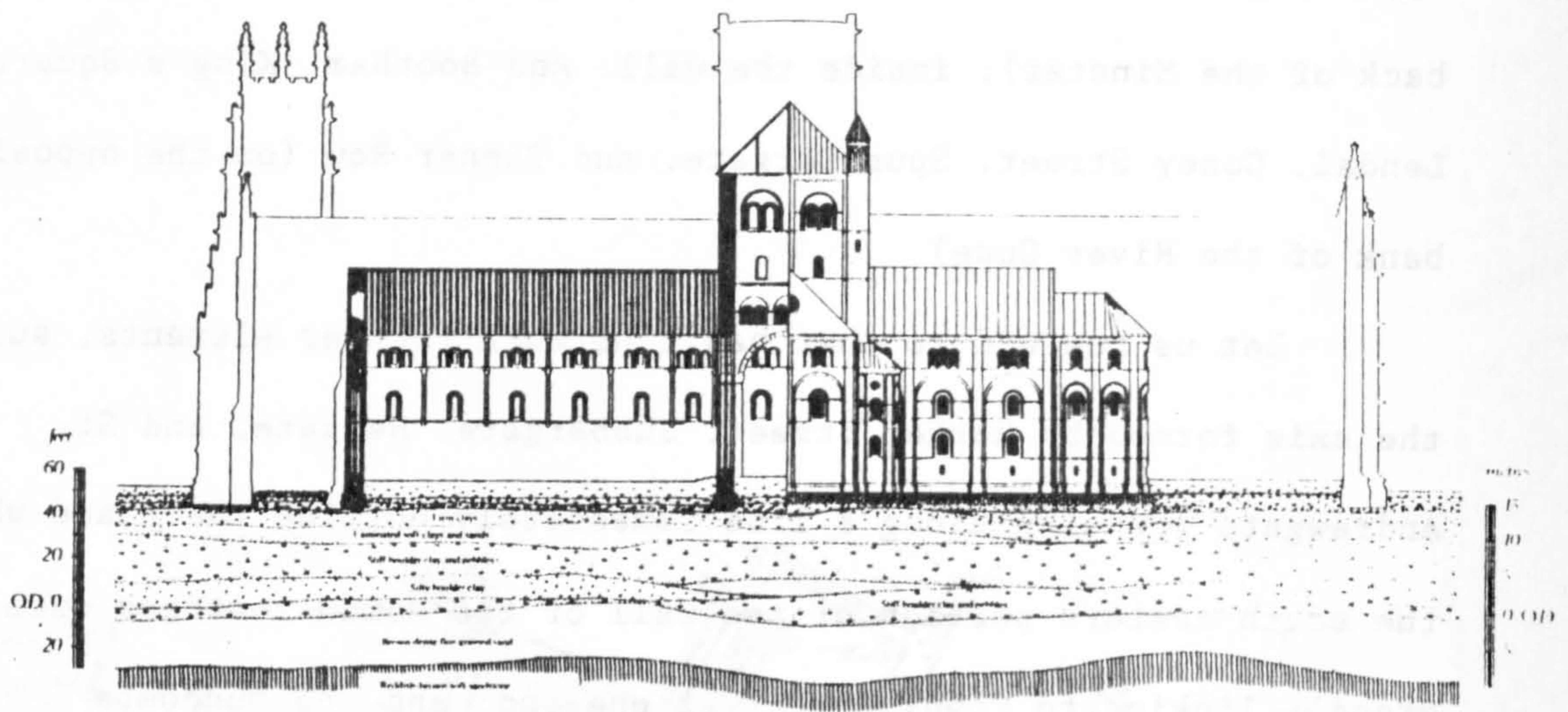


Fig.6.47 - York 'Minsters'. Source: RCHM, 1985.

Fig.6.48 - Minster precinct

maybe mainly, in the way they connect to each other, which presents a smooth continuity (fig.6.42).

Now, if we look at a map like that of 1694, we already identify a number of other streets (and squares) which spring off from the main network described above. Streets such as Davygate, Finkle Street, Swinegate, Little Stonegate, Silver Street, and Grape Lane, seem to have come about through a process of fragmentation of a larger area surrounded by roadways (fig.6.43). A process comparable to that we saw in Vila Paranoa, as revealed by certain morphological entities such as St. Sampson Square, which similarly to squares of Vila Paranoa that came about through a process of fragmentation, assumes a rectangular layout, instead of the triangular one generally associated with the formation of Y connections. Blake Street suggests the same process of fragmentation, this time in a less complex pattern (fig.6.44).

The Y junctions, we saw in earlier case studies, will appear in York in connection with the main network of roadways. Examples of that type of connection are King's Square (which is associated with the ramification of Petergate into the Shambles and Colliergate) (fig.6.45a), and the Pavement (which expands near All Saint's Church as it divides into Coppergate and High Ousegate (fig.6.45b)). It is interesting to remark that these two spaces went on to develop until the nineteenth century into the main public spaces of the city, housing respectively, the hay market, and the main city market. Another Y junction appears in St. Helen's Square. This junction took much longer to develop into a square, inasmuch as St. Helen's yard occupied its site until the eighteenth century (fig.6.45c).

On the other side of the River Ouse we find a main network of streets, formed by Micklegate (which follows from Ouse Bridge), North

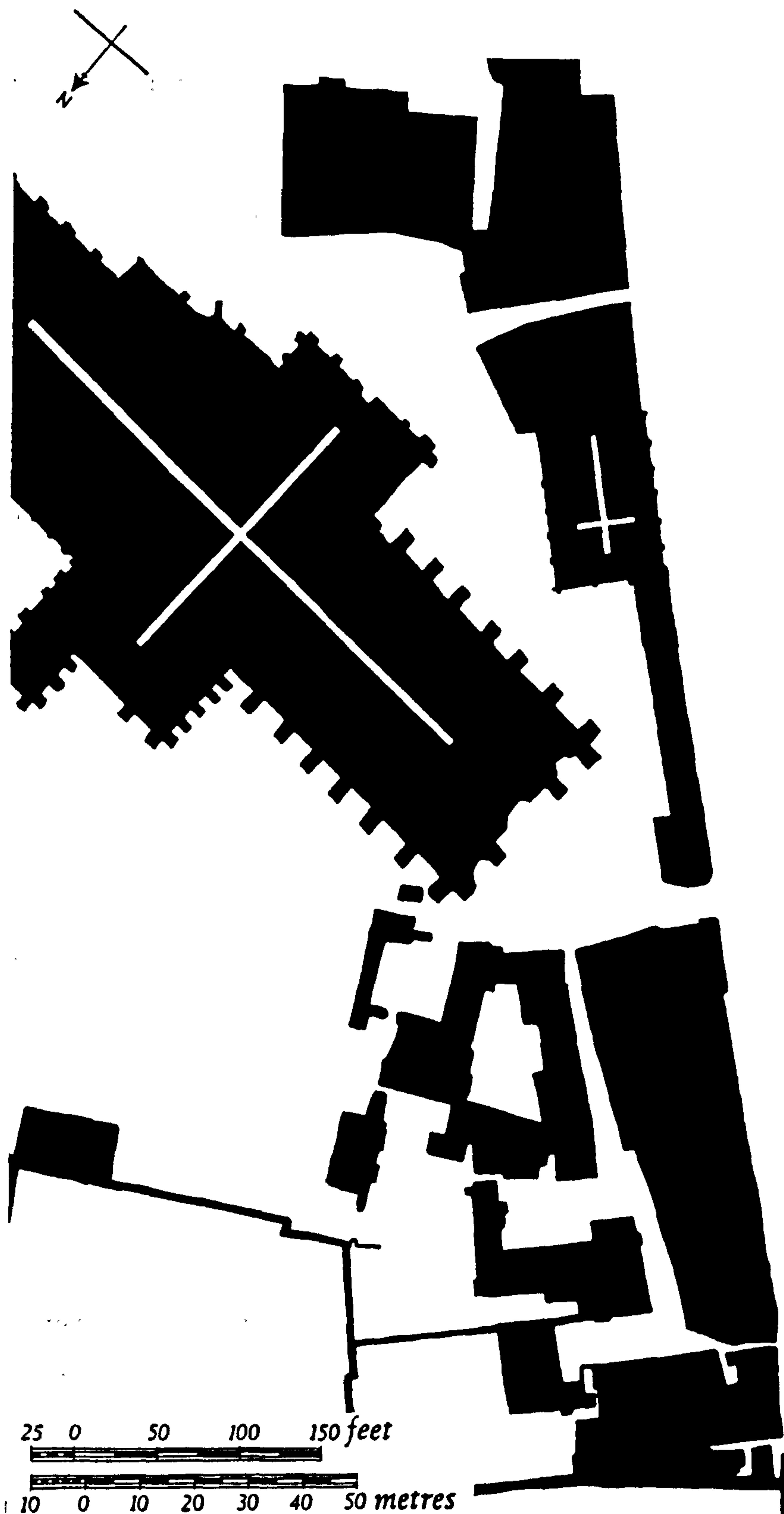


Fig.6.49 - Row of houses defining Minster precinct

Street, and Skeldergate (running along the river, and probably related to the development of trading activities in Anglian and Viking times), and Tanner Row (on the alignment of the old Roman Bridge). The process of development that has taken place here suggests a fragmentation which would have led to the formation of secondary streets such as Trinity Lane, Fetter Lane, Bishop Hill Senior, Bishop Hill Junior, St. Martin Lane, and Kirk Lane (presently Carr's Lane). Such a process happened at a much slower pace, keeping a number of yards, such as Toft Green, St. Mary the Younger gardens, Love Lane yards, and the Old Bail. These open spaces were to be intensively developed in Victorian times, with the erection of a number of housing terraces.

We now look at particular areas of the urban fabric that were subjected to planned interventions. The analysis that follows examines the impact of such interventions onto the urban fabric, and asks how sensitive to their context these interventions were. Once the analysis is completed for each area, I shall then propose further interventions (in most of the cases) aiming at the creation of a space layout more in tune with pedestrian patterns of movement.

Four areas have been selected for this analysis, namely: The Minster/Petergate, Piccadilly/Pavement/Parliament Street/St. Sampson's Square, Exhibition Square/St. Leonard's Place, and St. Helen's Square (fig.6.46).

Minster/Petergate

As we saw in the historic overview earlier on, the Minster presents a gradual development from the crossing of the transepts (coinciding with that of Thomas Bayeux's Minster (fig.6.47)), to the eastern and western ends of the central nave. Such a development meant

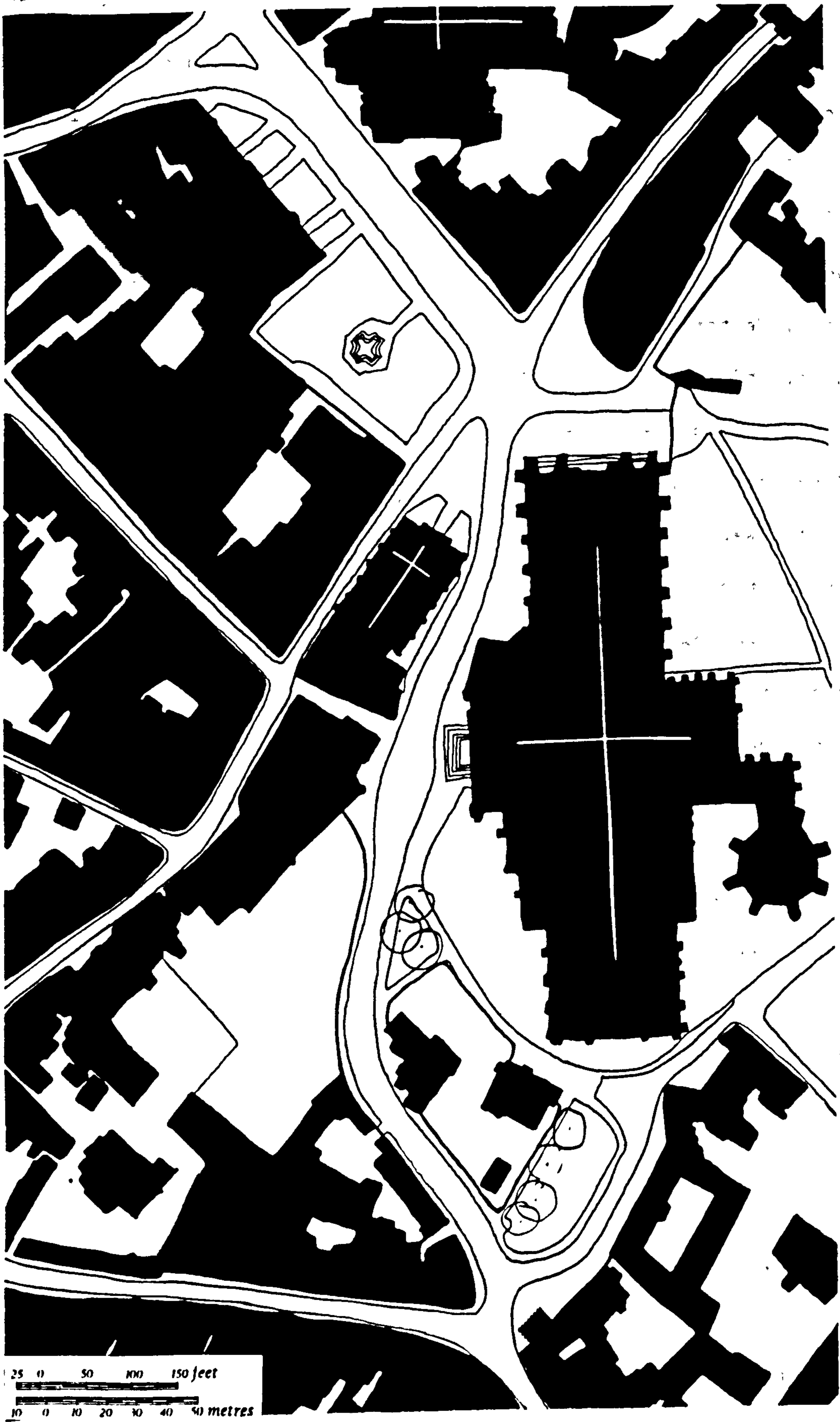


Fig.6.50 - Minster/Petergate interface

an increasing narrowing of the Minster distance from the south-western portion of its precinct wall (fig.6.48).

In the beginning of the sixteenth century, the fully developed Gothic building was probably almost touching its enclosure. Such a development seems to suggest that there was a strong interest in, and the means for, expanding the Minster (probably related to the importance of York as a city in the later Middle Ages - second only to London, and possibly the fact that it was more convenient to develop the already existing building rather than erecting a new one of similar importance). The fact is that the east-west alignment led to the Gothic building almost reaching the precinct wall.

The triangular open space that appears today next to the western facade of the Minster was already present at that time. The exiguousness of that space, however, seems not to be a major problem until the beginning of the sixteenth century (when the Minster wall was knocked down), as the relationship between the Minster and the urban fabric was (before that time) one of strong segregation. And the Minster was greatly related to buildings in its precinct; and it had even along its northern facade a large open space - the Minster yards (fig.6.48).

In the early sixteenth century, according to Knight, however, such a relationship began to change, with the removal to the Minster wall. The change was not a major one, to the extent that buildings of the fabric took over the role of the walls in the segregation of the Minster precinct. Of particular relevance to us is the row of houses continuing the alignment of St. Michaels' church between Petergate and the above mentioned triangular space. That row survived through the eighteenth century, still appearing in the 1772 map. A more detailed

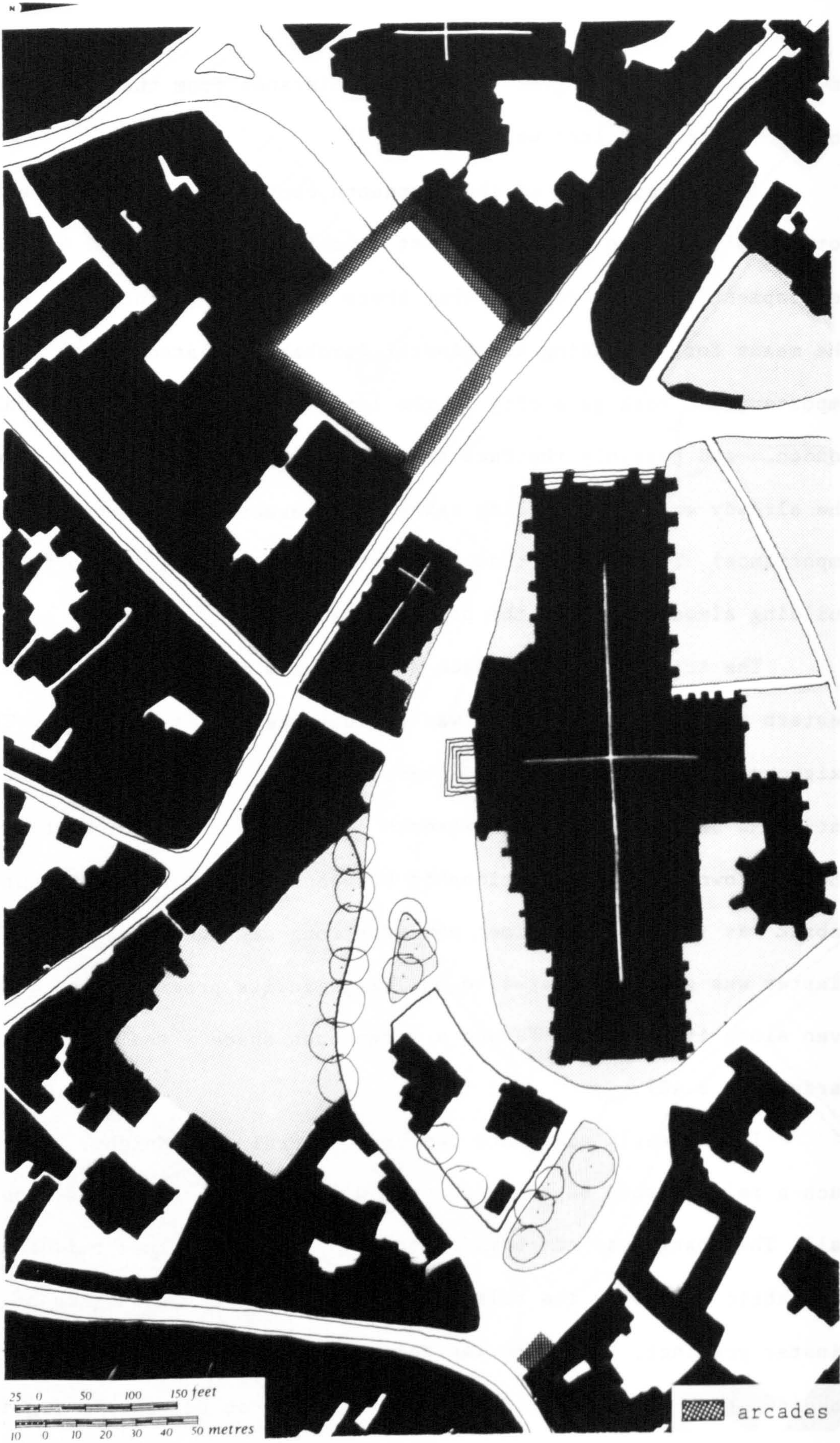


Fig.6.51 - Minster/Petergate proposal

map of the Minster area (1838) shows that the layout of this row of houses was intact at the beginning of the 1830s (fig.6.49). Then part of that row was demolished (as depicted by the 1838 map), widening the communication between the Minster precinct and Petergate. A look at the 1851 map, on the other hand, reveals that such a row of buildings had, by that time, completely disappeared.

By that stage, the relationship of segregation had been played down to a great extent. Another alteration that led to further elimination of the above mentioned relationship was the creation of Duncombe Place.

The result of these successive interventions is a space formed by the triangular area in front of the Minster, the area facing Michael-le-Belfry Church, Duncombe Place, and the square next to it (where the war memorial stands). Such a space is fragmented and amorphous - it lacks unity (6.50).

The direction of movement afforded by Petergate becomes dispersed when it penetrates that space. Moreover, the area next to the Minster fails to gather its users (as a traditional square would do).

The urban intervention proposed here, aims to create the integrity of the space around the Minster and a clear-cut affordance of movement. One way of doing that is to build along the south-western facade of Petergate. An arcade, for instance, as shown in figure 6.51, may be erected. Such an arcade would screen off the Minster partially, for someone who approaches it through Duncombe place. Also, it would provide (within the space that it encloses) the square next to Duncombe Place with an integrity that it does not possess at present. Finally, it would restore the Minster precinct as a self-contained space.

The pattern of movement afforded by the new surface layout of

the precinct, may be summarised as follows: Petergate offers a peripheral approach in the north-east/southwest direction. Such a direction is deflected in its interface with the Minster (as the Gothic building imposes an east/west orientation). The movement may then, flow along the western facade and reach the Minster yards. Otherwise, it may follow along the southern facade. In the latter case, the space presents a clear definition until it reaches the limit of the plot of the Minster School. That limit is marked by a iron fence - the building of the Minster School itself, however, recedes into the background. An ambiguity arises at that point. This ambiguity is related to the space in front of the Minster School being visually integrated to the Minster precinct, whilst the iron fence segregates the former from the latter.

Such an ambiguity could be eliminated by introducing an element that screens the yards of the Minster school away from the Minster precinct. The gaze of the observer would, in that way, be contained within the area of the precinct itself. A simple way of doing that is through the introduction of a dense mass of vegetation along the plot front of the Minster School (as shown in figure 6.51).

In relation to the pavement next to the southern facade of the Minster, the proposal is to eliminate Deangate⁶⁷, adopting a single level across the width of the promenade.

67. The closure of Deangate was ordered by county councillors on the 7th September 1990.

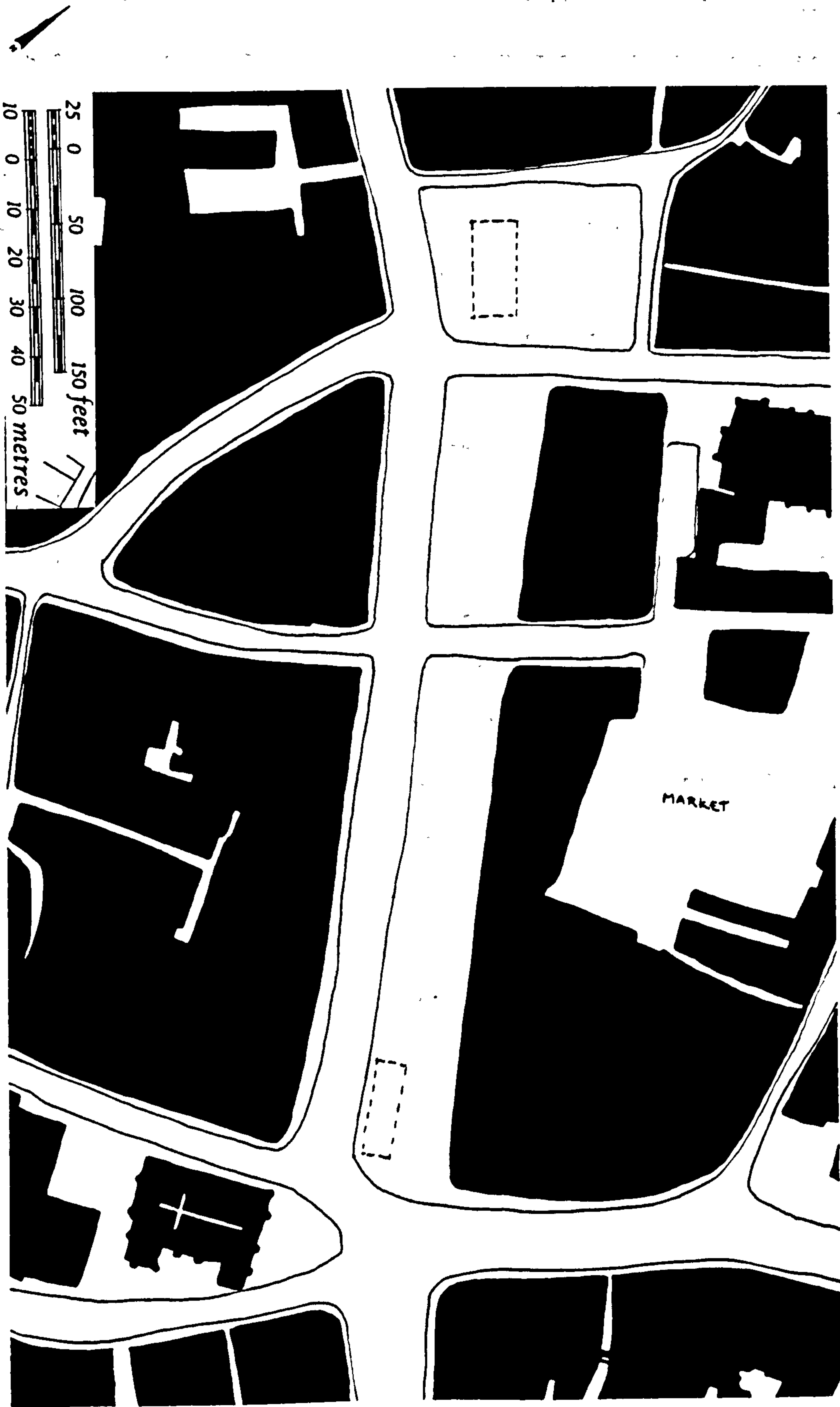


Fig.6.52 - Parliament Street

Piccadilly/Pavement/Parliament Street/St.Sampson's Square

The story of that area is much shorter: it is basically about the alteration of the character of two public spaces - St. Sampson's Square and Pavement - through the elimination of some of the elements that contributed for the definition of such a character. This character is that of an enclosure, and the elements that disappeared are some of the facades that configurated them. Instead of facades we now have voids opening to Parliament Street and Piccadilly. The state of affairs is such that none of the four open spaces effectively works as an enclosed space (a square) which affords a gathering movement; mainly because of the layout of the vertical elements (facades of buildings), but also because of the layout of the Pavement, as described in Appendix 6. Where those vertical elements disappear, there stops being an obstacle and instead there emerges a possibility of movement in that direction. This is the case of the four spaces analysed here, which are contiguous to each other, thus failing to be sufficiently enclosed to be perceived as a segregated space (fig.6.52). Such a segregated space, which defines the morphology of a city square (or piazza), if sufficiently defined works as an 'attractor', pulling people to its centre.

To be sure, the lack of integrity of these spaces as squares is only partial. If further contiguous open areas were to appear, the lack of integrity would be accentuated (e.g. through a possible annexation of the Newgate Market to Parliament Street). And if we keep exercising our imagination along these lines, opening further contiguous spaces, it is easy to visualise that this would lead to the total annihilation of the four spaces that interest us here. The present state of affairs is certainly not that extreme, but it has

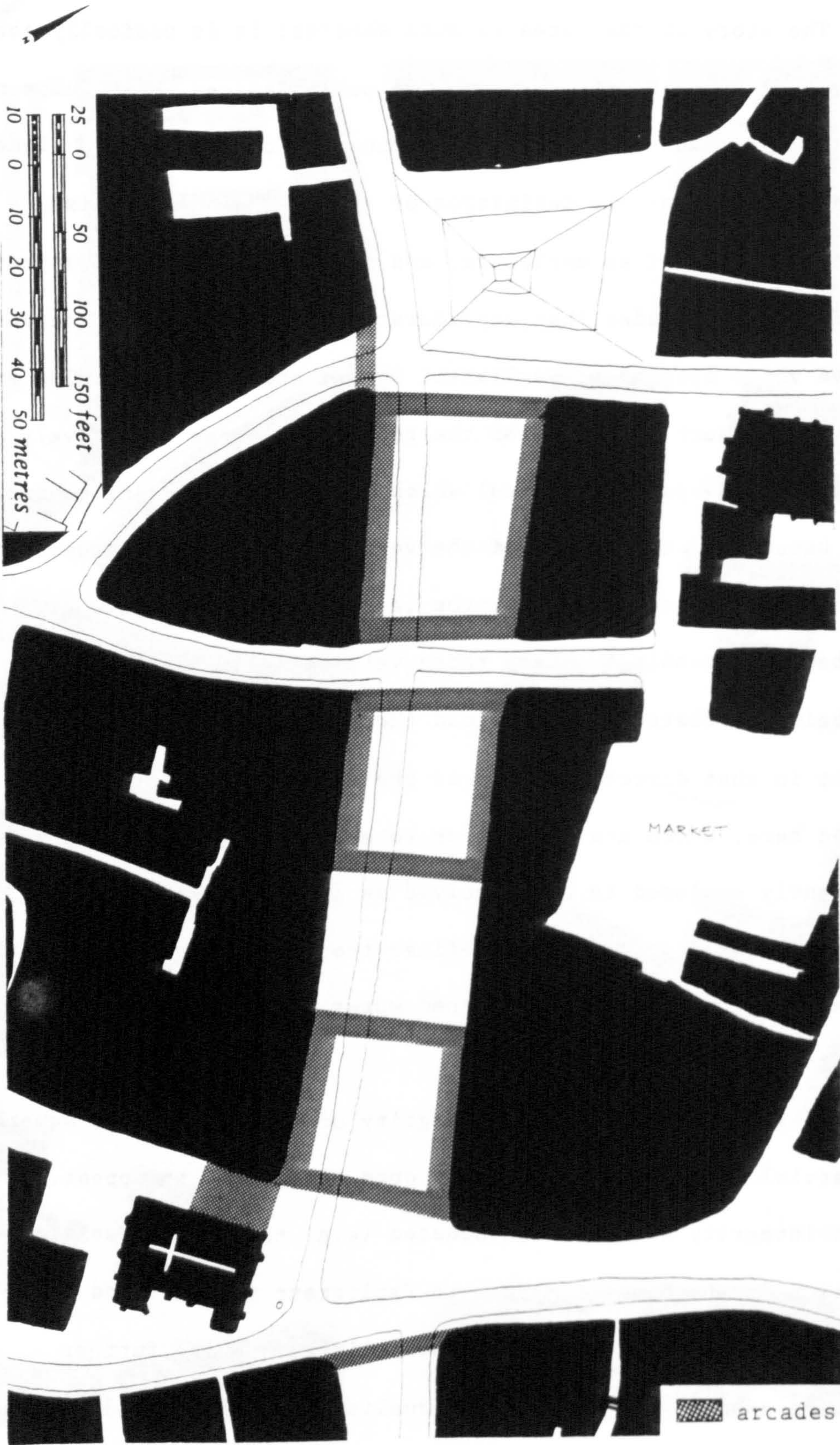


Fig.6.53 - Parliament Street proposal

gradually moved in that direction through nineteenth and twentieth century interventions.

Now an obvious way to remedy the lack of integrity of these spaces would be to propose a step back to the eighteenth century layout, when Parliament Street, and Piccadilly did not exist (fig.6.13). Alternatively, we may choose to keep these new additions, and intervene in the way they articulate with the eighteenth century urban fabric, notably Pavement and St. Sampson's Square (as well as changing their internal structure).

Two other colleagues and I proposed a design for Parliament Street, as an entry for an urban design competition organised by York City Council (Appendix 6). The competition brief, however, categorically excluded the disposal of any permanent built structure. In view of that fact, I present here a design proposal that does not work within the above mentioned constraints, as it involves the erection of some permanent built structures. This design proposal involves the erection of arcades following the alignment of the facades which once enclosed St. Sampson's Square and the Pavement. Through such an intervention the integrity of these two spaces as enclosed areas for gathering is regained. The four spaces are now segregated; still the space of Parliament Street is too long and narrow, and its sloped pavement does not afford staying, gathering and interchange, but a movement away from the space to the south-east end. To remedy this effect of exclusion of the space and restore gathering, I propose the creation of a series of levelled platforms (slightly concave, separated by a number of intermediate colonnades, slicing the space of Parliament Street into shorter segments (fig.6.53). The next step is to ban the circulation of automobiles from them.

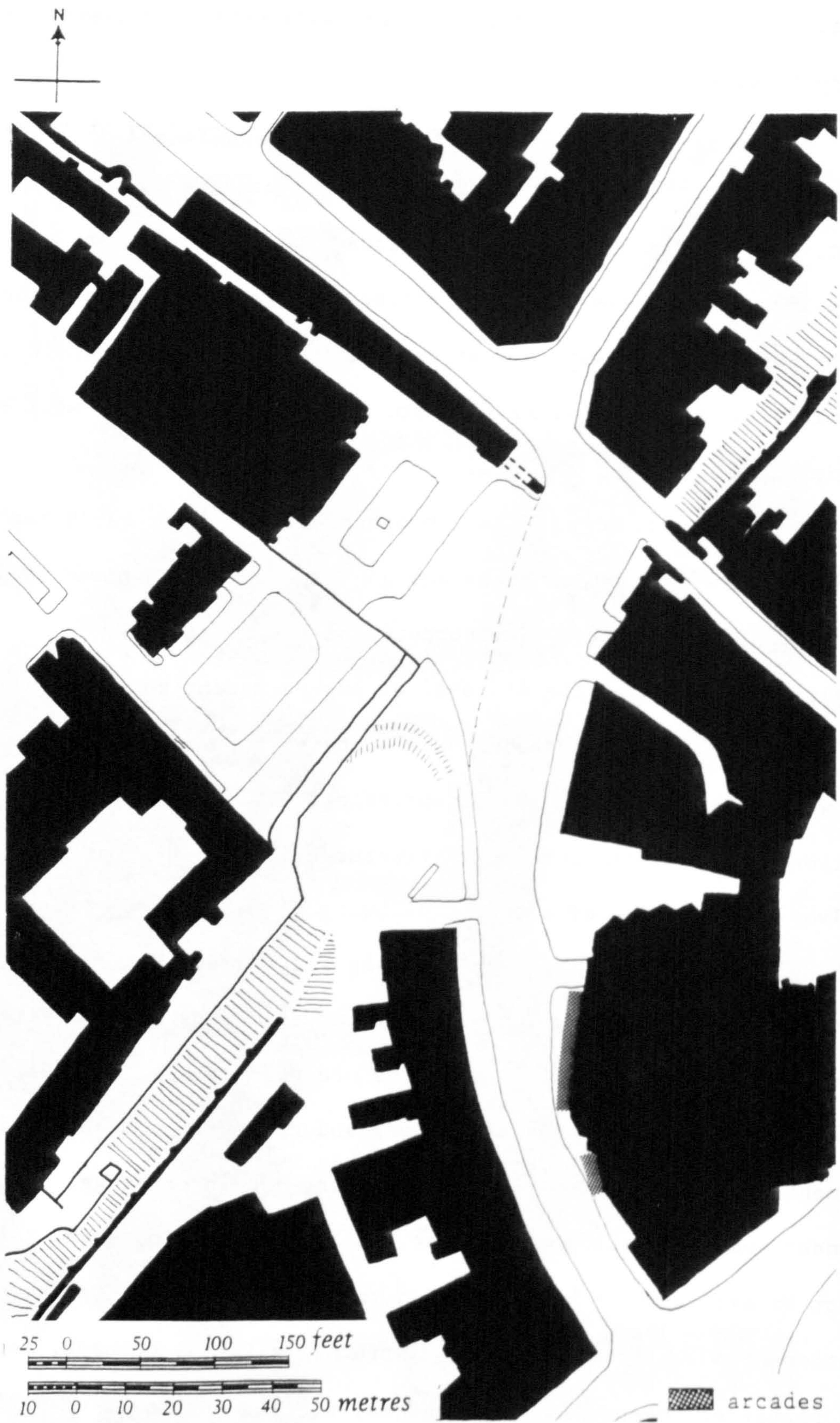


Fig.6.54 - Exhibition Square

Exhibition Square/St. Leonard's Place

Let us start analysing that area by looking at the 1610 and 1650 maps, which clearly depict St. Mary's Abbey precinct as a full enclosure totally segregated from the urban fabric - with three walled sides and the River Ouse to the south. In the 1680 map, a small section of that wall has disappeared in the interface between the precinct and Bootham. The 1694 map shows that a further portion of the wall in that area has been removed, bringing it to a length similar to the one that presently appears. From 1694 to 1772, few changes have occurred: the wall keeps its previous layout; and the King's Manor still stands near the city walls surrounded by gardens.

The creation of St. Leonard's Place, however, in 1832 introduced major changes in the layout of that area. As we saw earlier on, part of the city wall was destroyed and the crescent shape appeared in its place. An important aspect of such an intervention was the change of the alignment defined by the city walls, which was also echoed in the orientation of the King's Manor (which stands in approximately the same direction).

The crescent shape bent that alignment and concurred with the city Wall in a not totally smooth fashion. A more obvious mismatch, on the other hand, appeared in the relationship between the crescent and the King's Manor. For some time a third building prolonged the space of St. Leonard's Place (though not following the crescent shape) attenuating the above mentioned mismatch, by partially screening the King's Manor away from the thoroughfare. That building was then removed, and the Art Gallery building was erected (1879), following the alignment of St. Mary's Abbey's wall. The Art Gallery was set back from

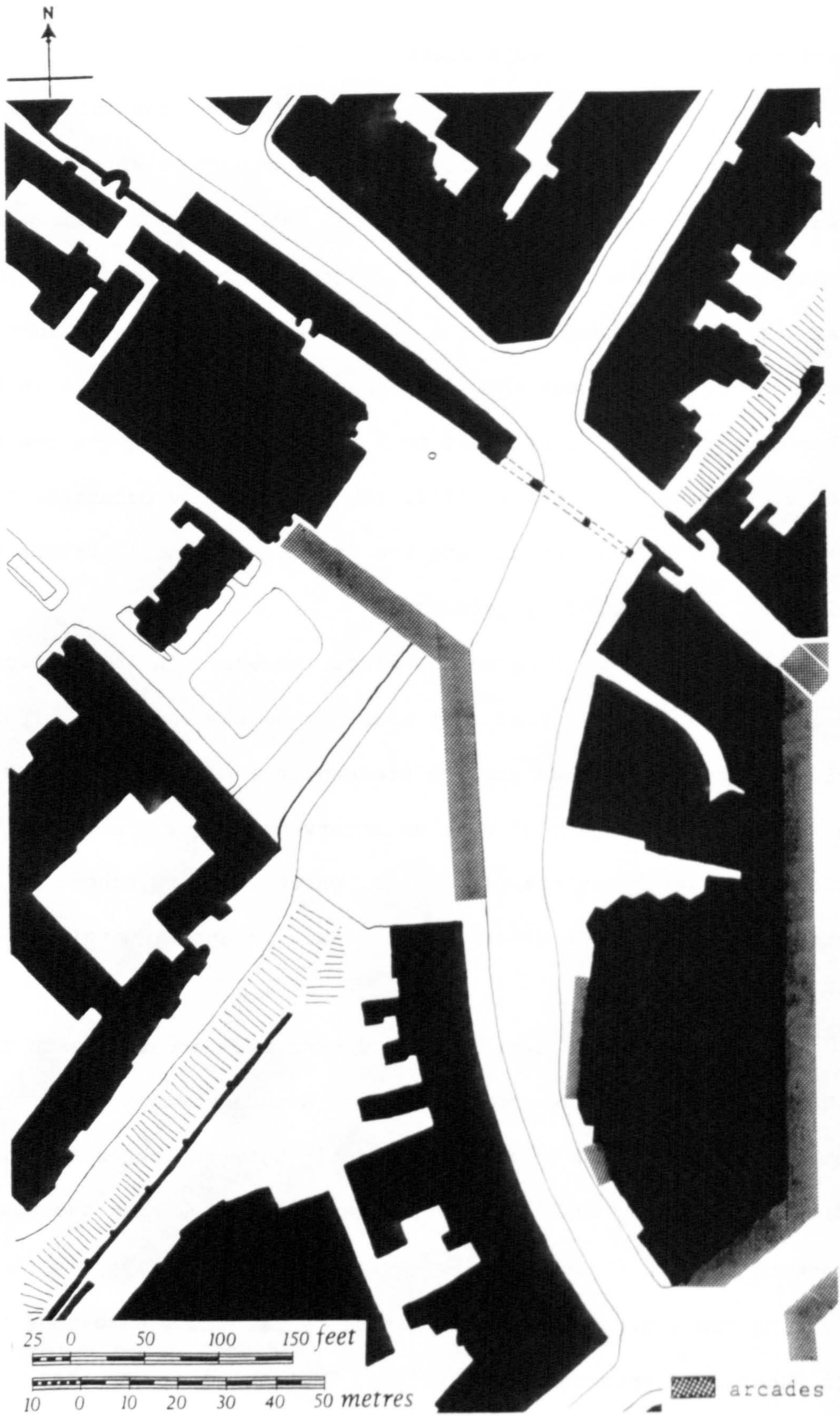


Fig.6.55 - Exhibition Square proposal

St. Leonard's Place, forming a square (Exhibition Square) in front of it.

As mentioned earlier on, the space of Exhibition Square as it now stands, is ambiguously defined. The buildings that configurate it present different alignments, and the changes of alignments do not appear in an obvious way (i.e. in the form of an articulation between two surfaces - a corner), but happens in the space between the buildings. We therefore do not have a convex shape of multi-oriented sides, but independent volumes standing isolated from each other (the King's Manor, the Art Gallery, St. Leonard's Crescent, and De Grey Rooms), presenting diverse orientations, and separated by voids. Through such voids, the view can escape, and a possibility of movement in that direction is afforded. And as voids further occur, the space does not hold together anymore around a single focus, affording a dominant pattern of movement; instead particular elements of the space in question act in isolation, affording uncoordinated patterns of movement. And the result, as one would expect, is 'noise'. The scenario becomes even more confused by the existence of half-statements in such a space, such as the iron fence which segregates the space of the King's Manor. Such a grid partially obscures the view of the observer, still allowing the gaze to penetrate into the space it tries to conceal. Therefore the penetrability of the observer into the precinct of the King's Manor, and the affordance of movement towards that space is also partial (fig.6.54).

With these observations in mind, I would initially propose a clear configuration of Exhibition Square, segregating it further from Bootham, and screening off the King's Manor and its precinct completely, as to provide a smooth connection with St. Leonard's Place.

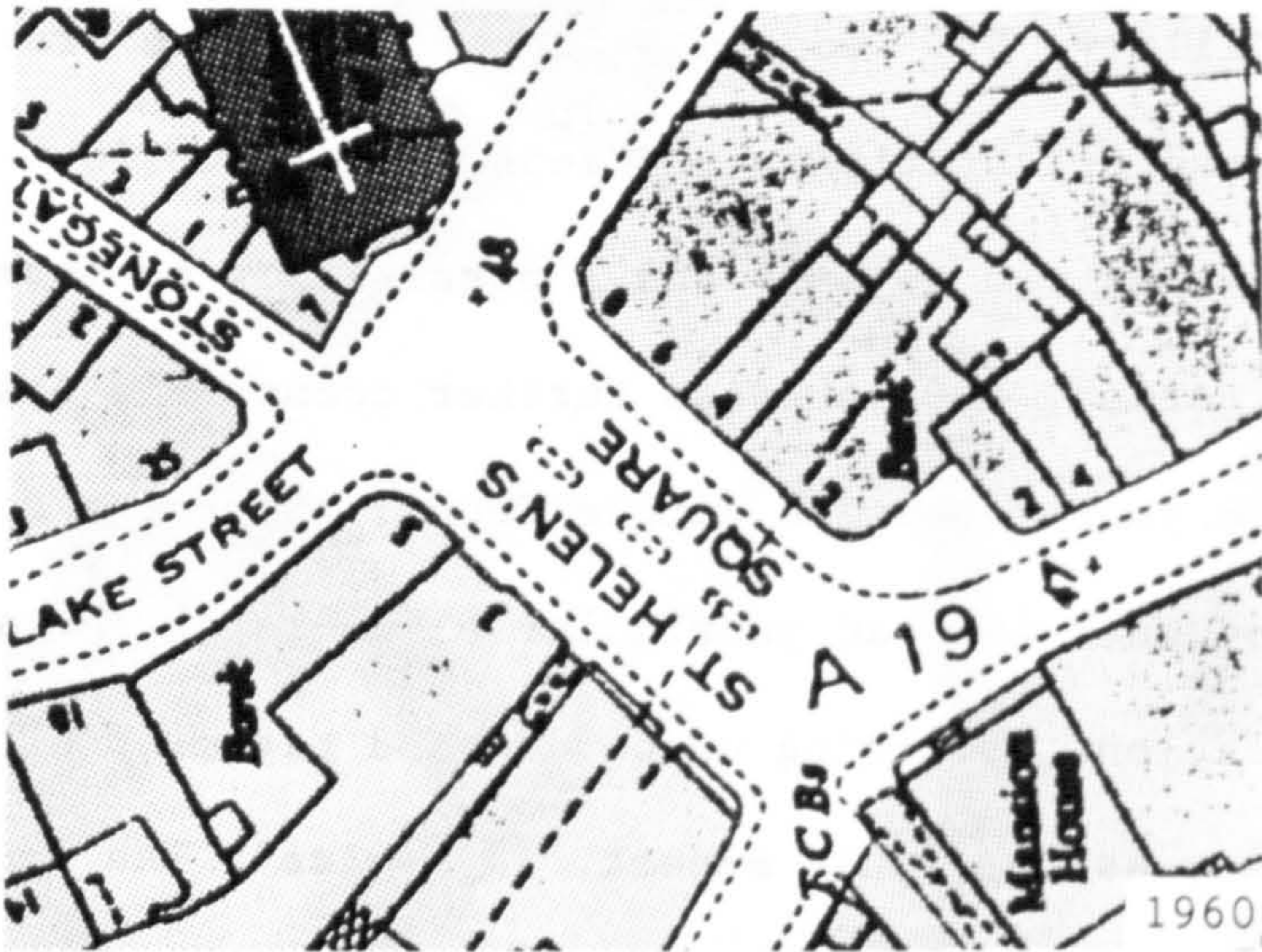


Fig. 6.56 - St. Helen's Square

Fig. 6.57 - St. Helen's Square (view). Source: author.

To actualise such a segregation I would propose again the use of arcades and a row of houses, continuing the crescent shape for a bit longer, then turning left (90 degrees), following along the line presently defined by the King's Manor iron fence, meeting with the Art Gallery at the other end. The enclosure would be further completed through restoration of the section of the Abbey's wall that has been removed through the seventeenth, eighteenth, and nineteenth centuries, linking it again with the city Wall. Such an extension of the Abbey's wall would not be a compact one, but would present a number of gateways (fig.6.55).

St. Helen's Square

St. Helen's Square is the last space to be analysed here. Unlike the other cases, what interests me is not how to remedy planned interventions insensitive to their context, but to describe the removal of an obsolete obstacle in the circulation of people and carriages.

Such an obstacle was the yard of St. Helen's church, which once projected into the space of St. Helen's Square. The erection of the Assembly Rooms and the increase in traffic of carriages from Davygate to Blake Street, brought to the limelight the awkwardness of the connection between these streets and the square. The removal of that portion of the church yard on St. Helen's Square, and the inclusion of it in the space for circulation, although being a top down intervention, may be said to reflect the pattern of movement that occurred in the public space (fig.6.56).

The only reservations I would have in relation to the present layout of St. Helen's Square, relates to:

- (a) the recent introduction of urban furniture which stands

right in the middle of the space (along a straight line), which excludes such a focal point from the circulation. Here I would repeat the comment made by Sitte in relation to the erection of statues in piazzas, by referring to the placement of snowmen in the peripheral areas of these spaces (see Appendix 1).

(b) the layout of the pavement which is convex, thus affording centrifugal movement (exclusion), and not a centripetal one (gathering) (fig.6.57).

CONCLUSION

A particular approach to the analysis of urban spaces has been proposed in this dissertation. Such an approach, as we saw, relies on the idea of an immediate interaction between person and urban environment. The three case studies presented here illustrated applications of that approach to particular urban spaces. I may now briefly reflect on such applications, asking:

A - How has the idea of immediate interaction contributed to the analysis of the urban spaces of Paranao, Ouro Preto and York?

B - Do we necessarily need a 'direct' approach to put forward an analysis of the kind that has been proposed here? In other words, could not a dualist standpoint have provided a similar analysis?

C - How is the present approach - that focus on the relation between movement of people in space and urban form - related to the attribution of symbolic meaning by people to such urban forms?

By looking at these questions I believe we will get a better picture of this work, and its contribution to the problem of analysis and design of urban environments.

CONTRIBUTION OF IMMEDIATE INTERACTION TO THE ANALYSIS OF CASE STUDIES

The idea of an immediate interaction between person and urban environment has determined the very objects of analysis in the various case studies. It is such an idea that has led this author to look for meaning in the pattern of formation of pathways, and ultimately in the urban spaces that appear as buildings are erected in vernacular settlements. If it weren't for that basic idea the objects delineated for analysis would certainly be different ones.

In the case of Vila Paranoa, an 'immediate' or 'direct' approach to the problem has lead me to look at the formation of pathways on the soil, identifying pathway edges and the gradual consolidation of public spaces through the appearance of fences and dwellings. It was observed that these three elements (pathway edges, fences, and volumes) are mutually related, that they do not simply dot the townscape, but create a spatial continuity. Such a spatial continuity exists in the first place because the formation of urban spaces is not simply a matter of individuals building their dwellings in isolation, but a collective process which I argued to be based on the very patterns of movement of people in space. It is such patterns of movements, connecting one area to the other (the house to the fountain, to the bus stop, etc.) that holds the whole settlement together.

In the case of Ouro Preto the same approach was used to describe the three spatial locations presented in Chapter Three: squares, streets, and connections. Squares were analysed in relation to the affordance of gathering. It was pointed out that few spaces in Ouro Preto may qualify for squares in such a conception. This is the case because of the social organisation of society - involving the pattern of 'irmandades' - (which I shall come back to shortly), and also the

extremely irregular topography of the Serra do Espinhaço, which provides few 'natural levelled spots'. By presenting sloped pavements, many public enclosed spaces in Ouro Preto fail to attract and hold passers-by.

It was highlighted that streets present an organic layout, which most probably follows the layout of the network of pathways at the origins of the settlement, therefore reflecting negotiations and accommodations in the face of environmental constraints. Connections were analysed in relation to their contribution to the definition of the hierarchy of circulation in the settlement - Y connections appeared along main routes, and T junctions were associated with a pattern of fragmentation. Such a definition was studied in terms of the angle frontal surfaces formed with the line of sight of the observer.

On the other hand, the analysis of Ouro Preto has looked at a number of planned interventions. It was pointed out that the churches stand on high spots, dominating the townscape of the settlement. Such a relationship between monumental buildings and, which is found in other settlements (such as Athens with its Acropolis), was viewed in relation to the history of the settlement, its people, and their intercourse with religion. The interesting thing, through the point of view of this dissertation, is that such a relationship between churches and fabric is directly affecting the way people move in the spaces of Ouro Preto today, contributing to the perpetuation of a type of interaction essentially similar to the original interaction (when those churches (or chapels at their origin) were built), regardless of present users spiritual beliefs. The very fact that those churches stand in dominant places, implies in them being seen (generally from beneath) from virtually any spot, and in people having to invest

considerable physical effort to visit them. So if on the one hand, the life of the inhabitants of Ouro Preto is not anymore dominated by religion in the way it was in the eighteenth and nineteenth centuries; the very layout of the city induces, and constantly recreates such a relationship. I shall come back to that point when talking about the attribution of symbolic meaning by people to urban form.

In the case of York a 'direct' approach was initially used to analyse the historical development of the city. The development of the settlement through the Middle Ages to the nineteenth century lead to a consolidation of the spaces of the urban fabric, according to people's patterns of movement. A detailed analysis of such a development was provided, identifying the appearance of an organic network of pathways that distorted the regular layout of the Roman camp. In articulation to such a network, through what seems to have been a process of fragmentation, a number of secondary streets appeared. The connections between these various streets, similar to the other case studies indicated a clear-cut hierarchy of routes. And similarly to Paranoa and Ouro Preto, the appearance of Y junctions was related to the main network of pathways, whilst T junctions seem to have come in association with a pattern of fragmentation.

In association with such an unplanned development, there were effected a number of planned interventions. Those planned interventions were viewed in relation to their impact on patterns of movement of people. In the case of the Minster/Petergate area, for instance, I identified a tension created by the combination of two axes: that of the Minster and that of the Roman layout. The Minster affords a pattern of movement in the east/west direction, whilst Petergate affords a movement in the north-western/south-eastern

direction. These incongruent directions clash in the main space of interface between the Minster and Petergate; i.e. in the transition between the interior of the Minster and the surrounding urban fabric - the triangular space that lies next to that building's frontal façade. Such a triangular space, besides not echoing the axis defined by the Minster, as we saw, is also too exiguous to accommodate its monumental scale.

The interventions I proposed, in their turn, sought to work with dominant elements of the surface layouts in question, drawing on main patterns of movement afforded by these dominant elements, and rearranging the remaining elements of the surface layouts in accordance to such patterns of movement. In the case of the Minster, the layout of the proposed piazza attempts to echo the direction of movement already afforded by the building of the Minster.

Each of these three analyses explores a different aspect of the idea of an immediate interface between person and environment. Nevertheless, there seems to be a number of overlapping aspects - not only in terms of more obvious aspects such as the organic layout shared by the three settlements, but also in relation to more specific aspects, such as the role played by Y and T connections in the formation of urban spaces. In the three case studies, Y connections appeared along the main network of pathways. Moreover, in the case of York, the main Y connections presented monumental buildings: in the tongue that appears as two pathways divide there stands a church (All Saints, Pavement; St. Helen, St. Helen's Square; and Christ Church (demolished in the nineteenth century), King's Square).

THE IMPORTANCE OF IMMEDIACY TO THE ANALYSIS PRESENTED HERE

I believe the urban analysis presented here cannot be separated from the idea of immediacy in the relationship between person and environment. Such an analysis relies very much on such an immediacy, inasmuch as it proposes a direct 'mapping' of patterns of action into surface layouts (as illustrated in the previous section of this conclusion). It is this concept that allows us to understand surface layouts in terms of people's patterns of movement.

Now, could a dualist approach provide a similar analysis? A dualistic view, as we saw earlier on, gives paramount status to individuals mental representations and images. In the case of an urban analysis, the attention would probably shift to an assessment of individuals mental conceptions. So, for instance, in the case of York, questionnaires would have been given out to citizens asking about their views in relation to the Minster, or Parliament Street, and so forth. The researcher would then go through such questionnaires, and eventually propose an intervention, which according to her/him, best suited York citizen's needs. Whilst I do not deny the relevance of that kind of research, I believe that applied on its own - without an account of how environmental constraints (with reference to surface layouts) affect people's actions - it can be misleading.

The requirements and expectations of York citizens is continuously changing: it is affected by fashion, cultural idiosyncrasies, and most certainly by a number of metaphysical assumptions that people take for granted. If we were to move back to the nineteenth century, for instance, we would have found that interventions such as Parliament Street, Picadilly, and Duncombe Place, which annihilated the integrity of the vernacular spaces of York, would

actually have been welcomed by the public as important 'street improvements'. If we were to ask York citizens, after the Second World War about the sort of urban environment they expected to live in; or their criteria for evaluating urban spaces, we would possibly be faced with a different attitude (probably a more sympathetic one) towards modern architecture, high-rise buildings, etc., than we would get from present York citizens. Nowadays, the order of the day is conservation. Cities like York (that have been able to maintain some of their historical heritage) become important touristic centres. And instead of building skyscrapers (such as the Viking Hotel) we decide to list historic buildings, to preserve and restore them to their original layout. But what is this original layout?

In the case of the Minster, for instance, are we talking about narrowing Duncombe Place to its pre-nineteenth century layout? Are we proposing to rebuild the houses that once segregated the Minster precinct from Petergate? Are we rebuilding the wall that enclosed such a precinct in the fifteenth century? Or are we keeping only the original nucleus of the Minster (the choir, the central nave, and central tower) getting rid of the latter additions (like the old library - which one may argue to have destroyed the sense of unity of the Gothic building)? The fact is that, by choosing to preserve buildings and spaces as they are, we are freezing an arrangement which has never been static, but has continuously changed to accommodate the requirements of different times. Besides, we have the additional complication of having to decide, what 'original' we want to restore or preserve. The important lesson to draw from such a state of affairs is that people's mental conceptions and expectations are continuously changing. And whilst it is fair enough to attempt to provide an

environment that somehow dialogues with such mental conceptions; it is essential to bear in mind that there are invariants in people's relationship with the environment (related to an immediate interaction between people's movements and surface layouts). Because such invariants are more enduring than a group's mental conceptions, they provide a more convenient starting point for an urban analysis.

If on the one hand, by adopting individuals mental conceptions as a starting point, the dualist makes an urban analysis relative to a social group; on the other hand, she/he hinders any effort to relate patterns of movement to surface layout in a direct way. And this is so because what drives individuals in their conscious relationship with the environment is not the movements their bodies perform, but a set of intentions, which are bound to fashions, cultural idiosyncrasies, and metaphysical assumptions.

Now, it was said a few moments ago that the direct relationship between people's movements in space and patterns of action provide a suitable starting point to an urban analysis. It was also said that by proposing such a starting point we do not necessarily overlook the importance of an urban environment establishing a dialogue with people's mental conceptions.

The question that follows is: does such a 'direct' approach allow any room for a consideration of symbolic meanings people attribute to the urban environment?

DIRECT APPROACH AND SYMBOLIC MEANING

In Chapter Two I elaborated on the idea of appropriation. As the reader may recall, such a notion was defined as 'the process through which individuals make something theirs'. Appropriation, in that it involves a personal contribution, is a useful notion to the problem of individuals attributing symbolic meaning to an urban environment.

As pointed out earlier on, appropriation occurs in an environment (with certain properties of its own) that is already given. Appropriation (which involves attributing symbolic meaning) is not considered as isolated initiatives that happen in an immaculate mental realm; it is rather taken as the outcome of an interaction with an environment; building up on such an interaction.

The discussion that was presented in the case of Ouro Preto illustrates that process. The separation between the holy and the mundane, as we saw, was an important component in the relationship of the eighteenth century miners with their thriving colonial settlement. Such a component had a notable role in these miners appropriation of their environment (the Serra do Espinhaço). The outcome was the placement of churches in high spots overlooking the settlement, hanging above the promiscuous life that went on beneath. Now, the attribution of a pre-eminent role to churches in the cityscape, is not simply a construct that the eighteenth century dwellers put together in their minds. It is not simply a conventional gesture of agreeing on the importance of such religious establishments. It rather involves an interaction with environmental features such as the hills that punctuated the site of Ouro Preto. And it is very much because the gesture of attributing a symbolic meaning to churches stemmed from an interaction with environmental (notably topographical) constraints.

that today, two centuries later, Ouro Preto churches still inspire submission - they still play a dominant role in the organisation of the townscape of Ouro Preto. And this is so even for strangers with the most diverse cultural backgrounds.

Symbolic meanings change, as do processes of appropriation, according to social groups and individuals. Through the point of view of spatial interventions, the best the designer can do is to be sensitive to environmental properties, and to manipulate such properties in accordance to a relationship that he/she hopes to provide. Now, it is impossible to predict how people will interact with an environment, precisely because such an interaction is not a mechanical gesture, but involves patterns of appropriation that are specific to social groups and individuals. By being sensitive to environmental properties, however, the designer offers the raw material for such patterns of appropriation, defining thus a basic inclination in an interaction, in the same way that the churches of Ouro Preto crystallised a relationship of submission by the user to the religious temple.

As to the domain of appropriation itself, it is a place where the designer is not allowed in - it belongs to the individual that generates a relationship. It follows from that that designers should never aim to provide a ready-made environment to a third entity. Instead, such a designer should produce an open-ended design - to be sure, a design which expresses a particular inclination towards the environment, but also a design which opens the possibility to a number of patterns of appropriation, and association by people of their own symbolic meanings.

APPENDIX 1

ALTERNATIVE APPROACHES TO RATIONALISM AND CONSTRUCTIVISM

Architectural inquiry has been punctuated many times by reactions to the mainstream of thought (notably rationalism), towards which a number of authors have contributed. To cite but a few of these authors I would mention:

John Ruskin, who in *Lectures on Architecture and Painting*, criticises regular order and repetition, proposing instead a return to vernacular forms:

...You go out of the gates, and walk in the suburban streets of that city - I mean Verona - the eye never seeks to rest on that external scenery, however gorgeous; it does not look for the gaps between the houses... The heart and eye have enough to do in the streets of the city itself; they are contended here...¹

In the above fragment, we read not only praise of the vernacular settlement, as an alternative to the rational order of the industrial city (in this case illustrated by the city of Edinburgh, 1891), but also the fact that the vision which occurs to Ruskin, does not recur to the domain of the imaginary, but seeks an answer in the

1. Ruskin, J., Lectures on Architecture and Painting (London: George Allen, 1891), pp.3/4.

realm of experiences of actual urban settlements. This attitude is most relevant to this dissertation, inasmuch as experience is given paramount status in the process of description and analysis of urban settlements. Other important aspects of Ruskin's work are his bringing attention to the fabric of the city, characterising it (and not only monuments) as an important contributor to the quality of urban spaces². Also of interest to us is his vehement criticism of regularity and repetition, which argues precisely against what Alberti argued for:

How many windows precisely of this form do you suppose there are in the New Town of Edinburgh? I have not counted them all through the town, but I counted them this morning along this very Queen Street, in which your Hall is; and on the one side of that street, there are of these windows, absolutely similar to this example, and altogether devoid of any relief by decoration, six hundred and seventy eight³.

Camilo Sitte is another author who made a substantial contribution to our understanding of urban forms little explored by rationalist approaches, by carefully studying the layout of vernacular settlements. In his *Der Stadtebau*, Sitte explores aspects such as 'size and shape of squares', 'plaza groupings', and 'layout of streets', among others. Sitte's account is not merely descriptive, there is an exercise of interpretation and judgement that accompanies the presentation of the various case studies. Such an interpretation has its roots in people's patterns of movement in space, as expressed in

2.Ibid., p.5.

3.Ibid., pp.6/7.

the paragraph below:

...snowmen stand on the same spots where, under other circumstances and following the old method, monuments or fountains might be expected to be located. How did this placement come about? Very simply. Imagine the open square of a small market town in the country, covered with deep snow and crisscrossed by several roads and paths that, shaped by the traffic, form the natural lines of communication. Between them are left irregular distributed patches untouched by traffic; on these stand our snowmen, because the necessary clean snow was to be found only there⁴.

The examples Sitte chooses are actual urban spaces, mostly of medieval Italian towns.

In the twentieth century, a number of authors have also contributed with important insights into the spaces of vernacular environments, again proposing an alternative to the influential rationalist trend described in Chapter One. Among those I should mention Frank Lloyd Wright, who claimed that 'the true basis of any serious study of art of architecture still lies in those indigenous, more humble buildings...'⁵; and who proposed a design for a city - *Broadacre-city* - with an organic layout that adapted to the topography of a particular site. Such an approach greatly differs of that of his

4. Sitte, C. City Planning According to Artistic Principles Translated from the first German edition (first published in 1889) by G.R. Collins, & C.C. Collins (London: Phaidon Press, 1965), p.21.

5. Quoted by Moholy-Nagy, S., Native Genius in Anonymous Architecture (New York: Horizon Press, 1957).

contemporary Modernists, which consisted of a fully conceived, mass produced repetitive environment, ready to land on any site over the planet.

Paul Zucker, in his *Town and Square* (1959) presents a study of the historical development of the square 'from the agora to the village green'. Zucker's analysis is focused on space: 'that three-dimensional void' that heretofore 'has been considered rather as a by-product...'⁶ Zucker is interested in what he calls 'artistically relevant squares'; which are spaces capable of producing an aesthetic experience, possibly related to the creation of 'visual tensions' in the 'kinesthetic experiences' of the viewer. A classification of squares is proposed, which is based on patterns of motion it induces in the observer.

Last, I shall refer to the work of C. Alexander. The ideas of Alexander have been developed in a number of publications: his basic approach was laid down in the book *The Timeless Way of Building*. As this title suggests, there are certain aspects that remain essentially unchanged (invariants) in our relationship with the urban environment. *The Timeless Way of Building* is pervaded by these invariants. The outcome of such a way of building is an urban environment which has a positive impact on people, an environment which is 'alive'. The search for such a timeless way, he tells us, involves building up a language of patterns: *A Pattern Language*. Although starting with an emphasis on mentally mediated human action in the environment, that: 'people can shape buildings for themselves, and have done it for centuries, by

6. Zucker, P., Town and Square from the Agora to the Village Green (New York and London: Columbia University Press, 1959).

using languages which I shall call pattern languages'⁷. Alexander acknowledges the importance of the environment in its relationship with people. Then we see a new side of Alexander's framework, where the focus is not on the individual's mental constructs, but on the relationship between such an individual and the environment; a relationship permeated by invariants that characterise a 'timeless way of building'. Another important insight in Alexander's work lies in the conception of urban form not just as an empty shell, but in relation to events in the urban environment. As he puts it: 'patterns of events are always interlocked with certain geometric patterns in space'⁸. His idea of activeness underlying patterns, which 'to the extent they are alive, they let our inner forces loose, and set us free; but when they are dead, they keep locked in inner conflict', may also be seen as an alternative view to the traditional rationalist view of the environment as a passive entity waiting to be controlled by man. In relation to Alexander's *Pattern Language*, it may be said that it is an important source book for designers; as to the 'pattern language conception', a number of things may be said: the first relates to the fragility of the idea that the appropriateness of an urban environment, or the successfulness of a relationship between people and an environment, is captured in the form of patterns: the fact that an arcade is an appropriate intervention does not reside in the fact that it is an arcade, but in what it does to people, the way it affects them given a number of contextual circumstances. A second point has to do with the idea of crystallising the relationship between person and urban

7. Alexander, C., The Timeless Way of Building (New York: Oxford University Press, 1979), p.xi.

8. Ibid., p. x.

environment in the form of patterns. By doing so, Alexander overlooks the importance of the understanding (which seemed to be there in his early statements), of urban form, in terms of the events that gave birth to it. This limitation of understanding is expressed in his pattern language at the moment when it does not differentiate between the events that take place in the city (such a carnival, or night life) and the actual physical forms (such as arcades or promenades): both are treated as patterns that compose a language.

APPENDIX 2

OBJECTIVITY, INTENTIONALITY AND THE CONCEPT OF *THING*

The idea of individuals at the source of their interface with the world, is developed by Merleau-Ponty, through the notion of intentionality. And I quote him:

...when I move towards a world I bury my perceptual and practical intentions in objects which ultimately appear prior to and external to those intentions, and which nevertheless exist for me only insofar as they arouse in me thoughts or volitions.¹

The process of directing intentions towards a world, inextricable from a person-environment relationship, yields objects in a relationship. And it should be emphasised that the notion of objectivity explored here specifically means the condition of something being an object in a relationship.

As expressed by Merleau-Ponty, objects owe their very existence to the intentions of individuals. Objects are self-contained structures, with limits that distinguish them from their surroundings. Objects vary according to individuals, existing as a focus of a relationship.

1. Ibid., p. 82.

Objects may now be a hat and a coat, and then the space between them: if I am going out of my building, my hat and coat are characterised by me as objects, however, when I get to the football pitch, and use these hat and coat to mark the goal, the space between them becomes the object, and the hat and coat are just there to define such a space, in the same way that space was defining my hat and coat earlier on. As elements that are simply defining an object, hat and coat may now well be substituted by, let us say, a pair of trousers and a bag, the important thing is that the space is kept the same.

And here we may gain further insight into issues such as the association of regular, self-contained forms with visionary gestures, or into Boulees' answer to the question as to why regular bodies are apprehended at first contact: namely, 'because their form is simple, their faces are regular, repeating themselves'.

The notion of individuals defining objects, in the lines of what has been said before, does not imply, however, that the environment is blank and meaningless, nor does it mean to ignore the fact that certain arrangements tend to suggest themselves as objects more readily than others, by them being self-contained structures, as in the case of artefacts, or as illustrated by the Gestalt laws of organisation.

Objects have their existence related to a world which is already there; a world of things with their own way of being, a way of being which characterises them and makes them intrinsically meaningful to humans.

The term *thing* is used here in a Heideggerian sense. It expresses phenomenology's concern with understanding the world in its essence. A thing is an entity which exists independently of mental processes performed in the head of individuals.

The way of being of a thing pervades its physical expression, at the same time that it transcends it. The implication of this reasoning is that things cannot be attributed a meaning constructed in the heads of individuals. Things can only be appropriated by humans, and their way of being is not corrupted by such a process of appropriation.

Heidegger tells us:

An independent, self-supporting thing may become an object if we place it before us, whether in immediate perception or by bringing it to mind in a recollective re-presentation. However, the thingly character of the thing does not consist in its being of the objectness, the over-againstness, of the object.

Unlike objects - which are defined by a ground, as illustrated by Rubin's vase, which has to disappear to give existence to the two faces - things coexist and penetrate each other.

Things have a life of their own. Heidegger, for instance, uses the notion of thing to depict a world of living entities, where the bridge is said to 'gather the earth as landscape around the stream', to 'hold the stream's flow up to the sky by taking it for a moment under the vaulted gateway and then setting it free once more.'²

A thing has a certain way of being in the world, a way which is peculiar to it, and which characterises it as a thing of its own kind. By talking about things we are referring to a movement from the environment to individuals. And if we consider this statement in the light of what has been said before, about individuals characterising objects, we have a twofold conception which expresses a mutualistic

2. Heidegger, M., Poetry, Language, Thought, translated by A. Hofstadter (New York, etc.: Harper & Row, 1975), p. 152.

understanding of the relationship between humans and the world.

APPENDIX 3

TABLES (VILA PARANOIA)

TABLE 2

SHIS/1986

PERIOD OF LIVING IN THE FEDERAL DISTRICT (WITH REFERENCE TO 1983)¹

PERIOD (IN YEARS)	NUMBER OF PEOPLE	%
Less Than 01	164	4.4
01 to 03	363	9.8
04 to 06	661	17.9
07 to 09	559	16.2
10 to 12	727	19.7
13 to 15	372	10.0
16 to 18	207	5.6
19 to 21	213	5.7
More Than 21	380	10.3
T o t a l	3,686	100.0

TABLE 3

SHIS/1986

PERIOD OF LIVING IN PARANOIA²

Time (in years)	Number of People	%
Less than 01	430	11.6
01 to 03	2,057	55.8
04 to 06	370	10.8
07 to 09	266	7.2
10 to 12	268	7.2
13 to 15	77	2.0
16 to 18	49	1.3
19 to 21	55	1.4
more than 21	144	3.0
T o t a l	3,686	100.0

1. SHIS, Vila Paranoia, 1986.

2. Ibid..

TABLE 4
 SHIS/1986
 NUMBER OF MEMBERS IN A FAMILY³

Members per Family	Number of Families	%
01	133	3.6
02	488	13.2
03	670	18.1
04	661	17.9
05	552	14.9
06	409	11.0
07	305	8.2
08	204	5.5
09	132	3.5
10	64	1.7
11	37	1.0
12	18	0.4
13	9	0.2
14	2	0.0
15	2	0.0
T o t a l	3,686	100.0

TABLE 5
 SHIS/1986
 NUMBER OF FAMILIES PER SHANTY⁴

Families per Shanty	Number of Families	%
1	1,842	50.0
2	1,184	32.1
3	390	10.5
4	132	3.6
More than 4	138	3.8
T o t a l	3,686	100.0

 3.Ibid..

4.Ibid..

TABLE 6
SHIS/1986
AGE⁵

Age (in years)	Number of People	%
01 to 03	2,988	17.4
04 to 06	2,017	11.7
07 to 09	1,568	9.0
10 to 12	1,259	7.2
13 to 15	1,063	6.1
16 to 18	967	5.5
19 to 21	908	5.2
22 to 24	1,030	5.9
25 to 27	1,039	6.0
28 to 30	916	5.3
31 to 33	808	4.6
34 to 36	609	3.5
37 to 39	460	2.6
40 to 42	348	2.0
43 to 45	315	1.8
46 to 48	216	1.2
49 to 54	326	1.9
55 to 60	241	1.4
More than 60	292	1.7
T o t a l	17,370	100.0

TABLE 7
SHIS/1986
TENURE PATTERN OF THE SHANTY⁶

Type of Tenure	Number of Families	%
Owned (and occupied)	2,610	70.8
Rented	264	7.1
Borrowed	812	22.0
T o t a l	3,686	100.0

5. Ibid..

6. Ibid..

TABLE 8
SHIS/1986
FORMAL EDUCATION⁷

Degree	Studying		Completed		Number	%
	Number	%	Number	%		
Mobral ⁸	-	-	713	6.2	-	-
First Degree (FD) ⁹ (Incomplete)	3,985	35.0	5,425	47.7	-	-
FD (Complete)	-	-	212	1.8	-	-
Second Degree ¹⁰ (incomplete)	17	0.1	81	0.7	-	-
'Supletivo' ¹¹ 1st Degree (inc.)	113	0.9	86	0.7	-	-
'Supletivo' 1st Degree (comp.)	-	-	6	0.0	-	-
'Supletivo' 2nd Degree (inc.)	34	0.2	1	0.0	-	-
'Supletivo' 2nd Degree (comp.)	-	-	0	0.0	-	-
Higher Degree (HD) (incomplete)	9	0.0	3	0.0	-	-
HD (complete)	-	-	1	0.0	-	-
No answer	3	0.0	2	0.0	-	-
Partial Total	4,162	36.6	6,530	57.4	-	-
Illiterates					673	6.0
T o t a l					11,365	100.0

7.Ibid..

8.Basic education for mature illiterate people.

9.Equivalent to O Level in Britain

10.Equivalent to A Level in Britain

11.Intensive course for mature students.

TABLE 9
SHIS/1986
REGISTERED EMPLOYEES¹²

Specification	Number of Workers	%
Registered	1,865	37.0
Not Registered	3,177	63.0
T o t a l	5,042	100.0

TABLE 10
DIEESE/1990
COST OF LIVING¹³

Items	Quantity/ Monthly	Expenditure ¹⁴ / Monthly	Expenditure (% in relation to MS ¹⁵)
Meat	6.0 Kg	1,217.40	36.21
Milk	7.5 L	196.88	5.83
Beans	4.5 Kg	156.78	4.66
Rice	3.0 Kg	127.23	3.78
Flour	1.5 Kg	50.84	1.51
Potato	6.0 Kg	168.00	5.00
Tomato	9.0 Kg	145.44	1.33
Bread	6.0 Kg	396.00	11.70
Coffee	0.6 Kg	166.80	4.96
Banana	7.5 Kg	212.85	6.33
Sugar	3.0 Kg	84.00	2.50
Oil	0.9 L	25.40	0.76
Butter	0.75Kg	128.33	3.82
Total expenditure (with basic food)		3,075.95	91.50

12. SHIS, Vila Paranoa, 1986.

13. DIEESE, Informativo no. 38, 1990.

14. In Cruzeiros (Cr\$).

15. Minimum salary of June 1990.

TABLE 11
DIEESE/1990
RELATIVE VALUE OF THE MINIMUM SALARY FOR THE PERIOD 1940-1990

Year	Real Value ¹⁶	Relative Value(%) ¹⁷
1945	9,511.22	67.03
1950	5,653.53	39.84
1955	15,756.59	111.04
1960	14,232.26	100.03
1965	12,644.91	89.11
1970	9,776.95	68.90
1975	8,073.72	56.90
1980	8,750.15	61.66
1985	7,507.61	52.91
1990	4,329.69	30.51

TABLE 12
SHIS/1986
DWELLING PLACE PREFERENCE¹⁸

Place	Number of Families	%
Paranoa	3,175	86.3
Nearby Area	86	2.3
Satellite City	411	11.1
Rural Area	12	0.3
No Answer	2	0.0
T o t a l	3,686	100.0

TABLE 13
SHIS/1986
IMPROVEMENTS PREFERENCE

Improvements	Number of Families	%
Plot with water and electricity	3,528	95.6
BNH House	158	4.2
No Reply	0	0.0
T o t a l	3,686	100.0

16. That real value is calculated in relation to the Cruzeiro in June 19

17. That relative value takes as its parameter (100%) the minimum salary July 1940.

18. SHIS. Vila Paranoa. 1986.

APPENDIX 4

SKETCHES OF OURO PRETO





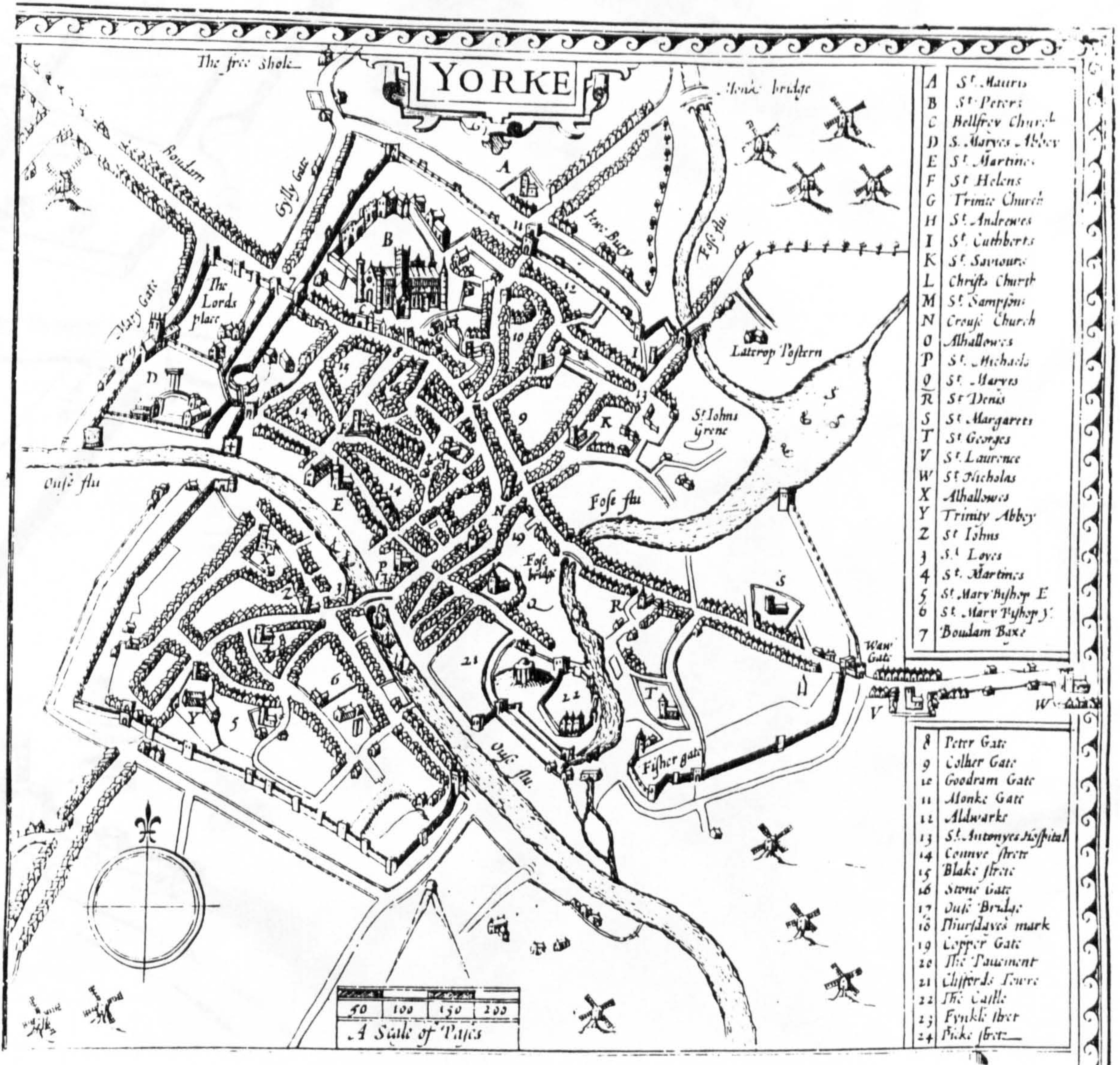


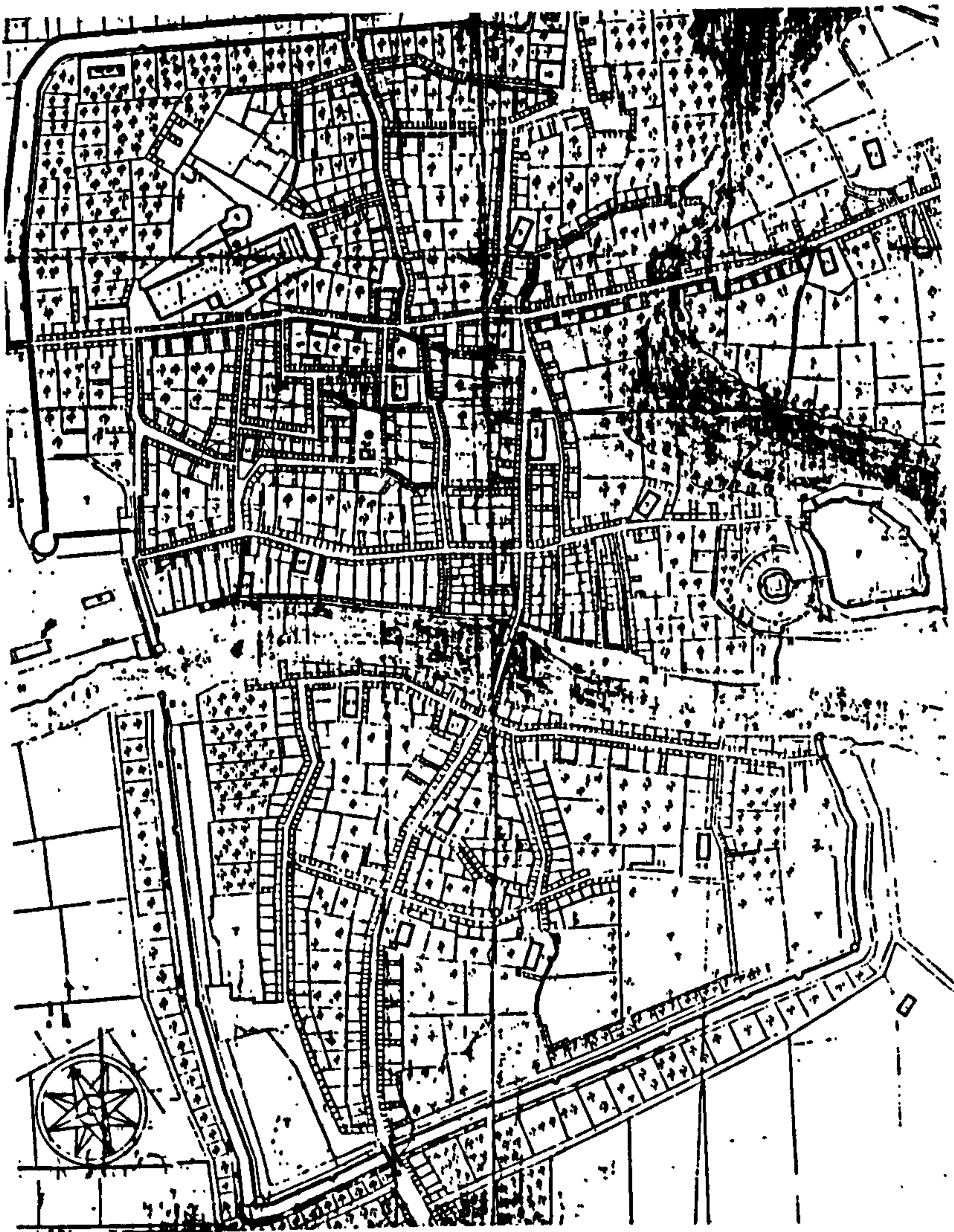




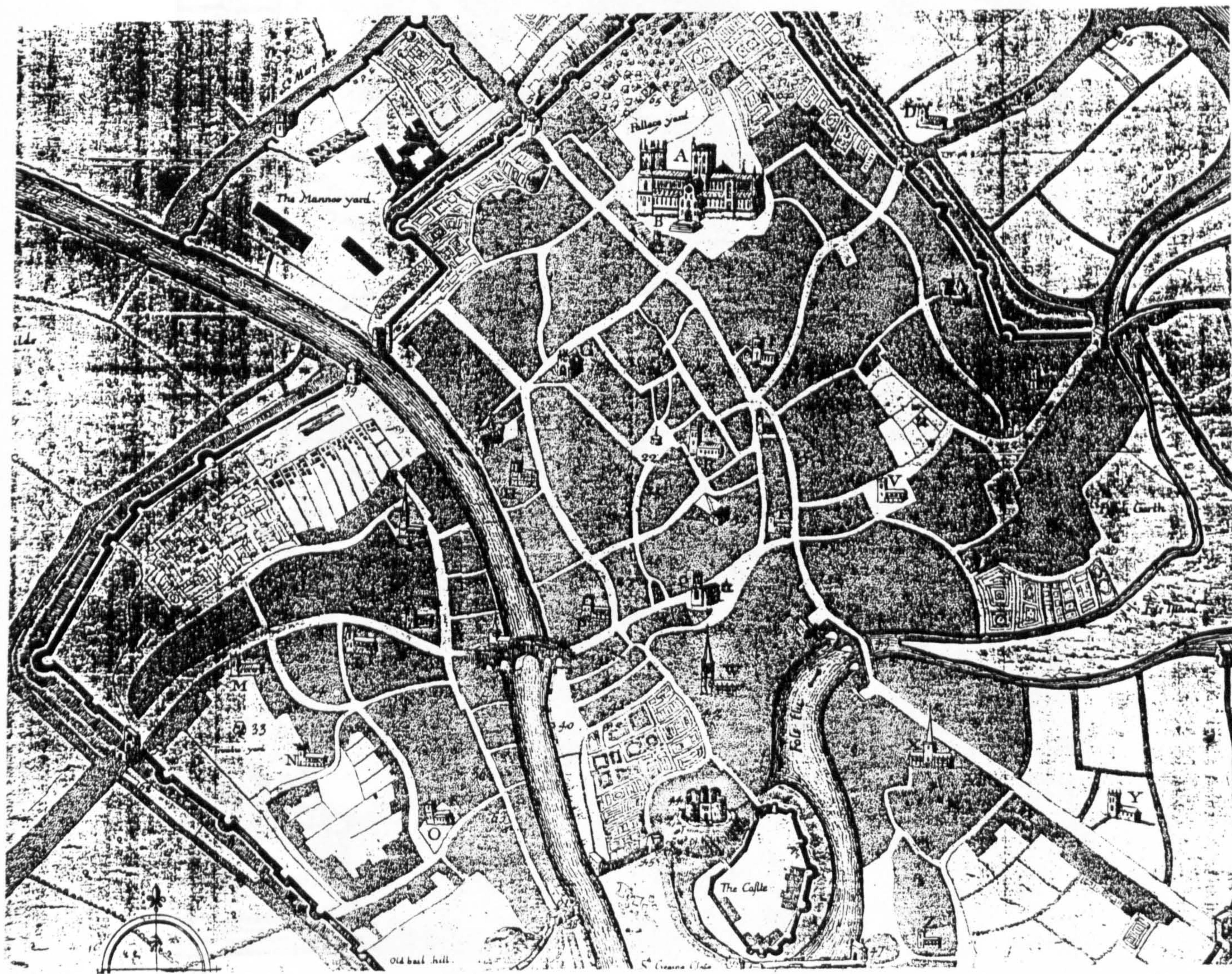
APPENDIX 5

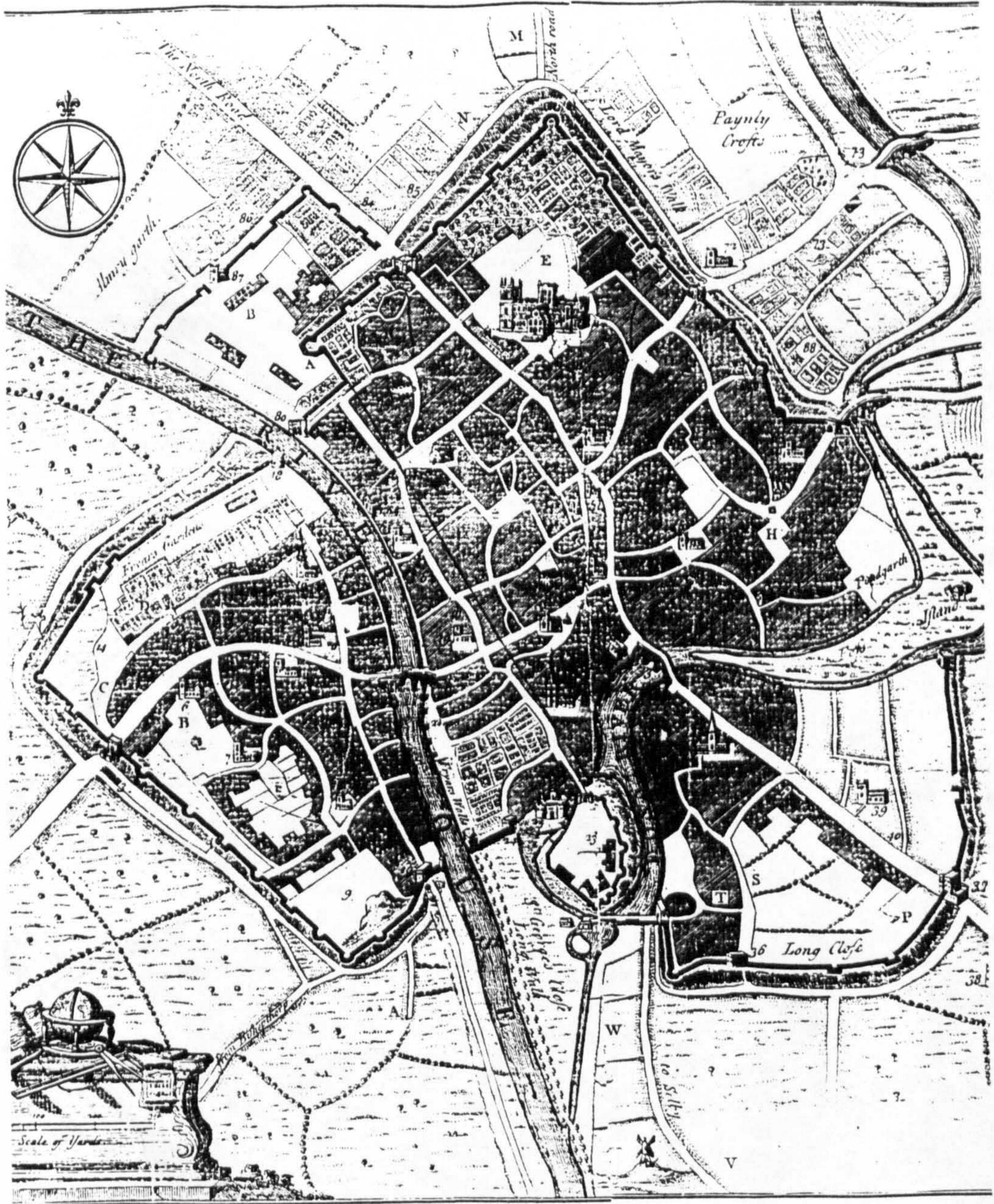
HISTORICAL MAPS OF YORK



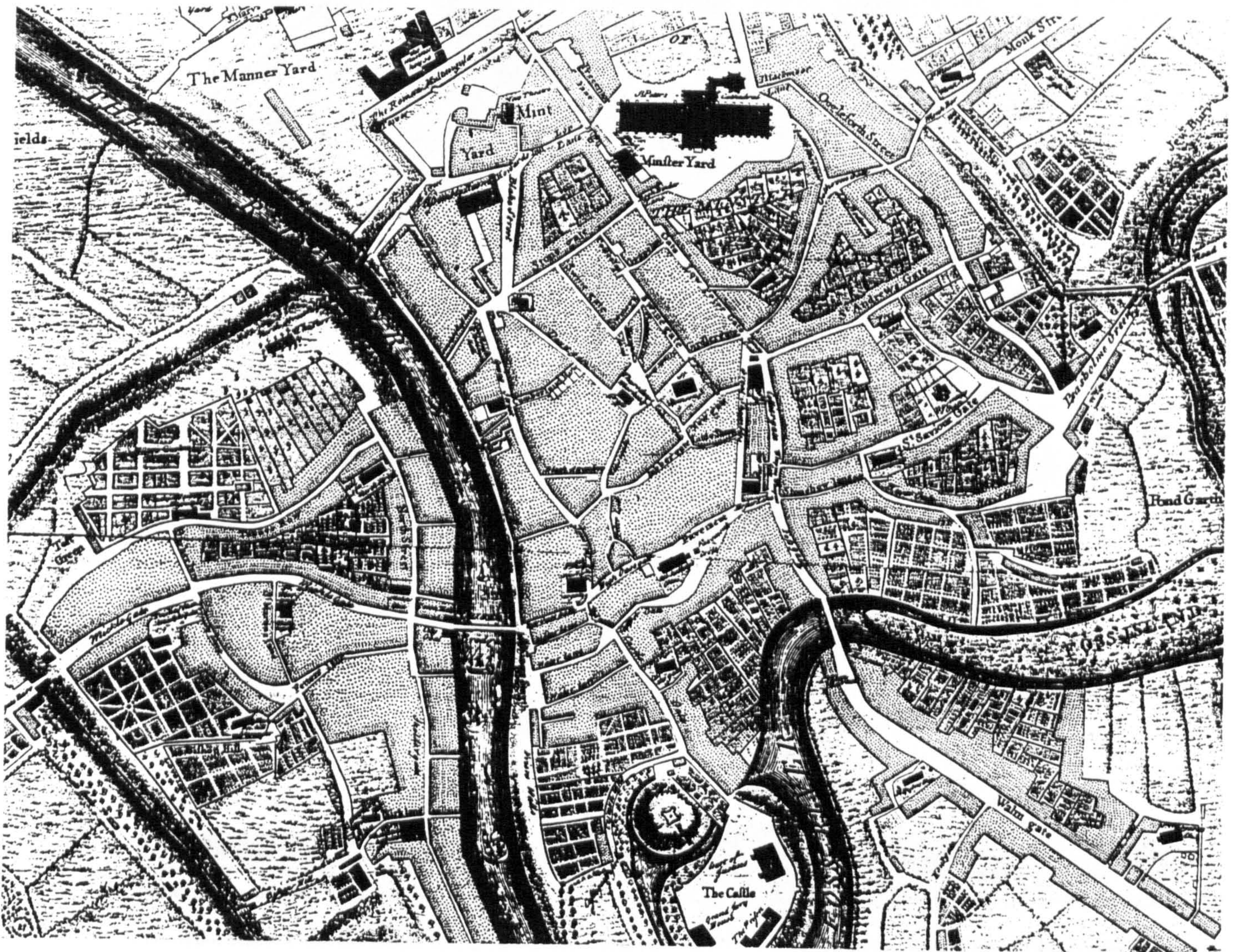


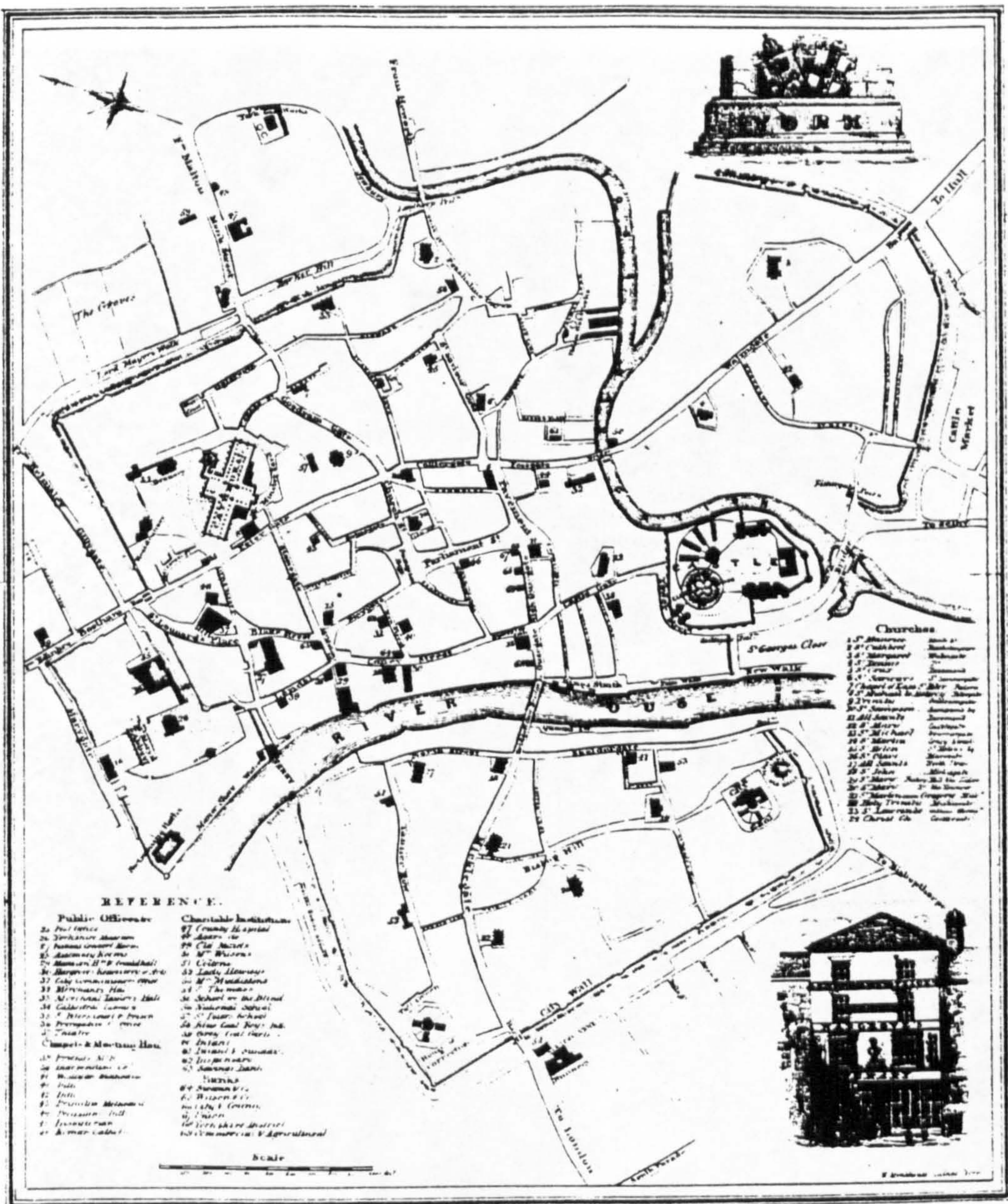
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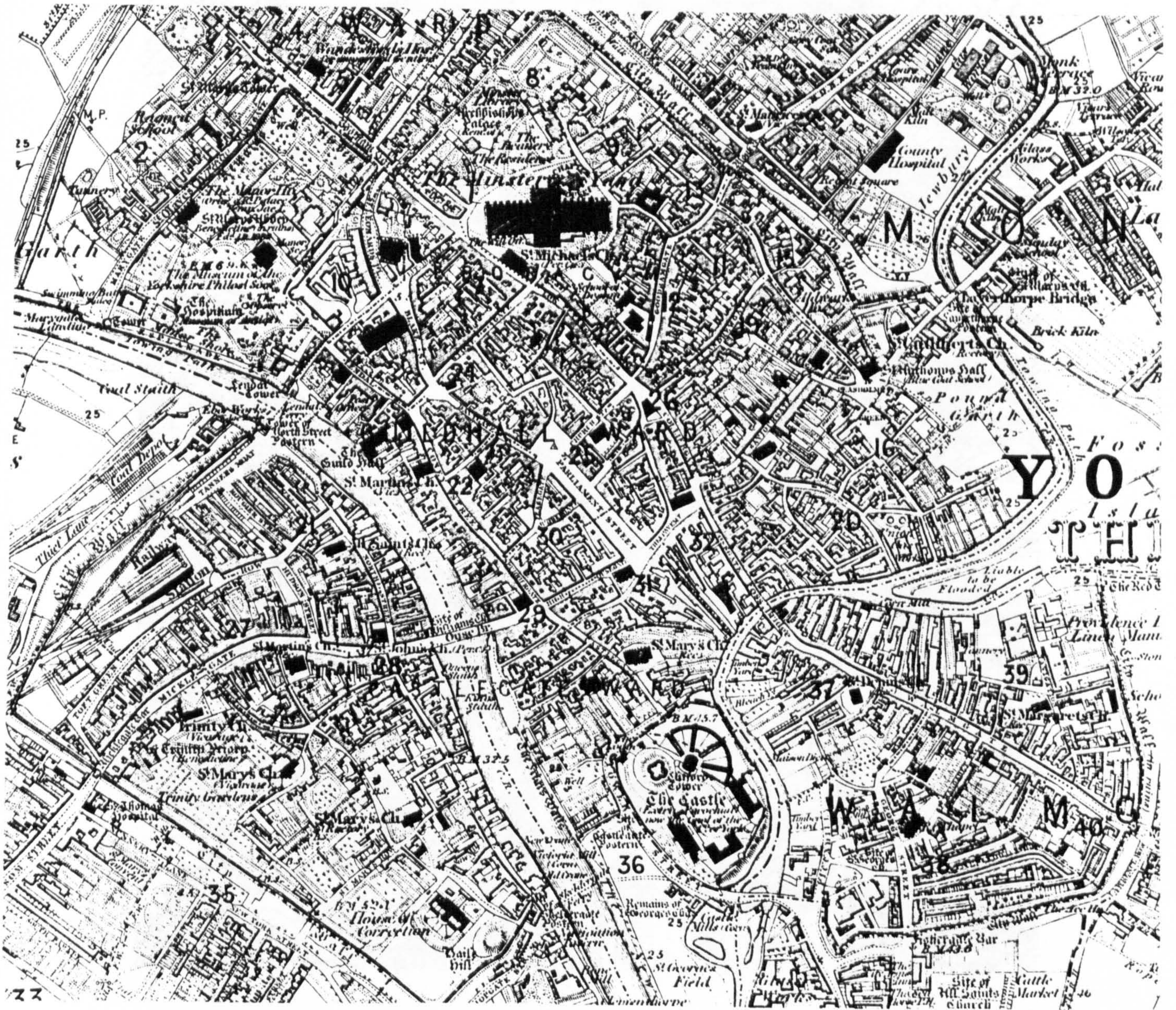




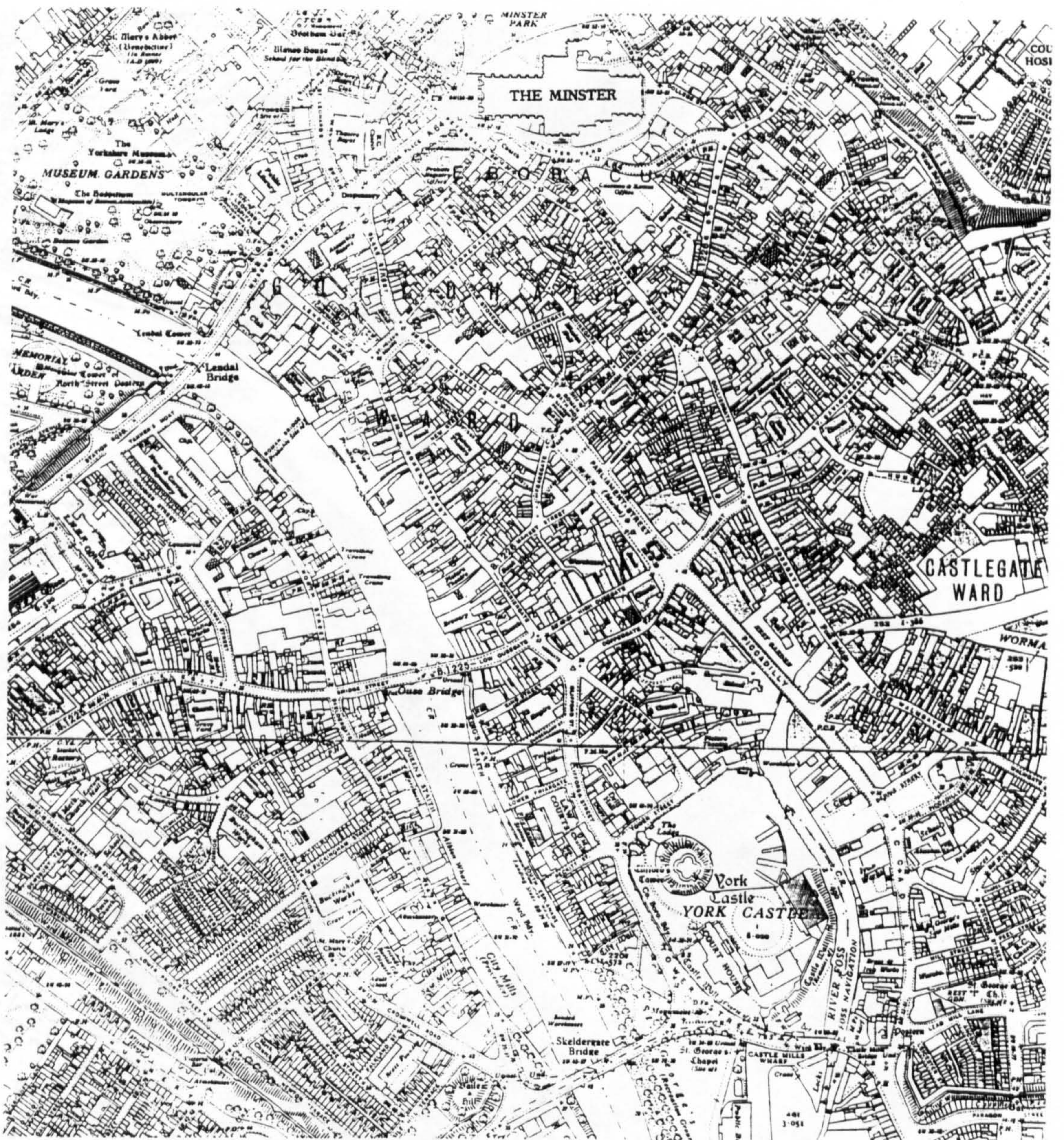
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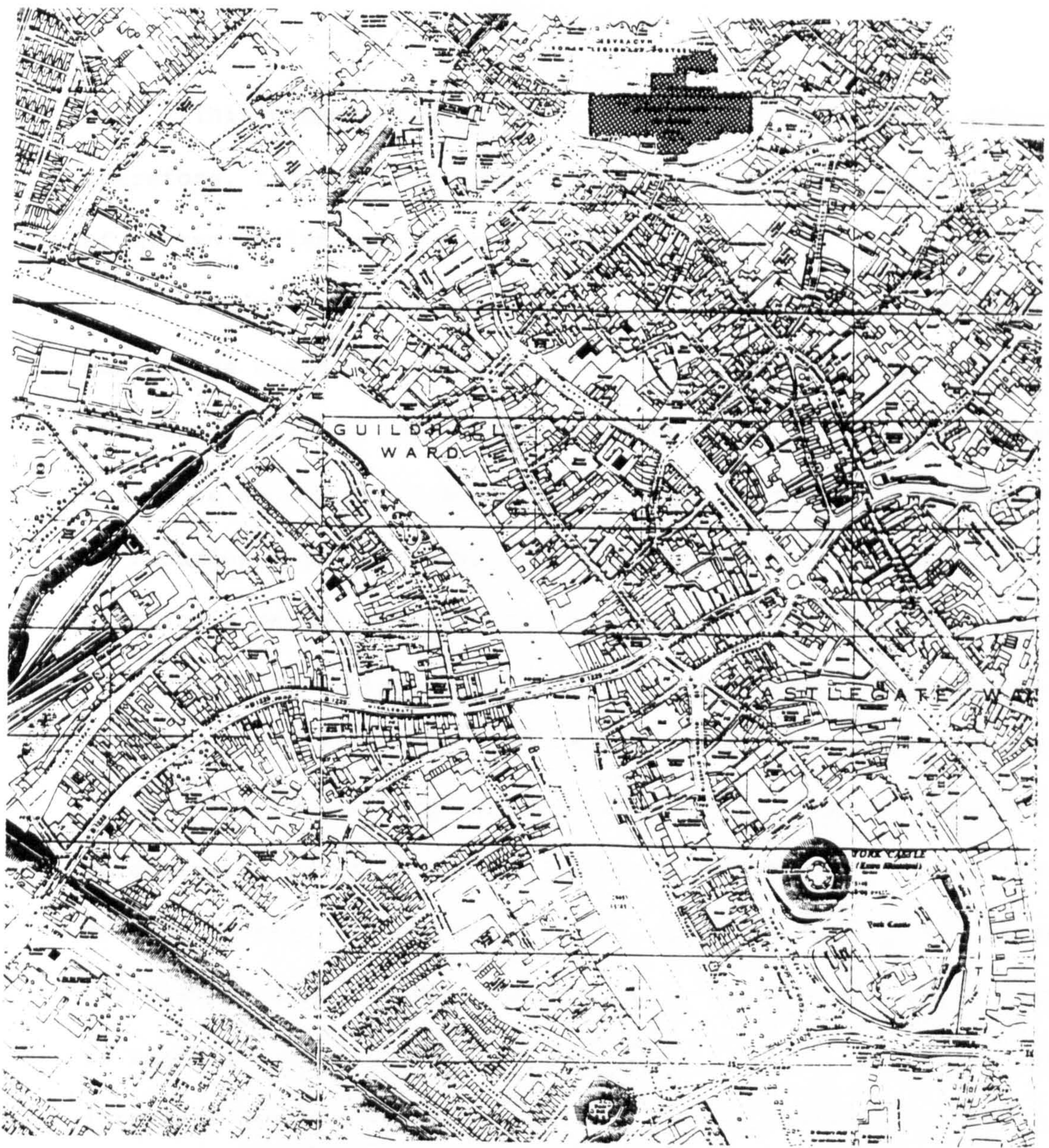




1851



1937



1960

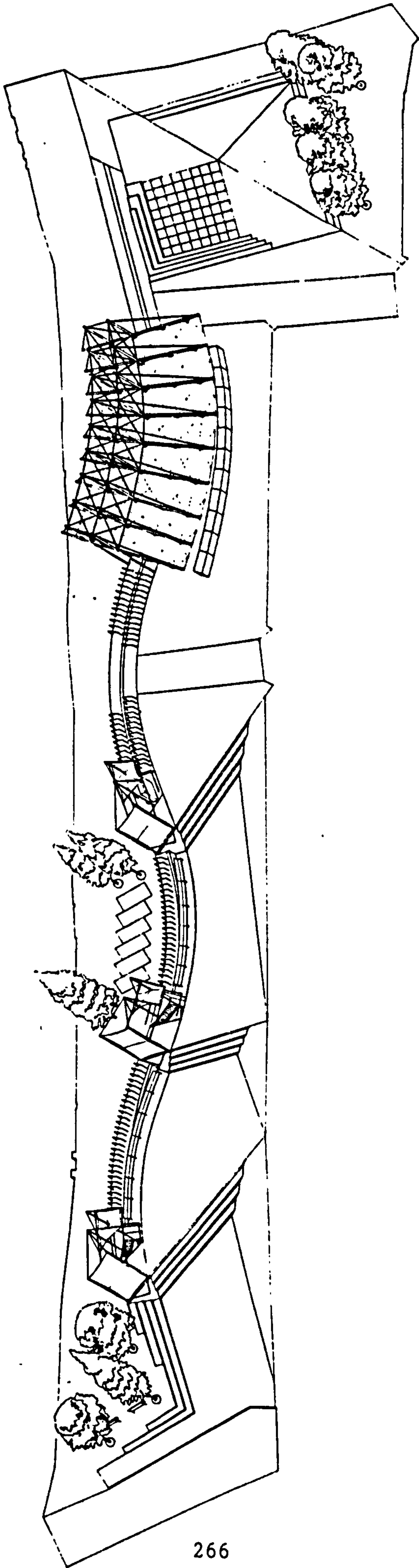
APPENDIX 6

YORK URBAN DESIGN COMPETITION ENTRY

This competition project is the result of a group effort. It, therefore, reflects not only my approach to urban design, but also that of my two colleagues, John Loring, and Jie Zhang.

The design intervention basically consisted of breaking the continuous space of Parliament St. (York) into smaller units. Within the constraints of the brief, which stipulated that no permanent structure should be proposed, such a segmentation was achieved by introducing a tension structure, configurating a square at one end, and creating a series of platforms (promontories) at the other. Adjacent to this sequence of spaces, we proposed a promenade, which linked them together, providing for fluid pedestrian and motorised circulations.

From the point of view advocated here, such an intervention may be characterised by a surface layout designed to slow down the movement of people, embodied in the vertical volume of the tension structure and the discontinuity between promontories. At the same time an alternative to rapid movement was proposed in the form of the promenade. The interface between these two elements was marked by gateways, accentuating their individualities.



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