

Evaluating Cadastral Systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities

by

Michael Brendan Barry

A Thesis Presented
for the

**Degree of Doctor of Philosophy
in Land Surveying**

**Faculty of Engineering
University of Natal
Durban**

December 1999

ABSTRACT

Evaluating the effectiveness of a cadastral system in situations where the social, political and economic environments are volatile and there is uncertainty over whether the cadastral system is likely to be used in the manner intended by the authorities remains a priority in developing countries. South African society, having negotiated a new democratic political dispensation in the early 1990's, has been experiencing fundamental social and political change. In this context, the experimental focus of this study is on analysing effective cadastral system usage by people who were previously excluded from owning land in urban areas. The study explores the effectiveness of the existing cadastral system in addressing the wants of Xhosa-speaking communities in Cape Town during this period of substantial change.

There is a paucity of substantive and methodological theory to evaluate a cadastral system in an uncertain, unstable situation. Based on soft systems theory, strategic management theory and existing cadastral theory, a conceptual framework to understand a particular situation has been developed. Using this conceptual framework, and drawing on the theory of planned behaviour and a social change model, an evaluative framework has been created that is germane to the South African situation.

The primary focus of the empirical work in this study was on usage of the system of cadastral boundaries and the land registration system. A set of four case studies that includes an informal settlement, two site-and service schemes and a suburb where much of the land is held in private ownership were studied. These case studies were augmented

by a study of a large area that is predominantly Xhosa-speaking in Cape Town's eastern metropole.

The conceptual and evaluative frameworks and the methodology adopted to conduct this research were found to constitute valid substantive and methodological theoretical foundations for studies of cadastral systems and land administration systems. In the context of the empirical work conducted, it is concluded that in Cape Town's Xhosa-speaking communities, in a stable situation where a favourable environment encourages its usage, the existing cadastral system will be effective and used in the manner intended by government. In volatile, unstable situations, the cadastral system will not be fully utilised for a variety of reasons. One reason being that in a rapidly changing social and political environment the land administration authority may not be able to govern effectively, and at the same time factions within a settlement may manipulate the land tenure rules to suit their own objectives. In such situations, conflict is inherent and natural in the relationship between the authorities and the community within a particular settlement and in the relationship between factions within that community. However, in this study it was found that in these uncertain situations that although cadastral instruments and processes were not used to effect all transactions in land, they form the essential core of a range of systems that are used to affirm an individual's claims to rights in land. Moreover, in cases of conflict over land rights, the official records and surveyed cadastral boundaries constituted the point of departure in all negotiations.

ACKNOWLEDGEMENTS

Many people have contributed to my thinking and to my eventually completing this thesis. Special thanks go to my supervisor, Clarissa Fourie, who provided knowledge, inspiration, valuable insights, criticism and on-going encouragement.

Undergraduate fourth year students in the Department of Geomatics at the University of Cape Town, Ian du Plessis and Hannes Gildenhuys, conducted research projects on elements of this work that provided valuable data for this research. My thanks to Susan Binedell for her technical assistance with the spatial data and to my field assistants who acted as translators and interviewers. Many academic colleagues have provided advice on appropriate data collection and analysis techniques. My thanks in this regard go especially to Beate Lohnert, Tom Ryan and Tim Dunne.

Research such as this relies on the collaboration and co-operation of people in local government institutions and in the communities where this research took place. My thanks to the many officials, politicians, land professionals and residents of the different communities who were prepared to give up their time to be interviewed and co-operate in other ways. My thanks to the City of Cape Town, the City of Tygerberg and the Cape Town Metropolitan Council for aerial photography, digital spatial data files and other documentation.

Financial assistance was provided by the Geospatial Urban Modelling project funded by the Foundation for Research and Development, by the University of Cape Town's University Research Committee fund and by my mother Hilda Barry.

My thanks to my wife Alice for her selfless support and encouragement and for her criticism relating to various aspects of graphic design. Thanks to Hilda Barry for proof reading the early chapters.

This thesis is dedicated to Jeanne and Shannon. May they one day understand why their father took so long to write this book.

I certify that this is my own work, that the work of others is accurately reported and that this thesis has not been submitted for evaluation to another university.

Michael Barry
Cape Town
December 1999

TABLE OF CONTENTS

Abstract	ii
Acknowledgements	iv
TABLE OF CONTENTS	v
List of Figures	xiv
List of Tables	xiv
Glossary of Terms and Abbreviations	xv
CHAPTER 1: INTRODUCTION	1
1.0 INTRODUCTION	1
1.1 BACKGROUND	3
1.2 RESEARCH OBJECTIVES	3
1.3 CONTEXT OF THE RESEARCH	5
1.3.1 Definitions	5
1.3.1.1 <i>Informal settlement</i>	5
1.3.1.2 <i>Effectiveness</i>	6
1.3.1.3 <i>Cadastral system</i>	6
1.3.2 Cape Town's Social History	6
1.3.2.1 <i>Colonial settlement to democracy</i>	7
1.3.2.2 <i>The Coloureds</i>	8
1.3.2.3 <i>The Xhosa-speakers</i>	8
1.3.2.4 <i>History: summary and analysis</i>	13
1.3.3 Cape Town's Demographic Profile	14
1.3.3.1 <i>Demographic profile: summary and analysis</i>	16
1.3.4 Land Policy Challenges and Objectives for the Cadastral System	16
1.3.5 South Africa's Cadastral System and Security of Title	18
1.3.5.1 <i>Security of title defined</i>	18
1.3.5.2 <i>Cadastral system inadequacies</i>	19
1.3.6 Land Tenure in Urban African Communities	20
1.3.6.1 <i>Sub-Saharan Africa</i>	20
1.3.6.2 <i>South Africa's Urban Nguni Population</i>	20
1.3.7 The Social Change Model	21
1.3.7.1 <i>Communal and individual bias in land tenure</i>	22
1.3.7.2 <i>Probation and sponsorship</i>	23
1.3.7.3 <i>Allegiance and affiliation</i>	23
1.3.7.4 <i>Social change model: summary and analysis</i>	24
1.3.8 Family rights and Individual rights	25
1.3.9 High Costs Militate against an Effective Cadastral System	27
1.3.9.1 <i>Costs: summary and analysis</i>	28
1.3.10 Analysis and Relevance to Research	29
1.4 HYPOTHESIS: THE RESEARCH QUESTIONS	30
1.5 RESEARCH METHOD	31
1.6 ASSUMPTIONS	34
1.7 ORGANISATION OF THE DOCUMENT	34

1.8	SCOPE AND LIMITATIONS	37
1.9	SUMMARY AND CONCLUSIONS	38
CHAPTER 2: LAND MANAGEMENT AND CADASTRAL SYSTEMS		42
2.0	INTRODUCTION	42
2.1	SYSTEMS THEORY	43
2.1.1	Systems Defined	44
2.1.2	System Characteristics	44
2.1.2.1	<i>Emergent properties</i>	44
2.1.2.2	<i>Hierarchy</i>	45
2.1.2.3	<i>Feedback communication and system stability</i>	46
2.1.2.4	<i>Control</i>	47
2.1.2.5	<i>Summary and analysis</i>	48
2.1.3	Hard and Soft Systems	48
2.1.4	Systems, Environments and Components	50
2.1.5	Systems Thinking and Reality	50
2.1.6	Systems Thinking and Cadastral Research	53
2.2	LAND MANAGEMENT AND THE CADASTRAL SYSTEM	53
2.2.1	Land Management Defined	53
2.2.2	Land Management Structure	54
2.2.3	The Macro-Environment	56
2.2.4	Land Policy	58
2.2.5	Land Administration	59
2.2.6	Land Tenure	60
2.2.6.1	<i>Ownership</i>	61
2.2.7	Cadastral System	63
2.2.8	Summary: Land Management and the Cadastral System	65
2.3	CADASTRAL SYSTEM STRUCTURE	66
2.3.1	The Information Base	66
2.3.2	Cadastral Sub-Systems	67
2.3.3	The Institutional Framework	67
2.3.4	Human Resources	67
2.3.5	Technical Resources	67
2.4	CADASTRAL SUB-SYSTEMS	68
2.4.1	Adjudication	68
2.4.2	Boundaries and Land Occupation Patterns	68
2.4.2.1	<i>Fixed boundaries</i>	70
2.4.2.2	<i>General boundaries</i>	70
2.4.2.3	<i>Topological boundaries</i>	71
2.4.3	Cadastral Surveying	72
2.4.4	Registration	72
2.4.4.1	<i>Oral agreements and symbolic delivery</i>	73
2.4.4.2	<i>Private conveyancing</i>	74
2.4.4.3	<i>Deeds registration</i>	74
2.4.4.4	<i>Title registration</i>	74

2.4.4.5 <i>Relevance to the research</i>	75
2.4.5 Dispute Resolution	75
2.4.6 Information Management	76
2.4.7 Summary and Analysis: Cadastral Sub-Systems	76
2.5 SUMMARY AND CONCLUSIONS	77
CHAPTER 3 CADASTRAL SYSTEM EVALUATION	80
3.0 INTRODUCTION	80
3.1 EFFECTIVENESS, EFFICIENCY AND CADASTRAL SYSTEMS	81
3.2 CADASTRAL SYSTEM EVALUATION THEORY	85
3.3 THE THEORY OF PLANNED BEHAVIOUR	86
3.3.1 Theory Of Reasoned Action	87
3.3.1.1 <i>Relevance to research</i>	90
3.3.2 Theory of Planned Behaviour	91
3.3.2.1 <i>Relevance to research</i>	93
3.3.3 Role of Prior Experience	94
3.3.3.1 <i>Relevance to research</i>	94
3.4 A CADASTRAL SYSTEM EVALUATION FRAMEWORK	95
3.4.1 Structure for Describing and Analysing Case Studies	97
3.4.1.1 <i>Describing case material</i>	98
3.4.1.2 <i>Analysing case material</i>	99
3.5 SUMMARY AND CONCLUSIONS	99
CHAPTER 4 LAND ADMINISTRATION IN CAPE TOWN	101
4.0 INTRODUCTION	101
4.1 LAND ADMINISTRATION STRUCTURE	102
4.1.1 Recent Changes in Land Administration	102
4.1.2 Administrative Structure	104
4.1.2.1 <i>National government</i>	104
4.1.2.2 <i>Provincial government</i>	105
4.1.2.3 <i>Cape Metropolitan Council</i>	105
4.1.2.4 <i>Municipalities</i>	105
4.2 LAND ADMINISTRATION PROCESSES	106
4.2.1 Land Registration	108
4.2.1.1 <i>Collective ownership</i>	109
4.2.1.2 <i>Partial rights in land</i>	110
4.2.1.3 <i>Relevance to research</i>	110
4.2.2 Boundary Definition and Cadastral Survey	111
4.2.2.1 <i>Cadastral survey</i>	113
4.2.2.2 <i>Relevance to research</i>	114
4.3 LEGAL REMEDIES TO INSECURE TITLE	115
4.3.1 Encroachment	115
4.3.1.1 <i>Relevance to research</i>	116
4.3.2 Prescription	116

4.3.2.1 <i>Relevance to research</i>	117
4.4 SUMMARY AND CONCLUSIONS	117
CHAPTER 5 RESEARCH METHOD AND PLAN	122
5.0 INTRODUCTION	122
5.1 RESEARCH METHODOLOGY	122
5.2 CASE STUDY SELECTION CRITERIA	123
5.2.1 Informal Settlement	124
5.2.2 Site-and-Service Scheme	125
5.2.3 Registered Settlement	126
5.3 CASE STUDIES SELECTED	126
5.4 NON SPATIAL DATA GATHERING TECHNIQUES	127
5.4.1 Wide-Ranging Data Collection	127
5.4.2 Data Collection in Cape Town	127
5.5 SPATIAL DATA GATHERING TECHNIQUES	128
5.5.1 Survey Precision	128
5.5.2 Control Surveys and Ground-Truthing	129
5.6 EXECUTION OF THE RESEARCH PLAN	129
5.6.1 Data Collection and Analysis Strategy	129
5.6.2 Sequence of Data Collection and Analysis	130
5.7 VALIDITY OF DATA AND SOURCES OF ERROR	131
5.8 PROBLEMS AND LIMITATIONS	133
5.9 SUMMARY AND CONCLUSIONS	133
CHAPTER 6 BROWN'S FARM	135
6.0 INTRODUCTION	135
6.1 SITUATIONAL DESCRIPTION AND HISTORY	137
6.2 SPATIAL DATA ACCURACY AND INTERPRETATION	139
6.2.1 Global Positioning System (GPS)	140
6.2.2 Photogrammetric Survey	141
6.2.3 Discussion: Spatial Data Capture and Interpretation	143
6.3 NON-SPATIAL DATA AND ENCROACHMENT DATA	144
6.3.1 Adjudication and Tenure Type	144
6.3.1.1 <i>Summary: adjudication and tenure type</i>	147
6.3.2 Boundaries	147
6.3.2.1 <i>Aerial surveys overlaid on legal cadastral layout</i>	147
6.3.2.2 <i>Verbal data</i>	154
6.3.2.3 <i>Summary: boundaries</i>	156
6.3.3 Registration and Tenure Security	157
6.3.3.1 <i>Rental scheme: registration of transfers</i>	157
6.3.3.2 <i>Registration of ownership</i>	158
6.3.3.3 <i>Summary: registration</i>	159
6.3.4 Dispute Resolution	160
6.3.4.1 <i>Summary: dispute resolution</i>	161

6.4	CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS	161
6.4.1	Land Tenure and the Hypothesis	162
6.4.2	Cadastral System and Land Tenure	164
6.4.2.1	<i>Registration</i>	165
6.4.2.2	<i>Family tenure</i>	166
6.4.2.3	<i>Boundaries</i>	166
6.4.3	Land Policy	169
6.4.4	Land Administration	172
6.5	SUMMARY AND CONCLUSIONS	174
CHAPTER 7 CAPE TOWN'S EASTERN METROPOLE		179
7.0	INTRODUCTION	179
7.1	LIFE HISTORY	180
7.2	INTERVIEW DATA	183
7.2.1	Adjudication and Tenure Type	183
7.2.1.1	<i>Individual parcels</i>	183
7.2.1.2	<i>Group biases</i>	184
7.2.1.3	<i>Family tenure</i>	188
7.2.2	Boundaries	190
7.2.3	Registration and Tenure Security	193
7.2.3.1	<i>Rental scheme</i>	193
7.2.3.2	<i>Ownership: deeds registration</i>	194
7.2.4	Dispute Resolution	195
7.3	CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS	196
7.3.1	Land Tenure and the Hypothesis	196
7.3.2	Cadastral System and Land Tenure	198
7.3.2.1	<i>Registration</i>	198
7.3.2.2	<i>Family tenure</i>	200
7.3.2.3	<i>Boundaries</i>	201
7.3.3	Land Policy	204
7.3.4	Land Administration	206
7.4	SUMMARY OF ANALYSIS AND CONCLUSIONS	207
CHAPTER 8 MARCONI BEAM		211
8.0	INTRODUCTION	211
8.1	SITUATIONAL DESCRIPTION AND HISTORY	212
8.1.1	Location	212
8.1.2	Role Players	213
8.1.2.1	<i>The Marconi Beam Development Trust.</i>	214
8.1.2.2	<i>Street committees</i>	214
8.1.2.3	<i>The landowners</i>	214
8.1.2.4	<i>Advisors and contractors</i>	215
8.1.2.5	<i>Milnerton / Blaauwberg Municipality</i>	215
8.1.3	History	215

8.1.4 Demographics	219
8.2 RESEARCH METHODS	220
8.2.1 Interviews and Group Workshops	220
8.2.1.1 <i>Key-informant interviews</i>	221
8.2.2.2 <i>Group discussion sessions and interviews</i>	221
8.2.2.3 <i>Appropriate sample</i>	222
8.2.2.4 <i>Gender bias</i>	222
8.2.2.5 <i>Spatial bias</i>	222
8.2.2 Aerial Surveys	223
8.3 INTERVIEW DATA	224
8.3.1 Adjudication and Tenure Type	224
8.3.2 Boundaries and Space	227
8.3.3 Registration and Tenure Security	231
8.3.4 Dispute Resolution	233
8.4 THE LOCAL REGISTRATION SYSTEM	233
8.4.1 Original Adjudication	234
8.4.2 Maintenance	234
8.4.3 Analysis of the System	237
8.5 TENURE IN JOE SLOVO PARK	239
8.5.1 Tenure Type(s)	240
8.5.1.1 <i>Overriding community rights</i>	240
8.5.1.2 <i>Inheritance and family rights</i>	241
8.5.1.3 <i>Analysis: tenure type(s)</i>	242
8.5.2 Boundaries and Spatial Organisation	242
8.5.2.1 <i>Analysis: boundaries and spatial organisation</i>	244
8.5.3 Registration	245
8.5.3.1 <i>Analysis: registration</i>	246
8.5.4 Dispute Resolution	247
8.5.4.1 <i>Analysis: dispute resolution</i>	247
8.5.5 Summary: Joe Slovo Park	247
8.6 PRIOR EXPERIENCE OF CADASTRAL SYSTEMS	248
8.6.1 Analysis: Prior Experience	249
8.7 CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS	250
8.7.1 Land Tenure and the Hypothesis	250
8.7.2 Cadastral System and Land Tenure	252
8.7.2.1 <i>Registration</i>	252
8.7.2.2 <i>Boundaries</i>	255
8.7.2.3 <i>Conclusions</i>	256
8.7.3 Land Policy	256
8.7.4 Land Administration	257
8.8 SUMMARY OF ANALYSIS AND CONCLUSIONS	257
CHAPTER 9 IMIZAMO YETHU: HOUT BAY	262
9.0 INTRODUCTION	262
9.1 HISTORY	264

9.1.1 Informal Settlement in Hout Bay	264
9.1.2 Administrative Authority	265
9.2 DEMOGRAPHICS	266
9.3 RESEARCH METHOD	266
9.3.1 Key-informant Interviews	266
9.3.2 Aerial Mapping	266
9.3.3 Structured Interviews	267
9.4 DATA COLLECTION AND ANALYSIS	267
9.4.1 Adjudication and Tenure Type	267
9.4.1.1 <i>Original adjudication</i>	267
9.4.1.2 <i>Local rules</i>	268
9.4.1.2 <i>Inheritance and family rights</i>	270
9.4.1.3 <i>Evictions</i>	271
9.4.1.4 <i>Summary: adjudication and tenure</i>	272
9.4.2 Boundaries	273
9.4.2.1 <i>Summary: boundaries</i>	276
9.4.3 Registration and Tenure Security	277
9.4.3.1 <i>Summary: registration</i>	279
9.4.4 Dispute Resolution	279
9.4.4.1 <i>Summary: dispute resolution</i>	280
9.5 CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS	280
9.5.1 Land Tenure and the Hypothesis	280
9.5.2 Cadastral System and Land Tenure	282
9.5.2.1 <i>Registration</i>	282
9.5.2.2 <i>Family tenure</i>	284
9.5.2.3 <i>Boundaries</i>	284
9.5.3 Land Policy and Land Administration	286
9.6 SUMMARY AND CONCLUSIONS	287
CHAPTER 10 KHULANI PARK: KHAYELITSHA	293
10.0 INTRODUCTION	293
10.1 DATA COLLECTION	295
10.2 RESULTS	297
10.2.1 Adjudication and Tenure	297
10.2.1.1 <i>Acquiring rights in land</i>	297
10.2.1.2 <i>Inheritance</i>	298
10.2.1.3 <i>Evictions</i>	300
10.2.1.4 <i>Summary: adjudication and tenure</i>	300
10.2.2 Boundaries	301
10.2.2.1 <i>Aerial survey</i>	301
10.2.2.2 <i>Encroachment: non spatial data</i>	302
10.2.2.3 <i>Summary: boundaries</i>	304
10.2.3 Registration	305
10.2.4 Dispute Resolution	305
10.2.4.1 <i>Boundary disputes</i>	306

10.2.4.2 <i>Summary: dispute resolution</i>	307
10.3 CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS	308
10.3.1 Land Tenure and the Hypothesis	308
10.3.2 Cadastral System and Land Tenure	309
10.3.2.1 <i>Registration</i>	309
10.3.2.2 <i>Family ownership</i>	309
10.3.2.3 <i>Boundaries</i>	310
10.3.3 Land Policy and Land Administration	311
10.4 SUMMARY OF ANALYSIS AND CONCLUSIONS	313
CHAPTER 11 CONCLUSIONS	316
11.0 INTRODUCTION	316
11.1 LAND TENURE AND CADASTRAL SYSTEMS	318
11.1.1 Land Tenure and the Hypothesis	318
11.1.1.1 <i>Family rights</i>	321
11.1.1.2 <i>Summary</i>	322
11.1.2 Cadastral System And Land Tenure	323
11.1.2.1 <i>Registration</i>	323
11.1.2.2 <i>Boundaries</i>	328
11.1.2.3 <i>Prior Experience</i>	332
11.1.2.4 <i>Summary</i>	332
11.1.3 Land Policy	333
11.1.4 Land Administration	334
11.1.4.1 <i>Collateral value and land markets</i>	335
11.1.5 Summary	336
11.2 VALIDITY OF UNDERLYING THEORY AND EVALUATIVE FRAMEWORK	338
11.2.1 The Social Change Model	338
11.2.2 Theory of Planned Behaviour	339
11.2.3 The Conceptual and Evaluative Frameworks	341
11.3 SUMMARY AND CONCLUSIONS	343
REFERENCES	346
APPENDICES	
A SURVEYING EQUIPMENT AND SOFTWARE	
B DATA COLLECTION DESIGN: MARCONI BEAM	
B1 Outline for Key Informant Interviews and Group Discussions	
B2 Structure Sheet for Group Sessions and Individuals Interviews	
B3 Spatial Planning of Marconi Group Session Interviews	

C MARCONI BEAM DATA

- C1 Marconi Beam Shack Density in May 1996
- C2 Aerial Survey Interpretation
- C3 Overlays: 1994 and 1996 Aerial Surveys
- C4 Sample of MBDT Record of Shack Transactions
- C5 Polynomial Rectified Image Stereo-Photogrammetric Survey

D IMIZAMO YETHU: HOUT BAY

- D1 Questionnaire: Imizamo Yethu
- D2 Overlay Map
- D3 Overlay Map Enlargement

E KHULANI PARK KHAYELITSHA

- E1 Questionnaire: Khulani Park
- E2 Overlay Map
- E3 Overlay Map Enlargement

F CONSTITUTION: BILL OF RIGHTS

LIST OF FIGURES

1.1	South Africa depicting Xhosa-speaking Regions of Transkei and Ciskei	9
1.2	Racial Development Patterns in Cape Town	15
1.3	Cape Town and Xhosa-speaking Settlements	33
2.1	Modelling System Hierarchies in Land Management	52
2.2	Land Management and the Cadastral System	56
2.3	Land Administration	60
2.4	Cadastral System	64
2.5	Topological Boundary System	71
3.1	Theory of Reasoned Action	88
3.2	Attitude Measures on a Bi-Polar Affective Scale	90
3.3	The Theory of Planned Behaviour	92
3.4	Cadastral System Evaluation Framework	96
4.1	Cape Metropolitan Council Jurisdiction	103
4.2	The Property Development Process	107
6.1	Brown's Farm Locality Plan	137
6.2	Brown's Farm Parcel Allocation Arrangements	145
6.3	Brown's Farm Rent Card	146
6.4	Cadastral Layout and Occupation Patterns Overlaid	148
6.5	Occupation Patterns Detailed View A	149
6.6	Occupation Patterns Detailed View B	150
8.1	Marconi Beam and Joe Slovo Park Locality Plan	213
9.1	Imizamo Yethu Locality Plan	263
10.1	Khayelitsha including Khulani Park	294
11.1	Family Ownership	322

LIST OF TABLES

1.1	Cape Town's Demographic Profile	14
4.1	Cape Town's Land Administration Hierarchy	104
6.1	GPS Survey: WGS84 - Lo19 ^o Conversion Parameter Precision	141
6.2	Stereo-Model Precision	142
6.3	Encroachment Results	151
8.1	Aerial Surveys of Marconi Beam	216
10.1	Structured Interview Sample Statistics	296
10.2	Ownership of Vibracrete Fences	303
10.3	Dispute Resolution Institutions used in Khayelitsha	306

GLOSSARY OF TERMS AND ABBREVIATIONS

<i>allodium</i>	Land held in absolute ownership without acknowledgement of an overlord. (Simpson 1976:27). The antonym of <i>feudum</i> (O.E.D.).
ANC	African National Congress
attitude	An attitude is a disposition to respond favourably or unfavourably to an object, person, institution or event (Ajzen 1988:4). Attitudes are affective. They are a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object (Fishbein and Ajzen 1975). They can therefore be measured on an interval between two extremes (poles) of negative or positive.
beliefs	Opinion, knowledge, information, stereotype can be subsumed under beliefs (Fishbein and Azjen 1975:13).
Cadastral system	A system comprising the processes, instruments and structure that support land tenure security and a multitude of other land administration objectives. The classical cadastre provides information concerning owners, land classes or values or land taxes. Additional information may sometimes be found in the cadastral records or adjacent records (Larsson 1991:16).
community over-rights	A range of social units have opposed interests in the same land, including abandoned or depopulated land This is different to one social unit having a reversionary right (Fourie 1993:116).
DAG	Development Action Group
<i>de facto</i>	As it appears upon the ground (Dale 1976).
<i>de jure</i>	The situation as it is according to the law (Dale 1976).
demand	Demands are defined as wants for specific products that are backed up by an ability and willingness to buy them (Kotler 1984:5)
dialectic	The art of critical examination into the truth of an opinion (O.E.D 1970). A method of reasoning which proceeds by the successive resolution of contradictions. The Ancient Greeks used the term to refer to a process of question and answer which permits us to arrive at the truth. Methodology adopted and adapted by Hegel and Marx (MacMillan's 1986)
internal dialectic	In relation to informal settlements: In a local area, the internal dialectic is the structural tension between groups within the community involved in fission and integration (Fourie 1994, Davies 1998:76).

external dialectic	The external dialectic is the tension between external factors and the internal dialectic in the local area (Fourie 1994, Davies 1998:76).
dominant parcel / party	In the instance of encroachment, the property or person encumbering a neighbouring parcel (servient party) with an encroaching structure.
dominant tenement	The holder of a servitude over another property (see also servient tenement).
<i>dominium</i>	A cluster of rights, powers and liberties in property, defensible against the world and subject to no other greater right.
erf	South African terminology for an urban land parcel.
expectative right	A claim on attaining land ownership by informal settlement tenants that strengthens with time spent in a particular informal, perhaps illegal, settlement (de Soto 1989:23-24).
extra-legal mechanism	A mechanism, involving instruments or processes, that is not recognised by the law and may not stand up in court, but may be regarded as legitimate by the local community. An extra-legal process should be distinguished from an illegal action.
<i>fideicommissum</i>	An interest given to one person (the fiduciary), subject to the interest passing to another person (the fideicommissary) on the fulfilment of a condition (Gibson 1970:279).
fiscal cadastre	A cadastre compiled for purposes of taxation (Dale 1976)
fission and integration	Fission is the process whereby a social unit within one kinship group splits away, renouncing its property rights and possibly asking for more land from the chief. Integration can take place when more than one group integrate into a new social unit (Fourie 1993). In informal settlements, fission is the process of individualisation, whereas integration is the process of strengthening a group identity. (Fourie 1993:428, Davies 1998:74).
greenfields development	A housing development on vacant, previously undeveloped land.
<i>habitatio</i>	The right to take absolute possession and live in the house of another with his/her family without detriment to the substance of the property. This right may be leased to another but right of habitatio ceases upon the death of the holder. Different to usus which may not be alienated by way of a lease (Kleyn and Boraine 1992:388).
<i>Imizamo Yethu</i>	‘through collective struggle’ (Xhosa).
informal settlement	An area which is being used illegally and it is therefore an unauthorised area (Peil M and Sada P O 1984:280-282). Peil (1976)

distinguishes between true squatting and informal settlement. Squatting is defined as deliberately building on land for which no permission has been obtained and against the owner's explicit or implicit wishes. Unauthorised settlement is defined as building in areas where government has not given permission to build (Peil 1976:161). Unauthorised settlement therefore implies building without statutory approval for building plans, but the settler may have permission to occupy a parcel of land or in fact be the owner thereof.

informal tenure	<i>De facto</i> tenure arrangements for holding, using and transferring land as perceived and operated by the landholders themselves. These informal holders may be seen from the outside as 'squatters', land invaders, illegal tenants, or as some other form of wrongful, extra-legal occupiers (Cross 1993:2).
intention	Intentions are assumed to capture the motivational factors that influence a behaviour; they are indications of how hard people are willing to try, of how much effort they are planning to exert, in order to perform the behaviour. As a general rule the stronger the intention to perform the behaviour, the more likely should be its performance (Ajzen 1991:181).
juridical cadastre	A cadastre of rights and interests in land. A legal cadastre.
land administration	An operations management function to administer and implement land policy strategies. This incorporates the administration, or partial administration, of elements such as land tenure systems, natural resources, environmental planning, utilities and transportation infrastructure (Barry 1999).
land management	The strategic planning, policy development and policy implementation processes related to land (Barry 1999).
land policy	A complex of socio-economic and legal prescriptions that dictate how the land and benefits from the land are to be allocated, managed and administered.
landowner	A landowner is the juristic person who possesses at least a part of the bundle of rights and in whom is vested the incident of residuary. The residuary character of land ownership implies that no matter how many entitlements the owner disposes of, he or she retains a reversionary right to these entitlements. Once all those entitlements are extinguished, ownership automatically becomes unencumbered again (Kleyn and Boraïne 1992:163).
land tenure	A system incorporating the way in which land is defined and held. It comprises a matrix of social, political, physical and legal relationships that support and negate the holding and use of land by individuals and groups of people (Barry 1999).

MBDT	Marconi Beam Development Trust.
<i>mfecane</i>	A series of conflicts in the early 19 th century which disrupted communities as far north as modern Malawi, Zambia and Tanzania. Zulu meaning is a time of troubles (Thompson 1990).
negative land registration system	The existence of rights is evidenced in the land registry. Registration itself is not sufficient proof of a claim to a right in land. Registration attempts to mirror objective legal facts which exist independently and outside of the registration system.
NGO	Non-government organisation
NHF	National Housing Fund
Operational definition	A definition of a fact or concept in terms of “operations” such as controlled observation or experimentation performed by the researcher. (Wolman, P B. 1973. Dictionary of Behavioural Science, Macmillan, London).
ownership bundle	An indefinite bundle of rights (Simpson 1976:7), powers, privileges and immunities (Yakubu 1985:55), that allow the owner of this aggregate bundle to behave as he or she chooses subject to statutory limitations imposed by the state from time to time.
PAC	Pan African Conference
positive land registration system	Title is constituted by registration. Often backed up by Government guarantee that the registered information is true.
proprietary unit	Proprietary unit in land is the run of property rights and the area of physical land to which they pertain (Denman and Prodamo 1972:18). The run of property rights, or abstract side of the proprietary land unit, is the set of rights in property which give the unit owners the power to use the land and its fixtures in whatever way they will (Denman 1978:67).
reversionary rights	Right of ownership which reverts to a particular person or organisation.
SANCO	South African National Civics Organisation
servient parcel / party	In the instance of encroachment, the property or person encumbered by an encroaching structure. Party is used in that the encroachment is considered a contractual, personal right. (See servient tenement and dominant party.)
servient tenement	The property or person encumbered by a servitude in favour of another property or person(s).

servitude	Also known as easement. A right that a person or owner of a property has over another person or property.
shack	A temporary dwelling, typically constructed from a wooden framework clad with metal sheets and waterproofed using plastic sheets
shebeen	An informal liquor store or bar.
site-and-service scheme	A development where serviced individual land parcels are delivered, in most cases with a flush toilet, but no housing structure. Residents build a structure themselves.
spaza shop	An informal, small grocery store attached to a residential dwelling, often doubling up as a shop and a dwelling.
squatter	see informal settlement
subjective norm	The perceived social pressure to perform or not perform a specific behaviour (Ajzen 1991:188).
tenant	see landholder
UDF	United Democratic Front
Underhand agreement	Agreement incorporating private agreement between parties which is not notarial. In land registration for instance a servitude area can be decided upon at first registration by underhand agreement without an accurate description or demarcation of the exact location of the servitude area.
usufruct	The right to use and enjoy property belonging to another and enjoy it while maintaining the substance of the property (<i>salva rerum substantia</i>). Usufructuary does not acquire <i>dominium</i> . In land law generally refers to rights of heirs such as a son having dominium nudum and possibly spouse having usufructuary rights (Gibson 1970, Kleyn and Boraine 1992).
<i>usus</i>	Resembles a usufruct, but <i>usus</i> holder may not take the fruits and sell them. The holder may take the fruits for daily needs and those of his or her household but nothing in excess of that (Kleyn and Boraine 1992:388)
vibracrete fence	A generic name, derived from a brand name originally, for a particular type of fencing used extensively in South Africa. The fencing is constructed of 50mm concrete slabs slotted upright between slotted concrete pillars.

CHAPTER 1

INTRODUCTION

“Land, its ownership and use, has always played an important role in shaping the political, economic and social processes in the country. Past land policies were a major cause of insecurity, landlessness, homelessness and poverty in South Africa. They also resulted in inefficient urban and rural land use patterns and a fragmented system of land administration.”

(Rep. of S. Africa. White Paper on South African Land Policy, April 1997)

1.0 INTRODUCTION

Effective administrative mechanisms for upholding land tenure security are vital in all societies and economies. Given the primary importance of land, it is vital that it is competently managed. Simpson (1976) in the opening passage to his work stresses that land is fundamental to human existence (Simpson 1976:1). Simpson's view is endorsed in the White Paper on South African Land Policy (Rep. of S. Africa 1997a). “Our land is a precious resource. We build our homes on it; it feeds us; it sustains animal and plant life and stores our water. It contains our mineral wealth and is an essential resource for investment in our country's economy. Land does not only form the basis of our wealth, but also our security, pride and history.” (Rep. of S. Africa 1997a:7).

This study develops frameworks and methodologies to evaluate the effectiveness of a cadastral system in a society undergoing a fundamental social, political and economic transformation. South African society, having negotiated a new democratic political dispensation in the early 1990's, has been experiencing fundamental change. In this context, the experimental focus of this study is on analysing effective cadastral system usage by people who predominantly have their roots in Cape Nguni tribal custom, the Xhosa-speaking communitiesⁱ in the Cape Town metropolitan areaⁱⁱ.

In particular the research explores how effectively two fundamental processes of South Africa's cadastral system are being applied, or are likely to be applied by these Xhosa-speaking communities. How effectively does the existing system of beacons and boundaries embodied in the cadastral survey system define the extent of land occupation rights by urban Xhosa-speaking communities in Cape Town? Furthermore, how effectively does the land registration system model and define rights in land? What are the beliefs and attitudes concerning the instruments generated as part of these processes? These instruments being the monuments demarcating parcel apices and the documents (title deeds and survey diagrams) that affirm registered ownership of land. These questions ask if the cadastral system is being used, or is likely to be used, to define, acquire, transfer and maintain rights in land. They deal with behaviour regarding the original occupation of land, sales to strangers or intra-family transfers of existing land units or subdivisions, and inherited estates. In addition, these questions relate to behaviour between occupants of neighbouring land units. For example, do

neighbours adhere to legal boundaries? Alternatively, do land occupants knowingly and wilfully encroach onto land lawfully allocated to a neighbour? If so, what are the affected neighbours' beliefs and attitudes concerning such behaviour? Do land occupants believe that land that is not covered by a dwelling is common property, and that particular households may not retain such land for their exclusive use but that all such land is for usage by the community as a whole? These are among the areas of uncertainty that have to be explored to establish how effective is the cadastral system. In essence, how effectively does the cadastral system support land tenure security in Cape Town's Xhosa-speaking communities?

In order to conduct a scholarly study of the above, the definitions of terms and the situational and theoretical context of the research first need to be established to posit a valid hypothesis. In particular, the structural and historical context of land tenure in urban Xhosa-speaking settlements needs to be established. This chapter prepares the background and the structural and historical context to the research, culminating in the formulation of an exploratory hypothesis, augmented by a set of key research questions. In so doing, the chapter describes the historical context of Xhosa-speaking communities' land rights in Cape Town, the demographic significance of these communities to the overall effectiveness of the cadastral system in the City, and the influences of current land policy on land tenure and the cadastral system. The chapter goes on to review some comparable situations and theoretical postulations that have been reported elsewhere internationally and in southern Africa, including Cape Town. Thereafter, a social change model of land tenure in informal settlements, which was developed in studies of urban Zulu speaking communities and has been found to validly describe the situation in an urban Xhosa-speaking community in another South African cityⁱⁱⁱ, is described.

Subsequent chapters, chapter 2 and chapter 3, develop operational definitions of relevant terms and core concepts, and develop a conceptual framework to understand, explore and analyse the hierarchy of objectives of a cadastral system and the complex interrelationships between cadastral systems, land tenure and other systems falling under the umbrella of land management. Further theory is then examined and adopted as a conceptual framework in which to observe and analyse the particular case of South Africa's cadastral system and its interrelationships with land tenure and other land management sub-systems.

Thereafter, having established the situational and theoretical context, land administration in Cape Town is briefly described in chapter 4 to complete the structural context of the research. Following on the development of relevant theory and the structural context of the research, case studies of four different Xhosa-speaking communities enjoying different levels of legal recognition of land rights in Cape Town are reported in chapters six to ten. These studies have been augmented by broader based enquiry of the cadastral system covering all of the geographic areas in Cape Town that are largely occupied by Xhosa-speaking communities. Finally, a synthesis and analysis of the study's results identifies areas of effectiveness and ineffectiveness of the cadastral system's instruments and processes and some of its structures, and reports on the validity of the theoretical constructs and conceptual frameworks developed to observe and analyse the situation.

1.1 BACKGROUND

In the context of the research, this section will show that the effectiveness of the cadastral system in Cape Town and in urban black African^{iv} settlements throughout South Africa is of major significance to a national drive to provide urban housing. The policy objectives of supporting land tenure security, sustaining collateral value of land and support for the operation of a land market espoused in South African land policy (Rep. of South Africa 1997a) are arguably crucial to these housing programmes. Due to the factors described later in section 1.3.2, at the time of South Africa's democratic elections in 1994 there was a substantial demand for housing by urban black Africans. This problem has to some extent been alleviated as houses have continually been built during the course of the research, but the demand remains substantial.

South Africa has a high rate of population growth that has impacted on the cities in the form of burgeoning informal settlements (Saff 1996:235). When this study was being initiated in 1996, South Africa's total population was estimated at approximately 44 million^v with estimates for annual population growth for urban black Africans ranging from 2.4% to 3.5%^{vi}. The majority of South Africa's poor are black Africans, as are the majority of informal settlement dwellers. In 1994, at the time of South Africa's first non-racial democratic elections, an estimated 1,06 million households comprising 7.7 million people lived in informal settlements. Coupled to this, an estimated 720 000 serviced sites that were provided by provincial legislatures under the previous government required upgrading and 450 000 people lived in various, often inappropriate, forms of hostel accommodation (Rep. of South Africa 1994:9, South African Institute of Race Relations 1994:328,367, Barry and Mason 1997).

Cape Town has a large number of informal settlement dwellers, and this number was growing when this research commenced. Moreover, a substantial proportion of its population in formal property needs improved shelter. In 1995 it was estimated that more than 400 000 people were inadequately housed in the Cape Town metropolitan area (Mazur and Qangule 1995). The Western Cape Economic Development Forum (MSDF 1995:10) cited urban growth rates for Cape Town of between 1.8% and 5% per annum. According to Saff, this was due both to organic growth and a major influx of people, predominantly Xhosa-speakers, with the easing of the pass laws in 1986 (Saff 1996).

It is assumed that the cadastral system is playing a role in strategies to alleviate the above situation. It is important that it plays this role effectively. At an operational level, this was a major motivation for initiating this research.

1.2 RESEARCH OBJECTIVES

The objective of this research is to formulate and test theory about ways of defining and evaluating the effectiveness of a cadastral system during a period of substantial social, political and economic change. As a vehicle for developing and testing such

theory, the study explores aspects of the effectiveness of the cadastral system in Cape Town, South Africa, during such a period of fundamental change. Adapting the work of Kuhn (1970) and Peters and Waterman (1982), this change is essentially a paradigm shift. The argument being that the social, political and economic paradigm within which South Africa's cadastral system existed has shifted substantially during South Africa's transformation in the 1990's and continued to do so while this research was underway.

A possible consequence of this paradigm shift is that the existing cadastral system processes and the instruments and services that emerge from these processes no longer effectively address the needs and wants of significantly sizeable segments of society and government. Moreover, even if these processes are found to address the general needs and wants of South African society, structural factors may still impede effective usage of the cadastral system, at least by particular communities. In the author's experience these structural factors may include *inter alia* the institutional structure of the cadastral, land administration and land management systems, the organisational development of the cadastral system itself and social structures within particular communities.

In addressing the first part of the above objective, the research develops a conceptual framework to enable an analyst to view a cadastral system in the context of its broader environment during a period of substantial change. This view of the cadastral system is developed in chapter 2 as a framework which takes into account the State's espoused objectives within a hierarchical structure of systems and sub-systems which constitute the system of land management. The framework is intended to guide an analyst in establishing on which interrelationships between a cadastral system and other systems in the land management environment he or she should focus during a cycle of change or instability. In chapter 3, this conceptual framework is further developed into an evaluative framework that is relevant to the particular context of this research.

The primary focus of the experimental work in this research has been limited to evaluating the effectiveness of cadastral processes, and the instruments generated as part of these processes, in upholding land tenure security in particular communities in Cape Town. The experimental work has been cognisant of structural factors such as the costs of using the system, difficulty of physical access to a cadastral system, difficulties emanating from institutional structures and the influences of internal power structures and conflicts within communities to name a few. However, it was not possible to explore and analyse these structural factors in the same depth as the processes.

The rationale behind this strategy was the assumption that structural factors are, in general, controls on behaviour relating to the way a cadastral system is used. These factors should be analysed once it has been established that users, the communities and institutions that the cadastral system serves, hold positive attitudes to the set of cadastral system instruments and processes and believe these to be effective mechanisms to address their wants. Therefore the first phase of evaluating a cadastral system should focus on evaluating instruments and processes. The analysis of structural factors should be organised around this primary analysis. This theory of

process and structure is developed in section 2.1.3 and it is grounded upon soft systems theory, in particular the work of Checkland (1981), and an adaptation of methods of organisational analysis when designing and implementing information systems (e.g. Miller 1985). Furthermore, in the author's experience, structural factors underlying cadastral system effectiveness are diverse and varied and continually changing. A comprehensive analysis of these factors in a single study is considered impossible. The rationale underlying the above assumptions is further developed in this chapter and in chapters 2 and 3.

1.3 CONTEXT OF THE RESEARCH

This section describes the historical and broader structural context of the problem(s) underlying the research. These contextual descriptions form the basis of the assumptions underlying the formulation of the hypothesis and the research questions that have guided the methodology adopted in conducting this research.

The section is structured so that first presented in section 1.3.1 is a set of operational definitions of terms and concepts that are relevant to this contextual discussion. These definitions are expanded upon in chapters 2 and 3. The historical context, being a brief description of Cape Town's social history that is germane to the research, follows in section 1.3.2. This historical description consists of an outline of events and legislation that shaped Cape Town's current population geography. In the structural contextual description that follows, the City's demographic profile and the implications thereof for cadastral system effectiveness is described in section 1.3.3. Thereafter, section 1.3.4 discusses land policy implications for the cadastral system and section 1.3.5 discusses South Africa's cadastral system and security of title. A discussion on theory and empirical observations concerning the interrelationships between land tenure systems and cadastral systems in black African communities on the periphery of large cities follows in sections 1.3.6 to 1.3.8. Lastly the issue of costs is discussed in section 1.3.9 and then the implications of an ineffective cadastral system and the relevance to the research is analysed in section 1.3.10.

1.3.1 Definitions

To discuss the context of the research, the terms informal settlement, effectiveness and cadastral system are operationally defined. In this section, short definitions for the terms are presented. More detailed discussion surrounding the definitions of effectiveness and cadastral systems is included in chapter 3 and chapter 2 respectively.

1.3.1.1 Informal settlement

An informal settlement is operationally defined as a settlement where land is occupied according to a set of rules and processes that are not entirely legal. Such a settlement may be wholly illegal, such as in the case of a land invasion. Alternatively it could be a formal site layout where land has been allocated according to a formal set of statutes, rules and procedures but the occupants have adapted and modified the formal system to suit their own ends. Other names that may be applied to an informal settlement are squatter settlement, spontaneous settlement, irregular settlement or

illegal settlement (Peil and Sada 1984:280-282, Fourie 1993:2, Durand-Lasserve and Clerc 1996).

1.3.1.2 Effectiveness

Drucker (1966:4) defines effectiveness as “working on the right things”. The author interprets this to mean performing the appropriate set of activities to create a desired set of outputs or outcomes. In contrast, to achieve efficiency the ability to “do things right” is needed (Drucker 1966:2). Thus an activity may be performed excellently, but if the output is inappropriate it is ineffective. This interpretation of Drucker’s (1966) work in the context of cadastral system analysis is discussed more fully in section 3.1.

1.3.1.3 Cadastral system

In summary of a detailed discussion in chapter 2, a cadastral system is operationally defined as comprising a set of institutions, human resources, technical resources and processes that support land tenure security. The processes around which these resources and institutions are structured include 1) adjudication; 2) boundary definition, demarcation and survey; 3) land registration; 4) dispute resolution; and 5) information management. It is assumed that appropriate cadastral system structures and interrelated activities between the elements of a cadastral system and those of a land tenure system should ensure the effective support of land tenure security.

1.3.2 Cape Town’s Social History

South Africa’s history of racially based social engineering has created a situation where Cape Town has been experiencing a large influx of black Africans since the 1970’s. History is important in the context of this research for the following reasons: 1) a result of this racially based social engineering is manifested in a large and growing number of informal settlements; 2) black Africans now constitute a significant proportion of Cape Town’s population; and 3) as figure 1.2 illustrates, the spatial patterns of land occupation in Cape Town have been engineered along racial grounds with the result that Cape Town has become a rigidly segregated city. Consequently, ineffective systems of formalising existing informal rights may have significant social, political and economic implications in specific areas of the City.

It will be shown in this sub-section that Cape Town differs from most other southern African cities in that early European colonists did not displace Bantu-speaking black African tribes. The indigenous inhabitants of the region encountered by these European colonists have been assimilated into the Coloured community. There is no underlying traditional African tribal tenure system in the immediate vicinity of the City which has to adapt to urbanisation. Instead, claims to land by black Africans have often been based on the exertion of collective power in informal settlements (e.g. *Imizamo Yethu* settlement meaning “Through Collective Action” in Hout Bay) as opposed to reasserting historical tribal rights. A further characteristic of Cape Town is that in terms of land occupation patterns up to the end of the nineteenth century it was arguably the most racially integrated of South African cities (Cook 1991). As figure 1.2 illustrates, over the next hundred years it became a city where the spatial

segregation of races is the most noticeable. Moreover, whereas black Africans enjoyed access to allodial ownership of property in the City in the mid-nineteenth century, the first eighty years of the twentieth century were characterised by policies and practices designed to keep them out of the City (de Tolley and Nash 1984).

A description of historical influences on land tenure practices in urban Xhosa-speaking settlements follows. It takes the form of an overview of the social history of Cape Town within the broader framework of South African history. It describes the colonial history of the European settlers, the so called Coloured ethnic group's history and the history of black Africans in Cape Town, the majority of whom are currently Xhosa-speakers.

1.3.2.1 Colonial settlement to democracy

The Dutch colonial regime introduced the principles which laid the foundation of South Africa's land registration system soon after they arrived in Cape Town in 1652 (Jones 1976, Jones 1964). This sub-section describes Cape Town's broader history from the first Dutch settlement through to South Africa's first non-racial democratic elections in 1994.

Cape Town is arguably the most cosmopolitan South African city, its character having been partly moulded by Dutch, French and British settlers and remnants of slave populations from Indonesia, Malaysia, Sri Lanka, Madagascar, and other parts of Africa (Cook 1991, Simon's Town Museum 1998). It is also home to approximately 40% of South Africa's so called Coloured population, who comprise the majority of the City's citizens (Cook 1991:26). European explorers in the 15th century such as the Portuguese plying the ocean trade routes to the Far East and the Dutch settlers encountered the early indigenous inhabitants of Cape Town metropolitan region. These were the Khoi and the San, nowadays commonly referred to as the KhoiSan, who lived as pastoralists and hunter-gatherers respectively. Cook (1991:26) estimates that there were approximately 50 000 Khoi in the South Western Cape at the time of the first Dutch settlement.

South Africa was gradually colonised by Britain and the Boers and consolidated into its current political boundaries by Britain in the nineteenth and early twentieth centuries. Britain conquered the Cape in 1795, briefly returned it to the Dutch in 1802-1803, and re-annexed the Cape Colony in 1806 (Simon's Town Museum 1998). At the end of the South African war in 1902, the two Boer Republics of the South African Republic (Transvaal) and the Orange Free State fell under British rule too. The self-governing British colonies of the Cape and Natal and the crown colonies of Transvaal and the Orange River Colony (Orange Free State) were consolidated into the Union of South Africa in 1910. Executive power was vested in the British sovereign, who was represented in South Africa by a governor-general (Spies 1993:3-66). South Africa became a republic when political ties with Britain were severed in 1961 (Scher 1993:364-376). However, political power remained almost exclusively in the hands of the White populace, and between 1910 and 1961, the political rights of South Africa's non-white population were systematically eroded (de Tolley and Nash 1984, Cole 1987).

In accordance with the apartheid state's segregation policies, non-independent self-rule and partial self-government was granted to a number of designated tribal African areas, the homelands, between 1963 and 1981. Of these homelands, independent self-rule was granted to the four TBVC states (Transkei, Bophuthatswana, Ciskei, Venda) between 1976 and 1981 (Liebenberg 1993:433-435).

The process of dismantling the spatial structure of separate independent ethnic states within the borders of South Africa and separate residential areas took place between the late 1980's and 1994. Following the release of political prisoners, the unbanning of the African National Congress (ANC) and a number of other political organisations in 1990, and the reconsolidation of the TBVC states into South Africa, after a protracted series of negotiations South Africa held its first fully democratic elections for the national and provincial governments in 1994.

A comprehensive restructuring of provincial and local government throughout South Africa has taken place as part of this transformation. In place of a structure of four provinces, the TBVC states and a set of self-governing homelands, provincial boundaries were reorganised to create nine new provinces. Similar consolidation and restructuring took place at local government level and at the time of writing this process was still underway. The structure of land administration in South Africa and Cape Town is described in more detail in chapter 4.

1.3.2.2 The Coloureds

The so called Coloureds are people of mixed descent having evolved from Khoi, San, European colonists, slaves from Madagascar, Malaysia, India, Indonesia and other African countries and local Bantu speaking tribes (Cook 1991, Burman 1992, Simon's Town Museum 1998). Implementation of racially based land policies moved the majority of Coloured people away from the city central areas such as District Six to the Cape Flats area. Forced removals were executed in terms of legislation such as the various Group Areas Acts (41 of 1950, 69 of 1955 and 36 of 1966) and the Community Development Act 3 of 1966 and by means of restrictive title deed conditions which stipulated that transfer of affected properties could only be to persons of the race designated for a particular area (Schoeman 1993, Simon's Town Museum 1998, Jones 1976, author's observation^{vii}).

1.3.2.3 The Xhosa-speakers

Xhosa-speaking communities in Cape Town are the focus of this study. Traditional Xhosa-land is in the Eastern Cape province, which includes the former TBVC states of Transkei and Ciskei (see figure 1.1). Historically Xhosa-speakers have constituted the majority of black Africans in the City (Kinkead-Weekes 1985:45). van Warmelo (1974) notes that the three main Cape Nguni tribes in the Transkei-Ciskei region are the Xhosa, Thembu and Mpondo^{viii}. These tribes are all Xhosa-speakers, albeit that there are local variations in the language (van Warmelo 1974:61-62).

The first recorded black Africans settlers to have voluntarily made their way from Xhosa land to Cape Town were a group of Mfengu who presented themselves at the local police station in 1839 (Kinkead-Weekes 1985:46). The Mfengu had become

refugees from the Zulu chief Shaka's empire building wars in KwaZulu-Natal in the early part of the nineteenth century^{ix}. They crossed the Umzimkulu River seeking a new home amongst the Cape Nguni, who were Xhosa-speaking tribes, and the White colonists (Van Warmelo 1974:61-62).

Black African land rights in Cape Town date back to 1853 when blacks qualified as voters on the same terms as Whites and could become freehold property owners enjoying residential security and business opportunity (de Tolley and Nash 1984:3). By 1904, there were approximately 10 000 black Africans out of a total population of 107 000 (Cook 1991:27).

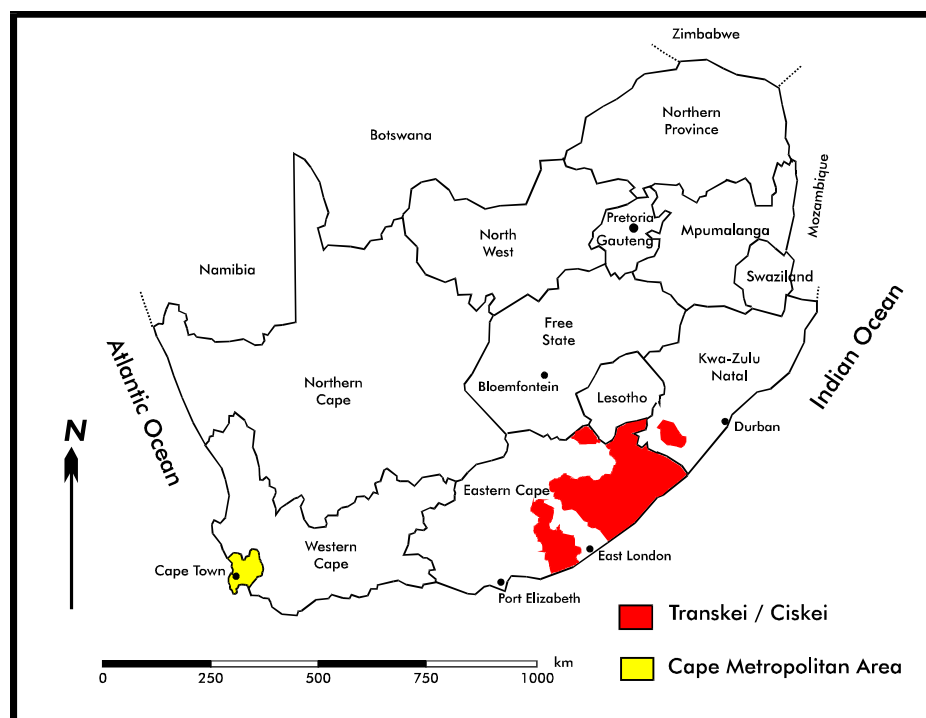


Figure 1.1 South Africa depicting Xhosa-speaking Regions of Transkei and Ciskei in the Eastern Cape Province

Restrictions on access to land occupation and ownership, and the right to be present in the City were systematically imposed on black Africans in the twentieth century. The reshaping of Cape Town as an ethnic city was begun by the British Colonial Administration's location policy in 1901. De Tolley and Nash (1984) note that in terms of this policy (and subsequent policies), Cape Town's black Africans were (gradually) segregated into separate residential areas without freehold rights, subjecting them to strict control (de Tolley and Nash 1984:3). Ndabeni was created as a bubonic plague emergency camp in terms of government notice 209 of 1901, and many black Africans were forced to live there (de Tolley and Nash 1984:12). From 1909 onwards, black Africans were required to carry passes permitting them to live and work in the City. However, they could buy or rent land anywhere in Cape Town until 1913, and under special circumstances until 1936 (Cook 1991:28). The Natives Land Act 27 of 1913 prevented black Africans from buying land in South Africa except in reserves, which comprised 7% of the area of the country, unless they had special

permission (Rutsch & Jenkin 1992). The Natives Land Act 27 of 1913 was not extended to the Cape as the case *Thompson and Sitwell versus Kama (1917 A. D.)* thwarted this (Jones 1964:12). However, once the Development Trust and Land Act 18 of 1936^x had been promulgated, these restrictions had been imposed in the Cape too.

In the interim, segregated areas were developed for black Africans in Cape Town. In 1924, houses were built in Langa (“The Sun”), obtainable on 30 year leasehold, although some black Africans being voters at that time qualified for freehold rights (de Tolley and Nash 1984:14). According to de Tolley and Nash, in 1936 Ndabeni was deproclaimed as a location and rezoned for industrial use, and all black Africans had to move out of the area. Some moved to Langa, others became squatters and lodgers throughout Cape Town. In 1946, Nyanga, Bellville South, Fish Hoek and Retreat were proclaimed as black African locations. However, the National party came to power in 1948 and, in line with its apartheid ideology, all black urban housing was frozen. Consequently, only 208 houses were built in Nyanga (de Tolley and Nash 1984:14) and the other three black African locations did not materialise. The black African township of Guguletu (“Our Pride”) was established in 1959 (de Tolley and Nash 1984:15). Thereafter no official black townships were established in Cape Town for 25 years until Khayelitsha (“Our New Home”) was developed from 1983 onwards.

Economic opportunities were also legally restricted for black Africans on top of the pass laws restricting the right to reside in the City. In 1955, when there were an estimated 178 000 black Africans in Cape Town, the Western Cape was declared a Coloured labour preference area. Black African settlement was to be phased out and influx control stepped up (de Tolley and Nash 1984:15). This meant that Coloured labour was to be preferred and it became increasingly difficult for black Africans to gain employment legally. For example, farmers and industrialists were encouraged to replace black African labour with Coloured labour^{xi}.

The 1970's were characterised by a marked increase in urbanisation. An influx of black Africans was tolerated in the economic boom of the early 1970's, but harshly repressed during the recession in the latter half of the decade (de Tolley and Nash 1984, Cole 1987). This era was characterised by the development of a number of informal settlements in and around Cape Town. The largest settlement, Crossroads, developed as a transit camp for black African squatters in 1975 (Cole 1987). Crossroads was characterised by internal power struggles, which were often violent, as different leaders emerged in the community (Cole 1987).

The 1980's were dominated by the effects of a realisation by the National Party government that segregationist policies and influx control were unworkable. There was a relaxation in the apartheid practices that excluded black Africans from enjoying permanent land rights outside of the independent or semi-autonomous homelands (Liebenberg 1993:488-491). The Black Local Authorities Act 102 of 1982 provided for black Africans in urban areas to have their own local government (town councils) (Liebenberg 1993:471). Two black town councils that were set up in terms of this act, Ikapa and later Lingeletu West, included most of Cape Town's Xhosa-speaking suburbs in their jurisdictions. Permanent land rights in urban areas were introduced and the pass laws rescinded. The Black Communities Development Act 4 of 1984,

provided for the laying out of registered 99 year leasehold townships for black Africans outside the former TBVC national states, self governing homelands and in most instances released and scheduled areas in terms of Act 18 of 1936. The pass laws were rescinded in April 1986 in terms of the Abolition of Influx Control Act 68 of 1986 (Cole 1987, Liebenberg 1993:471).

The political reforms of the 1980's were matched by escalation in revolutionary activity against the government and government aligned organisations, and internecine violence between revolutionary organisations. According to Liebenberg, large scale disturbances in the black African townships of the Vaal Triangle erupted upon the opening of the tricameral parliament in 1984, speedily spread to other parts of the country and lasted through to the end of the decade in varying levels of intensity. Liebenberg attributes this escalation in violence to "the economic recession, the unpopularity of the black town councils, the ANC's intention to make the country ungovernable, and dissatisfaction with the (new) constitution of 1983" (Liebenberg 1993:499). Revolutionary activity included large-scale stayaways from work, rent and service boycotts^{xii} and consumer boycotts (Liebenberg 1993:498-509). It also included the murder of black councillors, policemen and black Africans who supposedly co-operated with the government. In many cases (gangs of teenage revolutionary) *comrades* used the necklace method, whereby a car tyre was hung around the victim's neck, filled with petrol and set alight, to execute (so-called) traitors in public (Liebenberg 1993:504)

During the period of reform and revolutionary turmoil in the 1980's, in Cape Town the authorities made additional land available for occupation by black Africans. The government announced Khayelitsha as a new area for black Africans in 1983. The residents of existing townships which such as Langa, Nyanga and Guguletu, and informal settlements such as Crossroads and settlements adjoining it were to be relocated to Khayelitsha. The original idea was that Coloureds were to be housed in Langa, Nyanga and Guguletu, but ultimately implementing this idea was not attempted (de Tolley and Nash 1984:9). These suburbs were incorporated into what became the Ikapa Municipality. Khayelitsha was administered by a new municipality, the Lingeletu West City Council, that was set up in 1983 after the area was first administered as a substructure of Ikapa (Lawrence pers. com. 1999).

A large number of parcels were surveyed and occupied as site-and-service plots or pre-built housing in areas such as Khayelitsha and Phillippi from the mid-1980's onwards. However, an insignificant number of these parcels were formally registered as 99 year leases under the Black Communities Development Act 4 of 1984 (Mayekiso pers com 1996, Koen pers com 1997)^{xiii}.

Saff (1996:238) argues that the rescinding of the pass laws in 1986 was the catalyst for accelerated black African urban migration to Cape Town. This resulted in an equally rapid increase in both the number of informal settlements and informal structures (shacks) in proclaimed black African townships. However, there is evidence that the accelerated influx of black Africans into Cape Town commenced before this event. Lourens et al (1992:3) observe that pass law prosecutions stopped long before the influx control laws were lifted in 1986.

A number of violent conflicts between different informal settlement factions took place during the political turmoil of the 1980's, which have a bearing on this research (Cole pers. com. 1998^{xiv}, author's own observation^{xv}). The violent intimidatory activities of the *comrades* did not enjoy universal approval amongst black Africans and the result was the rise of so-called vigilantes, or counterrevolutionaries in opposition to them (Liebenberg 1993:504). This history of violent conflict influenced events and behaviour that prevailed in some of the areas studied in this research, such as Brown's Farm. Residents of Crossroads stoutly resisted any attempts by the authorities to move them to Khayelitsha (de Tolley and Nash 1984:8). There is strong evidence to suggest that the Crossroads leadership under Johnson Ngxobongwana, who was at one time aligned with the anti-government forces of the United Democratic Front (UDF)^{xvi}, entered into a strategic alliance with government agencies such as the police and the army to forcibly move these people to Khayelitsha. They were later strengthened by conservative elements in the community, the headmen (Cole 1987, 1986). This culminated in a major conflict in 1985 and 1986 where the *witdoeke* ("white head bands") of Crossroads, battled with United Democratic Front (UDF) aligned neighbouring settlements (Cole 1987, 1986). It appears that some of these UDF aligned neighbouring informal settlements were home to the informal settlement leaders and the people who later moved to one of the areas included in this study, Brown's Farm, which is discussed in chapter 6. Moreover, according to Saff (1996), another study area, Marconi Beam, supposedly attracted people who wished to escape ongoing violence that followed these events (see chapter 8).

The political unrest of the 1980's affected general land administration in the Xhosa-speaking areas of Cape Town's eastern metropole that were the subject of this research. According to Lawrence (1999), who started up the Lingeletu West City Council, Ikapa and Lingeletu West councillors and officials were continually subject to politically motivated attacks and intimidation between 1984 and 1992. He recalled that five councillors and six officials from the Lingeletu West City Council were murdered in politically motivated assassinations. Lawrence, the chief executive officer, had had a 24 hour personal police guard at his office and his home. Limpet mines exploded at his Lingeletu West offices on two occasions. Lawrence also related incidents of an Ikapa councillor being necklaced in KTC and the Ikapa council chairman and the town clerk being assassinated. Councillors and officials were often subjected to hand grenade attacks and attempted shootings (Lawrence pers. com. 1999)^{xvii}. The effectiveness of local government in the Ikapa and Lingeletu jurisdictions was further affected in the 1990's by industrial action up to the time that the two municipalities were absorbed into the City of Cape Town and the City of Tygerberg respectively (Kreiner pers. com. 1999, author's observation)^{xviii}.

Political reforms accelerated in the 1990's. The Abolition of Racially Based Land Measures Act 108 of 1991 repealed the majority of racially based land laws, such as the Group Areas Act 36 of 1966, the Black Communities Development Act 4 of 1984, the Natives Land Act 27 of 1913 and the Development Trust and Land Act 18 of 1936. Access to individual ownership of urban land for black Africans throughout South Africa was introduced in terms of the Upgrading of Land Tenure Rights Act 112 of 1991. This act also provides for the conversion of tenure types such as leasehold and quitrent to (allodial) ownership (Kleyn and Boraine 1992:502-505).

The early 1990's was a period of multi-party political negotiation, chiefly between the National Party government and the various revolutionary organisations such as the African National Congress (ANC) and Pan-Africanist Congress (PAC). Land issues were central to these negotiations and have remained a sensitive issue throughout the 1990's.

During this period the author observed a continual increase in the number and size of informal settlements in Cape Town. Some of these included settlements that were in affluent middle class suburbs of Cape Town, two of which, namely Marconi Beam and Imizamo Yethu, were studied as part of this research.

In the 1990's political power and authority in informal settlements and site-and-service schemes vested in powerful individuals or political groupings. These included ANC aligned groups such as the South African National Civics Organisation (SANCO). Opposed to them were groups aligned to powerful individuals, or warlords, some of whom had aligned themselves with the National Party Government in the 1980's. Violent conflicts between these groups were still ongoing in 1998 (e.g. Cape Times 10 July 1998 "Homes Destroyed as Warlords Return"). These conflicts directly affected one of the settlements studied in this research, Brown's Farm, and also impacted on all the other study areas.

In the author's observation, the power of the land administration authorities to administer the land tenure system and carry out their fiscal responsibilities to collect service fees and rents in informal settlements and site-and-service schemes was curtailed during the early 1990's. At this time there was rapid, volatile change from legal political power being in the hands of the National Party government to the ANC as political negotiations were underway. Referring to Marconi Beam and Imizamo Yethu, Saff (1996) observes that any large-scale eviction of squatters was bound to have both racial and political implications, something that both central government and local municipalities were desperate to avoid (Saff 1996:251). As this research will show, during the early stages of South Africa's transition at the beginning of the 1990's, power was held firmly in the hands of community structures. However, the power vested in community structures diminished and gradually shifted to government structures as the new national government became legitimately entrenched over time.

1.3.2.4 History: summary and analysis

Unlike many other southern African cities, Cape Town is not affected by underlying customary tenure claims by black Africans. In the mid-nineteenth century, the colonial authorities adopted what at that time was arguably a liberal view of land ownership for people who were not of colonial descent. However, after the turn of the century, existing land rights, opportunities for access to land, and access to economic opportunities for black Africans were systematically eroded. Consequently, new arrivals in the city resorted to illegal land occupation in informal settlements. Whereas in the 1960's and 1970's the authorities generally did not tolerate these settlements, the 1980's were characterised by a change in policy. The pass laws were no longer strictly enforced and they were eventually rescinded in 1986. This relaxation in strategies to keep black Africans out of the city led to a substantial influx of Xhosa-speakers into the city, many of whom lived in informal settlements. The political

turmoil of the 1980's was frequently mirrored in these black African communities in the form of politically aligned faction fights in informal settlements and murder and violent intimidation committed against local government councillors and officials. Khayelitsha also developed as a large township on the outskirts of Cape Town. The 1990's were a period of political transition, characterised in the early part of the decade by a *lasset faire* attitude to informal settlements by the authorities. This resulted in the mushrooming of informal settlements in affluent areas as well as around established areas, such as Crossroads.

The relevance of the above to the research is that factors determined by this history of repression by the State and violent conflicts between and within communities are assumed to be causal to some of the behaviour observed in this study. Firstly, many Xhosa-speakers had to contravene the law to occupy land in Cape Town. Therefore, there is a history of non-compliance with land administration regulations and directives over a long period. Secondly, the history of violent conflict and changing of allegiances between revolutionary forces ranged against the National Party government and those that supported it also influence current behaviour. Historical political alignments have been observed in this study to still play a role in local community dynamics.

1.3.3 Cape Town's Demographic Profile

Demographic studies indicate that the proportion of Xhosa-speakers to the total population of the City has become significant in the last two decades. In the author's opinion, it is therefore socially, economically and politically important for the City as a whole that Xhosa-speaking communities enjoy access to land and secure land tenure.

To date, accurate population data are not readily available. Population studies in 1995 portrayed the demographic profile for the Cape Town metropolitan region in table 1.1 below.

Table 1.1 Cape Town's Demographic Profile

Population Group	Population 1995	%
White	641 000	22
Coloured	1 422 700	50
Asian	29 600	1
African	760 300	27
Total	2 862 600	

(Source: Van Zyl 1995)

In 1990 growth rates for the White, Coloured and Asian population were all measured at approximately 1.8% per annum whereas those for black Africans, the poorest sector of the population, were estimated at 5% (Metropolitan Spatial Development Framework (MSDF) 1996^{xi}). In the same study, black Africans were predicted to constitute the majority ethnic group before the year 2005 (MSDF 1996^{xx}). Moreover,

in 1992, 414 000 people of all groups were estimated to be unemployed or active in the informal sector, this being 36% of the potential labour force of 1 150 000. Black Africans were estimated to constitute just under half of this number, that is 201 000 or 17.5 % of the total labour force (MSDF 1996^{xxi}). Using the population growth rate of 5%, and applying it to the 1995 African population figures, the black African population in 1992 is calculated at 656 500. A combination of figures from the three studies cited in the MSDF^{xxii} (1996), indicates that in 1992 approximately 30% of the black African population in Cape Town were unemployed.

Allowing for some inaccuracies in the population data and in the growth projections, what the demographic profile does indicate is that there is already a significant proportion of Cape Town's population that is Xhosa-speaking. Given their substantially higher population growth rate than other population groups, black Africans can be expected to be in the majority in the City within the next twenty years. Moreover, given the high proportion of this demographic sector who are unemployed, it can be assumed that economics is a major determinant of the effectiveness of the cadastral system in addition to the social factors outlined in section 1.2.

A further significant factor that is likely to have an impact is that there is little residential integration of ethnic groups in the city. A consequence of this is that in certain areas the cadastral system may operate effectively whereas in others it may not. The geography of racial development patterns resulting from previous racial segregation policies is depicted in figures 1.2. With a few exceptions, most Xhosa-speakers live in a particular part of Cape Town's eastern metropole stretching from the areas of Langa and Guguletu in the west through to Khayelitsha in the east portrayed in figure 1.2.

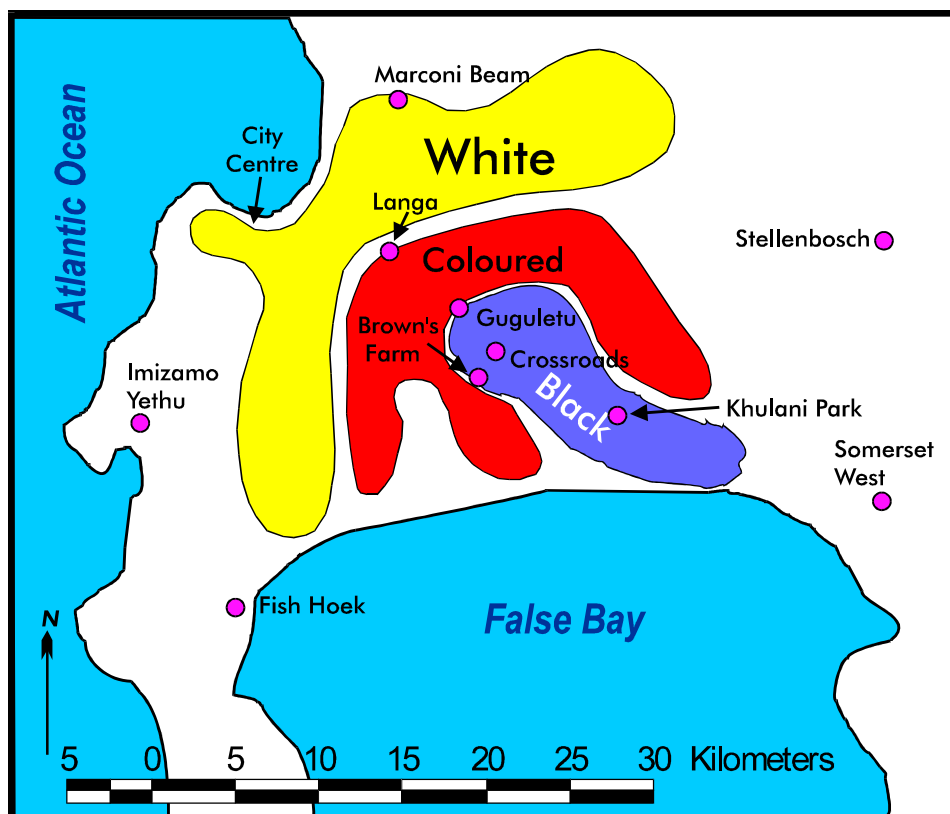


Figure 1.2 Racial Development Patterns in Cape Town

(Sources: Annotated from Metropolitan Spatial Development Framework: A Guide for Spatial Development in the Cape Metropolitan Region 1995, Department of Surveys and Mapping Map Sheet 1:250 000 3318 Cape Town 1982 and author's data)

1.3.3.1 Demographic profile: summary and analysis

In summary, demographic figures indicate that Cape Town has a substantial Xhosa-speaking population. At current population growth rates, Xhosa-speakers can be expected to become the ethnic majority in Cape Town in the foreseeable future. A characteristic of this demographic segment is that a large proportion of Xhosa-speakers is poor and unemployed. Moreover, Xhosa-speaking communities are largely segregated from other population groups in the City. In the author's analysis, ineffective modelling of the land tenure systems in a cadastral system or ineffective support for land tenure security by the cadastral system in Xhosa-speaking communities is likely to have a substantial social, economic and political impact on the City.

1.3.4 Land Policy Challenges and Objectives

The objectives of a cadastral system, explicit and implied, need to be clearly identified and understood to evaluate the effectiveness of such a system. As will be demonstrated in chapter 2, land policy is a major force in setting objectives for a cadastral system and in shaping the nature of the system. In this section, the strategic challenges that the South African government has stated as falling within the domain of land policy are stated. Following from this, the South African cadastral system objectives are established to address the challenges identified in land policy.

South African land policy changed substantially in the 1990's, especially after the ANC government came to power in 1994. As part of the endeavour to transform the country within the canons of a new democracy, the White Paper on South African Land Policy identifies the following as particular strategic challenges:

1. the need to deal with the injustices of racially based land dispossession of the past;
2. the need for a more equitable distribution of land ownership;
3. the need for security of tenure for all;
4. the need for a system of land management that will support sustainable land use patterns and rapid land release for development.

(Rep. of S. Africa 1997a:7).

To address these challenges, the present central thrust of land policy is the land reform programme (Rep. of S. Africa 1997a:7). This programme incorporates three general strategies. These are land redistribution, land restitution and land tenure reform (Rep. of S. Africa 1997a:9). Moreover, as operational system objectives to deal with the above challenges, the White Paper states that there should be accessible means of recording and registering rights in property; and an effective system of land administration should be developed (Rep. of S. Africa 1997a:7).

The land redistribution and land restitution programmes address challenges 1 and 2 above. These programmes do not provide direct objectives for the cadastral system. However, it is shown in chapter 2 that the cadastral system is part of a larger land administration system and it should be designed and operated to support these strategic programmes. This support is mainly in the form of land information required to service these programmes.

Challenge number 3 is being addressed by a land tenure reform programme. Support of secure land tenure constitutes a direct objective for South Africa's cadastral system at all times. In the context of this research, alternative tenure forms are being explored, and changes to the cadastral system may be required to incorporate the requirements of these alternative tenure forms. For example, legislation to improve the security of labour tenants and informal rights holders has been introduced and a new legal mechanism to hold land collectively, the Communal Property Association in terms of Act 28 of 1996, has been introduced (Rep. of S. Africa 1997a:10).

Interpreting challenge number 4 above, it would appear that although there is no direct strategic programme to address this challenge outlined in the policy document, there is a need for effective administrative structures and processes that are affordable. Moreover, there is a need for land information for effective decision making. The cadastral system should contribute to an effective land administration system in this regard.

A specific problem identified by government in addressing the above challenges is that transaction costs in land are regarded as high. The White Paper states that many of these transaction costs are attributable to cadastral system processes such as cadastral surveying and land registration, and associated taxes and duties. As negative consequences, the White Paper states that these costs act as a disincentive to the public to register transfers of ownership (Rep. of S. Africa 1997a:19).

From the above, it is concluded that the cadastral system has to serve a number of different, and at times competing, objectives. The primary long-term objective served by the South African cadastral system should be the support of land tenure security. In the context of the research, changes in land tenure forms themselves are taking place. The cadastral system should also support what the author perceives as broader land administration objectives. Such land administration objectives specifically mentioned in the White Paper are to sustain land as low risk collateral in the operation of a land market (Rep. of S. Africa 1997a:vii, 8, 17-19, 26)^{xxiii}. As part of a broader land administration system the cadastral system should support strategies designed to support sustainable land use patterns and rapid land release for development. Furthermore, as part of the land administration system, the cadastral system should also contribute to the facilitation of change espoused in the land redistribution and land restitution programmes.

In the author's interpretation of the role of the cadastral system in addressing land policy objectives, the first objective of support of land tenure security is served directly by the juridical cadastral system's fundamental products. These are the processes and instruments such as adjudication of land rights, the demarcation of the spatial extent of these rights, registration and cadastral survey. It is the author's

understanding of the situation that it is in the land information derived from achieving this primary objective of land tenure security that the other objectives are served by the cadastral system. The higher challenges identified in the White Paper are served in the main by the information derived from the cadastral surveying and registration records, which is fed into a broader land administration system. For example, as is described in chapter 4, the Cape Town Metropolitan Council assimilates cadastral layout data originating in the Surveyor General's office with municipal planning data to facilitate metropolitan wide planning (Milne pers. com. 1998)^{xxiv}. This issue is discussed further from a conceptual perspective in chapter 2 in the context of the role of the cadastral system in a land management system hierarchy.

Given South Africa's history of legally enforced racial segregation, certain land related problems are unique to the country. However, the problem of high land transaction costs attributable to cadastral processes appears to be characteristic of many developing countries. The government's desire to encourage the public to use formal, legal instruments and processes such as registration to uphold claims to land tenure is also supported by experience elsewhere in the world such as Peru (e.g. de Soto 1989:24).

It is worth noting that in striving to achieve the above objectives, it is well documented that technically superior systems of land registration, a major component of a cadastral system, are not a panacea for land tenure related problems (e.g. Dale 1992:1^{xxv}). Inappropriate design and implementation of cadastral systems have indeed diminished tenure security^{xxvi}. Bruce *et al* (1994) note that unsuccessful attempts to substitute state titles for customary entitlements may reduce security by creating confusion, a situation of which the powerful may take advantage (Bruce *et al* 1994:256).

1.3.5 South Africa's Cadastral System and Security of Title

To develop and test theory concerning the effectiveness of cadastral systems during periods of change, the strategy adopted in this investigation has been to evaluate if the existing cadastral system effectively supports land tenure security in Cape Town's Xhosa-speaking communities. This section discusses the notion of security of title and the cadastral system.

On technical grounds, the South African cadastral system has been upheld as being of the highest quality in providing security of title. Simpson (1976:107) describes the registration system as the kind of system Torrens wished to introduce into South Australia in 1858. However, in the author's analysis the primary object in the design and development of the existing system has been product oriented technical excellence^{xxvii} in providing a high quality information system to support tenure security at the expense of time and cost considerations^{xxviii}. The development of South Africa's cadastral system in the latter part of the nineteenth century and early twentieth century arguably had a narrow focus of primarily serving a mining and mineral economy and to a lesser extent the agricultural economy. Much of the litigation, detailed in the South African Law Reports, that influenced the formation of the legal infrastructure underpinning the existing cadastral surveying and registration system revolved around the exploitation of mineral deposits (Barry 1995:156).

1.3.5.1 Security of title defined

There are a number of conceptions of what constitutes security of land tenure. Place *et al* (1994:19) argue that:

“Land tenure security can be defined to exist when an individual perceives that he or she has rights to a piece of land on a continuous basis, free from imposition or interference from outside sources, as well as the ability to reap the benefits of labour and capital invested in that land, either in use or upon transfer to another holder.”

In a similar vein, Migot-Adholla and Bruce (1994) define land tenure security as the perceived right by the possessor of the land parcel to manage and use the parcel, dispose of its produce and engage in transactions without hindrance or interference from any person or corporate entity. The right of continuous, unchallenged use of land is perhaps the most critical measure of tenure security (Migot-Adholla and Bruce 1994:3).

Whilst accepting the above definitions of land tenure security, the link between security of tenure and the formal and informal processes required to create this security needs to be established. Jones (1964) argues that there are three elements of security of title to land:

- 1) the unambiguous definition of the land units;
- 2) the unambiguous definition of rights and interests in a specific unit of land and;
- 3) the unambiguous definition of the person(s)^{xxix} enjoying specific rights in specific units of land.

Jones (1964:63)

As the sub-section that follows illustrates, there is ample evidence in South Africa and internationally to suggest that western forms of land registration and rigid forms of boundary definition may not unambiguously define the elements of security of title espoused by Jones (1964) in black African communities, especially where there are strong customary influences (Jones 1976:45).

1.3.5.2 Cadastral system inadequacies

South Africa's existing cadastral system may fall short of unambiguously defining the three elements posited by Jones (1964) in Cape Town's Xhosa-speaking communities. The current socio-political environment is radically different to the one that existed when the fundamental legal and institutional structure of the cadastral system was put in place^{xxx}. Consequently, the narrow operational focus on technical excellence in the design and implementation of the existing cadastral system, which in the author's view prevailed when this research commenced, may be inappropriate.

International and local experience reveals that cadastral systems, in particular land registration systems, have in certain circumstances not effectively improved land administration or realised the objectives underlying their implementation in

developing countries. Evidence suggests that in the main this has been due to a mismatch between the cadastral instruments and processes supplied and existing social processes in landholding communities, as well as structural factors. Migot-Adholla and Bruce (1994) argue that land tenure security does not necessarily follow from legal ownership. A formal title certificate or other official document is, at best, merely an affirmation of the social guarantee of tenure security; it does not create it (Migot-Adholla and Bruce 1994:8). Ezigbalike and Benwell (1994) observe that often systems of land administration that are introduced with the objective of improving security of tenure to stimulate development have the opposite effect, and may in fact impede development (Ezigbalike and Benwell 1994:178).

In synthesis of these arguments, it is apparent that any formal intervention in land administration should address what marketers would term the 'wants' of landholders^{xxxii}. Attempts to alter the tenure system and attempts to design formal instruments and processes to support tenure security should take cognisance of these community wants as well as those of land administrators and policy makers.

1.3.6 Land Tenure in Urban African Communities

It follows from section 1.3.5 that an understanding of *de facto* tenure practices is essential to evaluate if a cadastral system is likely to be effective. In this sub-section, existing work relating to phenomena that can be expected in urban Xhosa-speaking settlements is described. It will be shown that local residents may adapt elements of customary practices and mesh these with a sample of the cadastral system instruments and processes to suit their specific circumstances. This sub-section firstly describes theory posited by international observers concerning urban land tenure in sub-Saharan Africa. It then investigates theory derived from the Zulu polity of the Nguni people and applied to a single case study of the Cape Nguni, or Xhosa-speakers in East London in the Eastern Cape Province. Due to a paucity of literature concerning the systems of tenure in urban Xhosa-speaking communities that is germane to this research, data gathered from interviews, discussions and life histories during the course of this research have been used to augment, support and develop this body of theory.

1.3.6.1 Sub-Saharan Africa

Durand-Lasserve and Clerc (1996) argue that in sub-Saharan Africa, colonialism and post-colonial management introduced market logic and overturned most previous "customary" rules of land allocation. Despite these, customary land tenure practices continue to have a strong impact on urban land management in general and in informal settlements in particular. "Faced with the huge pressure of demand and in the absence of alternatives, the heirs of the customary system have adapted to the market, outside the boundaries of State laws, by improvising transfer procedures which are a mixture of customary practices and the practices of market and government administration." (Durand-Lasserve and Clerc 1996:6). Doebele (1994:48) argues that there is not a duality of "legal" and "not legal" tenure. He observes that the real world contains complex mixtures of formal and informal systems with infinite variations in between. Davies and Fourie (1998:240) conclude that tenure practices in informal

settlements exist not in terms of legal, illegal, spontaneous, planned, formal and informal concepts, but on a continuum of these concepts.

1.3.6.2 South Africa's urban Nguni population

In South Africa, experiences of urban tenure practices amongst the Nguni people, who include Zulu and Xhosa-speakers, mirror the above observations in other parts of sub-Saharan Africa. The writings of Cross (1994, 1993), Byerley and McIntosh (1994) and Fourie (1993) suggest that in the Zulu polity of the Nguni people, tenure practices in informal settlements in the Durban Functional Region mesh western-based individual tenure with customary practices. Fourie (1993) argues that tenure practices in informal settlements in the Zulu polity are, in general, adaptations of the tribal tenure system. This theory is embodied in her social change model. Moreover, Davies and Fourie's (1998) hypothesis of a continuum model for levels of physical development, socio-economic profile, and legality of tenure was supported by research in a Xhosa-speaking settlement in East London (Davies and Fourie 1998:240).

1.3.7 The Social Change Model

Drawing on Comaroff's (1982:146) dialectical approach to the analysis of local systems and on the observation of a Zulu settlement in the Durban functional region, Fourie (1993) developed a social change model for observing and analysing the social dynamics of informal settlements. Davies (1998) in researching an urban Xhosa-speaking community observed similar phenomena that support Fourie's thesis in a settlement in East London in the Eastern Cape. In this research, the social change model has been assumed to validly describe the dynamics in Cape Town's informal and semi-formal settlements. The model is now described to provide a framework in which to understand the behaviour that was observed as part of this research in Xhosa-speaking settlements in Cape Town.

The main features of the social change model are 1) the dialectical approach (which assumes that conflict or structural tension is inherent in a system); 2) the ongoing processes of fission and integration; and 3) transactional behaviour. Each of these features are now described in more detail.

The dialectical approach holds that there is internal competition and inter-dependence between various power levels and sub-groups within a community. Competition is manifested in struggles for land, resources and power. Tension between sub-groups develops as a result of local dynamics and factors external to the community (e.g. urbanisation patterns, local authority policies, local authority interventions) (Fourie 1993, Davies 1998:77-78). Hence reference is made to the internal dialectic as the structural tension between groups within the community involved in fission and integration (Fourie 1993, Davies 1998:76). The external dialectic is seen as the tension between external factors and the internal dialectic in the local area (Fourie 1993, Davies 1998:76, Davies and Fourie 1998:241).

Fission and integration are two opposing processes. Fission, being a process of individualisation and integration is a process that strengthens a group identity. This creates competition between individual and group land tenure rights (Fourie 1993:428,

Davies 1998:74). Davies (1998) interprets this aspect of the theory to mean that integration gives greater importance or weight to group rights rather than individual rights. Consequently, where there is a bias toward integration, group rights prevail over individual rights. An example of this apparent contradictory tendency of fission and integration is the allocation of a secure land right for an individual's exclusive use of a particular parcel of land (fission), yet a community (-based institution) may insist on approving any person to whom this land right may be sold (integration) (Davies 1998:75). Interpreting Fourie's (1993) work, fission and integration also describes the process whereby a faction may sever ties with one sub-group (fission) and seek alignment with another faction within a community (integration). This phenomenon and the exercise of an overriding community right as to who may reside in a settlement was observed or described to the author in a number of instances throughout Cape Town during the course of the research.

Transactional behaviour, also termed entrepreneurial behaviour, in the context of informal settlement tenure analysis is about the negotiations and deals associated with land and land tenure within a community. Fourie (1993) notes that indigenous systems of land tenure evolve by adapting to unique circumstances that face people at any particular time (Fourie 1993:438). In this model, land tenure rules are important and required by groups at settlement level for land administration, such as land allocation and dispute resolution (Davies 1998:81). However, the tenure rules tend to be manipulated by sub-groups as they compete for land, resources and power. Therefore, internal rules are not static but are subject to change due to the effect of tension and conflict within the local system (internal dialectic) and between the local system and external factors (external dialectic) (Davies 1998:81).

Analysing Fourie's (1993) social change model, it is based on a pluralist conceptualisation of urban Nguni settlements. Firstly it assumes that a settlement comprises individuals, groups and sub-groups who have conflicting interests and goals. Secondly, it assumes that conflict is inherent and natural in the relationships between different individuals, groups and sub-groups within a settlement and between these entities and external forces such as the local authority or an external hostile interest group. As different entities strive to maximise their own goals and interests in competing for power, land and resources, so the nature of the tenure rules and practices change. The model allows for continually changing group and individual emphases in land tenure. As circumstances change it is likely that the prevailing bias of the tenure system in different geographical and social sectors of a settlement may oscillate between individualisation (fission) and overriding group rights (integration).

What will now be described are specific, observable tenure practices that have been observed in a Xhosa-speaking community using the social change model as a conceptual framework. Davies (1998) documents a number of behaviour patterns in a case study of a combined site-and-service rental scheme and informal settlement. The relevance of this is that many similar patterns were also observed by the author or related to the author by key informants in this research. In particular, Davies observed three key phenomena in the land allocation system that he regarded as symbolic of the value system incorporating conflicting urban and tribal tenure rules. These phenomena were: 1) a communal as well as an individual bias in land tenure; 2) a period of probation and sponsorship before a newcomer would be accepted into the community;

and 3) allegiance and affiliation to a local group, such as a political party, before acceptance by the community.

1.3.7.1 Communal and individual bias in land tenure

Communal and individual bias in land tenure implies the tension between ongoing forces of fission and integration. Davies (1998) cites examples of this in his case study of an informal settlement that had evolved in a site-and-service scheme in East London where certain individuals had managed to fence off their parcels and could protect their individual rights. In this case the bias is toward individualisation. He also observed that in certain areas of the site-and-service scheme where he analysed the bias as being toward integration, shacks had been built to a high density with little regard for surveyed, legal cadastral boundaries^{xxxii}. In such cases, he posits that individuals may not be able to define or defend what was originally allocated to them because the group over-right (integration) is stronger than the individual bias (fission) (Davies 1998:38).

Similar behavioural patterns were described to the author in structured interviews with officials in this research, which are detailed in chapters 6 - 10. For example in some site-and-service areas of Khayelitsha, individuals constructed their shacks and fences according to the boundary monuments. In others, the boundary monuments were completely ignored so that when the time came for the person entitled to acquire formal registered ownership to construct a house, it became impossible to evict other shack occupants. In such cases it was often only possible for legitimate landholders to reassert their individual rights once the local authority had found alternative land for the invading shack occupants (Du Toit pers com 1997, Martin pers com 1997). Communal and individual bias toward the individual's right to transfer and sell land rights also fluctuated, over time as well as in the degree of formalisation that existed in a particular settlement. In some instances, individuals were not permitted to transfer rights to another person, but they might be permitted to sell the materials used to build their shack. This was founded on the principle that they had not paid for the land. The community leadership decided, ostensibly according to a set of agreed rules and procedures, who should take possession of an individual's land right should that individual leave the community. However, as circumstances changed over time, in some settlements individuals were permitted to transfer their land rights. It also appeared that the practice of privately transferring land rights occurred in contravention of community rules and procedures.

1.3.7.2 Probation and sponsorship

In Davies (1998:38) case study, in what Cross (1994:179) classifies as a modification of rural practices, newcomers to the settlement required a sponsor and had to undergo a period of probation before being allocated land rights. As an example, Davies (1998:38) notes that newcomers had to bring a letter of good conduct from their previous place of residence to be accepted. Similar practices were found to apply in Cape Town's Xhosa-speaking communities.

1.3.7.3 Allegiance and affiliation

Davies (1998:39), in corroborating observations by Byerley and McIntosh (1994:172) in the Zulu polity, notes that newcomers had to show allegiance and affiliation to a particular group. In Davies' (1998:39) case, newcomers had to prove allegiance to the ANC. In such cases, the group right is dominant over individual rights. As is discussed in chapters 6 -10, in Cape Town's Xhosa-speaking communities allegiance and affiliation to a political organisation, a gang or a warlord were required to gain access to land in certain communities and in some instances to remain on the land.

1.3.7.4 Social change model: summary and analysis

Land tenure practice in Nguni speaking informal settlements on the urban periphery are characterised by both individual and communal biases. Cape Town's Xhosa-speaking communities are no exception. A number of observers regard these practices as adaptations of customary tenure.

The social change model assumes that these communities are plural in nature. That is conflict and competition for land, resources and power is inherent between elements within a community and outside of a community. Rules may be established and agreed upon under the auspices of the general community but in practice these rules are manipulated by certain groups and individuals. A fundamental premise of this social change model is that there are simultaneous, fluctuating behavioural patterns of fission and integration. These are played out in land allocation and occupation processes. For example, the strength of group over-rights versus individual bias may determine adherence or non-adherence to legal boundaries and, sponsorship and periods of probation may be required to acquire land rights. Furthermore, affiliation to a particular local group may be necessary to gain access to land and retain occupation of it.

The relevance to evaluating cadastral system effectiveness is that the social change conceptualisation of land tenure in informal settlements provides a useful framework in which to view the interrelationships between instruments and process that support formal property rights, the cadastral system and land administration system, and prevailing *de facto* land tenure. In the author's view, what is important in evaluating the effectiveness of a cadastral system is establishing a long term vision of a general set of stable social relationships as well as the relationships between the people and the land that residents in a community envisage. This general vision could be biased toward communal or individual land tenure. If tenure in a settlement exists on a continuum of continually fluctuating biases toward fission and integration, exacerbated perhaps by particularly volatile internal and external dialectics, then it serves little purpose for the cadastral system to model *de facto* tenure. Moreover, the cadastral system should not support tenure practices that violate established ethical standards and conflict with the prevailing socio-political ideology. It should not facilitate practices that effectively extinguish what may be formal registered rights in land that are legitimately recognised by the majority in the local community. Such practices include the eviction of people from a community by powerful individuals or political parties. It is suggested that given current technological and human resource infrastructure, a cadastral system comprising formal instruments and products to support tenure security is unlikely to cope with frequent fluctuations between individual and communal biases in land tenure. Ideally, it should attempt to model long-term

relationships. However, the challenge is to manage and administer land tenure equitably using the cadastral system and other land administration sub-systems to ensure that ultimately the land tenure system attains a desired stable state.

The reader should note that the social change model itself, including the theory that tenure exists on a continuum of formality and informality, is not the subject of research. It is assumed that this model constitutes a valid scientific paradigm. Theory concerning the effectiveness of the cadastral system has been established within this paradigm.

The relevance of the social change model for evaluating cadastral system effectiveness is that it facilitates understanding of seemingly contradictory, irrational behaviour founded on the assumption of inherent conflict in competing for power, land and resources, and the continual changing social interrelationships resulting therefrom. As this research will show, there was an overwhelming want for a form of tenure based on individually owned parcels in Cape Town's Xhosa-speaking communities. However, existing power structures and social forces meant that group practices still prevailed to varying degrees in the settlements studied.

1.3.8 Family Rights and Individual Rights

In addition to group rights in land pertaining to a large section of a community over a wide area, the issue of family versus individual rights in a particular parcel of land surfaced during the course of this research. It appears that this issue prevails throughout the developing world (e.g. Larsson 1991, Bruce 1983, Simpson 1976). Disputes that may arise in respect of family lands may involve for instance: appropriation of the family land by one member of the family, disputes over alienation of land rights, and disputes over the extent of the family^{xxxiii}. The danger of registering land in the name of one person only may give that person new and far reaching powers in respect of the land. It may also change their relationship with other family members who share the land, resulting in the security of tenure of those other family members being substantially diminished (Sibanda 1998). Registering land in the name of an individual may vest residuary ownership^{xxxiv} in the name of a person who, *de facto*, does not enjoy such narrowly defined ownership. Such registration may exclude and consequently legally extinguish some of the existing legitimate rights and interests of family or household members in a particular piece of land. Abuse of this legal ownership by registered owners may result in evictions of household members. The problem is exacerbated when the registered rights holder can sell the land. Owners may alienate land where previously this would not have been possible without broad household agreement, and the proceeds of such alienation (sale or lease) may not devolve to all household members who might previously have been entitled to them. At the same time, complex systems that register the names of all family members may well be unworkable^{xxxv}.

Conversely, registered individual ownership may evolve into family title over time. Bruce (1983) describing the situation in the Caribbean observes that family land ownership tends to be created by a series of unadministered intestate successions. This phenomenon has also been observed in certain African countries, such as Nigeria (Nwabueze 1972, Yakubu 1985).

In Nigeria, family ownership is recognised under customary law. The law recognises that family ownership of land may evolve as a result of intestate succession and permits legally registered land held under a deed by the received English law to revert to a system of customary family ownership. “More often than not reconversion arises by operation of the law of intestate succession whereby on the death of an intestate Nigerian, his self acquired property devolves upon his children as family property” (Nwabueze 1972:133). In Nigerian family land, an individual cannot alienate a part of family land acting independently, as the individual’s rights are limited to those of usufruct. Ownership of the land is vested in the whole family, and an individual’s usufructuary rights emerge at birth and are extinguished upon death. They are not tradable (Yakubu 1985).

Disparity between legal tenure and *de facto* tenure, which can be partially ascribed to a system of family as opposed to individual ownership has also been experienced, but not extensively documented, in South Africa. Greene (1994:250) describes the case of Edendale Township, on the outskirts of Pietermaritzburg in KwaZulu-Natal province, where many live land titles date back to the late 19th and early part of the 20th century. In most of these cases, the owners have died but details of inheritance have not been recorded on the register. Moreover, many registered owners entered into deeds of sale of portions of their properties without the required statutory town planning consents to subdivide and the transactions never proceeded to registration. Many of these registered owners and unregistered purchasers have died. Overall 33% of the owners controlling 50% of a township of 3250 land parcels cannot be traced.

Jones (1976) describes a situation in the Eastern Cape, the traditional Xhosa-speakers’ region, where land was allocated to black Africans and registered in individual tenure in the 19th century. In 1893 it was estimated that only five percent of succeeding owners had taken formal transfer registered in a Deeds Office (Jones 1976:45). In a more recent study, Manona (1987) researched such a case in Grahamstown, Eastern Cape, which is described in section 1.3.9.

Further evidence of family ownership related issues in South Africa emerged during the course of this research. In Soweto, Gauteng province, in the early 1990’s in some instances it was difficult to register ownership in the name of an individual. In converting leasehold rights into registered freehold ownership, there were reported cases where the registered owner evicted extended family members. Freehold registration was halted at the insistence of political organisations that contested the notion of individual ownership in favour of family ownership. The alternative family ownership model espoused by these political organisations appeared to limit individual rights in land to those of *habitatio* or *fidei commissum*^{xxxvi}.

In this research, a number of similar problems between sets of married and common law spouses in rental schemes administered by the local authority in Khayelitsha, Cape Town, were described to the author. Upon separation, the partner in whose name the rental agreement was registered at the local authority^{xxxvii} often moved out of the house and informally sold the right to rent to a third party. The third party would then attempt to evict the remaining spouse and family to take occupation of the house. These sales, however, were invalid, as the right to rent was not tradable. The local authority, which

owned the land, but not the dwelling structure^{xxxviii}, allocated and reallocated these rights (Du Toit pers com 1997)^{xxxix}.

The relevance of the issue of family versus individual ownership to cadastral system effectiveness is firstly that registering a parcel in the name of an individual as opposed to all interested family members may extinguish existing *de facto* rights causing conflict where previously there was none. Secondly, if land is *de facto* family land it is unlikely to be transferred out of the family with the consequence that there is no incentive for a family to assume the cost and effort to register inheritances, especially if the registered owner dies intestate. The cadastral record is therefore likely to be rendered inaccurate over time. The consequence of an inaccurate record is that it becomes difficult to mortgage affected parcels as it would be difficult for the financial institution to repossess it in the event that of default of payment. Furthermore an inaccurate cadastral record makes it difficult for land taxes and municipal service charges to be administered efficiently.

What has also emerged from the literature though is that the failure to register succeeding rights in a particular parcel is due in the main to systems of family tenure as well as the cost of using the registration system. This is discussed in the following section.

1.3.9 High Costs Militate against an Effective Cadastral System

This issue of cost militating against effective land administration was introduced in section 1.3.4 in the discussion on land policy (Rep. of S. Africa 1997a:9).

In this research, the notion of the cost of a cadastral system to the user is adapted from spatial modelling of cost surfaces (e.g. Tomlin 1990, Eastman 1992:129-131). It is defined as the order of difficulty, sometimes defined as a measure or weighting of impedance (e.g. Eastman 1992), in attaining a particular goal and is not necessarily directly measured in monetary terms. Cost is regarded as structural factor that is a function of a basket of variables. There are actual monetary transaction costs and impedances to using the cadastral system that derive from factors such as the cadastral system and land administration system organisational structure, the effectiveness of transport and communication systems, and the spatial patterns of human land occupation. As an example, costs to the individual user can be made up of a combination of the order of difficulty of physical access to the cadastral system and other land administration functions, the time taken for a particular task to be completed and the complexity (and therefore order of cognitive difficulty) of the cadastral system.

A number of works (e.g. Tomlin 1990, Eastman 1992:129-131) use a similar conceptual model of cost, particularly when addressing spatial analysis problems using geographic information systems (GIS). For example some GIS software packages include the functionality of generating cost surfaces or cost networks, where cost is measured as an order of impedance rather than a monetary cost. It is argued that there is a substantial spatial component in the cost to the individual of using a cadastral system. For example, the order of difficulty of physical access is a function

of the distance from the individual's place of abode to various land administration offices and the time taken to travel to these offices.

In South Africa transaction costs have been identified as an underlying cause of extra-legal transactions in land taking place (Manona 1987, Ralawe 1993)^{xl}. These costs, in the eyes of landholders, may be considered to be too high and alternative mechanisms may be used to extra-legally transfer rights in land. Manona (1987) attributes a situation similar to Edendale described in section 1.3.8 in Mfengu Township in Grahamstown, Eastern Cape province, mainly to cost related factors. The township was one of the first instances of land being registered for black Africans in South Africa in the mid-nineteenth century. However, the register is out of date as land has been sold extra-legally and inheritances have not been reflected on the title deeds. In one case the title dates back to 1885. Ownership of inherited individual parcels in the township effectively resides in extended families. *De facto* individual's rights are usufructuary and the land has little collateral value as it is a complex and difficult process to alienate it, with the result that family members are reluctant to invest in these properties. There exists too, ample evidence of serious family disputes concerning inheritance of freehold land (Manona 1987).

Manona (1987:575) identifies the difficulties involved in reregistering title deeds (to clean up the titles) as one of the reasons that the land register is out of date. Some family members with financial means have purchased land in neighbouring areas to have their own home, rather than invest in the family home in Mfengu Township. One reason being that they could not raise loan capital against land in Mfengu Township due to the uncertainty of ownership (Manona 1987:576).

Analysing this particular case, the difficulty of cleaning up the titles falls under the umbrella of what have been classified as cost or impedance factors as a result of seemingly unentangleable family ownership being created by a series of unadministered intestate successions. There is a trade-off for the individual in effort, time and monetary costs in cleaning up the title versus purchasing land under secure title elsewhere. People with financial means have chosen rather to live elsewhere than expend time and money attempting to clean up a title. Moreover, the risks attached to such an effort are high, as ultimately attempts to clean up a title to land may not yield satisfactory results if the web of interests in a parcel of land cannot be disentangled. The discussion in section 1.3.8 suggests that such process may affect the social relations within a family. The situation in Mfengu Township at that time indicates that as a geographical location it was unlikely to attract internal investment. Due to their effective inalienability, land parcels held little collateral value.

What is significant though is that the system of individual tenure and the nature of the cadastral instruments to support it have not been challenged. Manona (1987:576) observes that residents appeared to place supreme value on freehold ownership.

Ralawe (1993) describes similar conditions in a rural case in the Xhosa-speaking Rabula village in the Eastern Cape Province, former Ciskei area of Keiskammahoek, where the legal system of land transfer has been substituted by an informal system. An informal system of sub-division, demarcation and transfer by a system of public witnessing^{xli} evolved. "This system is said to have developed out of the reluctance of new owners to

register their properties at the Deeds Office in King William's Town^{xliii}. ... the new owners were not prepared to pay transfer and registration costs as they maintained that it was (too) expensive." (Ralawe 1993:8).

1.3.9.1 Costs: summary and analysis

Costs to the user of a cadastral system are made up of a number of structural factors, which are a function of more than the monetary cost of a transaction in land rights. Perceived high monetary costs or a high level of impedance to the user of using the cadastral system may persuade individuals to use extra-legal processes to conduct transactions in rights and interests in land.

Furthermore, impedances to using a cadastral system can arise from a combination of factors that are exogenous and endogenous to a particular community, household or individual. A combination of cost related structural factors in concert with factors such as *de facto* family ownership of a parcel may cause registered owners or legal heirs to transfer land rights extra-legally. For example in the case of inheritance, the case may arise where the transfer of legal ownership is merely not recorded. This phenomenon may not necessarily affect security of land tenure if the general relationship between a family and a land parcel is viewed as usufructuary and there is a general belief that the land should not be sold. However, the land is unlikely to attract loan collateral and becomes excluded from the formal land market. Rectifying such a situation by using a legal remedy such as registering a prescriptive claim over the land is likely to be unaffordable for *de facto* landholders.

As mentioned earlier in discussion on the objectives in section 1.2, cost factors, and structural factors in general, have not been the primary focus of this research, but they cannot be considered entirely separately from an analysis of how effectively a cadastral system upholds land tenure security. The focus of the research has been on cadastral processes and the instruments that form part of them. The argument that both structure and process form the basis of analysing a system, but that the initial focus should be on processes is developed in chapters 2 and 3.

1.3.10 Analysis and Relevance to Research

In synthesis of the discussion in this section, a number of social and political factors have shaped the ethnic geography of land occupation in the Cape Town metropolitan area and in particular the geography of Xhosa-speaking communities. Xhosa-speakers do not have a traditional claim to land in Cape Town. Moreover, although they were permitted to own land in the City in the latter half of the nineteenth century, a history of racially based land management strategies in the twentieth century attempted to keep Xhosa-speakers out of Cape Town and removed many of the rights that Xhosa-speakers held in the nineteenth century. A reversal of these strategies in the last twenty years of the twentieth century has resulted in an influx of Xhosa-speakers who now make up a significant and growing proportion of the City's population. Ineffective support for land tenure security by the cadastral system in Xhosa-speaking communities is likely to have a substantial social, economic and political impact in the City.

Largely by means of land information, the cadastral system should also play a role in addressing current land policy challenges outlined in the White Paper (Republic of South Africa 1997a) and in general land administration. In this context, the cadastral system should contribute to the facilitation of change espoused in the land redistribution and land restitution programmes described in the White Paper. It should also feed information into a broader land administration system for the general management of the City.

Existing work on communities in urban informal settlements in sub-Saharan Africa and in urban Nguni speaking communities indicates that the cadastral system may not effectively support land tenure security in these Cape town's Xhosa-speaking communities. The following factors, applying singularly or in concert, may motivate landholders not to use the cadastral system to effect transactions in land rights in Cape Town's Xhosa-speaking communities. Firstly, there may exist *de facto* land tenure systems that are too complex to model in a cadastral system. Examples of this are systems where there are frequent fluctuations between fission and integration; so too is the family rights dynamic. Secondly, tenure practices that violate established ethical standards and conflict with the prevailing socio-political ideology fall outside the domain of what the cadastral system should serve. For example, the cadastral system should not support the actions of powerful individuals or political organisations in evicting people from a community so that what may be formal registered rights in land that are legitimately recognised by the majority in the local community are effectively extinguished. Thirdly, the set of cadastral instruments and processes may not be sufficiently extensive to incorporate certain key tenure practices. Design features of the cadastral system itself may be changed to accommodate these. These are issues to be explored in this research. Fourthly, broadly defined cost and other structural factors may encourage people to seek alternative instruments and processes to transfer and secure land rights, although given adequate financial and other resources they might prefer to use the formal system.

In summary, this research has taken place in the context of substantial social, political and economic change. Under these circumstances a cadastral system analyst has to take cognisance of macro-level factors such as land policy objectives as well as micro-level factors pertaining to land tenure systems and social structures within communities.

1.4 HYPOTHESIS: THE RESEARCH QUESTIONS

In addressing the research questions, the contextual review indicates that the following hypothesis is worthy of investigation.

The land tenure system in Cape Town's Xhosa-speaking communities comprises elements of both individualised tenure and group tenure rights. In these communities, some of the existing cadastral system's processes, and the instruments generated as part of these processes, are used to support claims to rights in land. Others are substituted by extra-legal mechanisms more suited to de facto tenure in a particular situation. Consequently, due to non-usage of parts of the cadastral system, the system does not effectively support land tenure security in the manner that government intends thus often rendering the cadastral system ineffective.

To explore, test and build on the above hypothesis, sub hypotheses have not been posited as definitive statements which the data collection and analysis should persuade the analyst to support or reject. Instead, a set of questions has been framed to inductively guide the exploratory processes as opposed to testing a set of predetermined constructs.

Key questions to be addressed are:

- 1) How effective is the existing cadastral system in Cape Town's Xhosa-speaking communities in realising the objectives of supporting land tenure security? How effectively does it support other objectives of land administration and land policy such as sustaining the collateral value of land and, if it exists, the operation of a land market?
- 2) What substantive theory exists or should be developed to conceptualise and analyse problems such as the one described above and what is an appropriate methodology to explore it?

There are two elements to the above questions. The first element is the spatial definition of rights in land. At the most elementary level, the question posed is how valid is the concept of a parcel of land, and how valid is the definition of the boundaries that legally define it? The second element relates to the validity of the record of the bundle of rights legally defining the relationships between persons, and relationships between persons and land.

In examining these broad hypothetical questions, the following issues need to be explored

- (a) In whom does *de facto* ownership of land reside? What are the group interests, if any, in a particular parcel(s) that limit the powers of the registered owner? To whom is ownership of a parcel bequeathed in the event of death or a person leaving a settlement?
- (b) What *de facto* systems, that is, processes, structures and instruments, currently underpin tenure security? What instruments and processes are crucial for supporting land tenure security? To affirm tenure security, is there a general hierarchy of evidence that applies in Cape Town or a bundle of evidence wherein the hierarchy may change from place to place and over time?
- (c) To what extent are landholders using the existing cadastral system? Is the system of title deeds and parcels defined by fixed monumented boundaries delineated and recorded in high quality cadastral surveys being used? Are landholders meshing aspects of the cadastral system with other processes and structures? To what extent are landholders likely to use the cadastral system? In the event of non-usage of the cadastral system, what are the reasons underlying this non-usage?
- (d) To what extent are *de facto* systems in conflict with the *de jure* system? To what extent do *de facto* systems undermine the validity of the *de jure* system? What are the implications for the effectiveness of the cadastral system?

1.5 RESEARCH METHOD

This section introduces the research methods, which are discussed in further detail in chapter 5.

The study commenced in 1996 in an atmosphere of conflicting, unsubstantiated statements by a number of land professionals concerning the usage of cadastral boundaries in black African communities in urban South Africa. Furthermore, operational solutions to these problems were being formulated and proposed without what in the author's opinion were satisfactory data to support them. Various options for land registration and cadastral surveying were being mooted in a number of workshops (e.g. Federation of Institutes of Land Surveyors), studies (e.g. Fourie 1994) and working groups (e.g. those assembled by the Department of Land Affairs in 1995).

The research methodology is primarily inductive in that observation of events, and behaviour and the determination of beliefs and attitudes at the micro-level should reveal characteristics which can be abstracted and modelled and contribute to the development of general theory. In applying this methodology, a number of alternating cycles of developing theory to identify the research questions, conceptualise the research problems and analyse and explain observed phenomena were interspersed with data collection in the field. For example, boundary problems were first explored in one case study, Brown's Farm, and a number of theories were examined and hypothesised to explain certain observed behaviour. A desktop study and interviews with a number of officials and land professionals was conducted simultaneously. This was followed by a period of theory development before data was collected in the next case study. This process was repeated in a number of cycles throughout the research.

The research methods used were numerous. These consisted of a review of relevant literature, interviews and discussions with numerous officials, land professionals, NGO field workers, academics, project managers, international aid workers and community organisers. Theory surrounding the general problem statement and questions arising from international experience were developed using a review of existing literature and site visits to land registries and surveyors general in South Africa and a number of other countries such as Namibia, Singapore, Malaysia, Hong Kong, Thailand and Zimbabwe. Moreover, the author spent two weeks in the USA at the Land Tenure Center, University of Wisconsin - Madison and a week at the Department of Geomatics, University of Melbourne in Australia. Numerous officials from the Department of Land Affairs in South Africa and land professionals working in the Durban and Cape Town areas were interviewed. Moreover, the author was a member of working groups at the Department of Land Affairs exploring land tenure, registration and surveying options in South Africa.

In attempting to address the fundamental research questions, data was collected in four Xhosa-speaking settlements in Cape Town and analysed to determine 1) the beliefs, attitudes and intentions concerning the existing cadastral system; 2) usage of the existing system; and 3) the *de facto* systems of tenure

The following case types were identified to obtain suitably representative data across the spectrum from informal to formal property:

- 1) an existing informal settlement where community members were expecting to have formal land rights bestowed upon them;
- 2) a greenfields site-and-service scheme that had some sites registered, or sites were scheduled for titling and registration;
- 3) an existing settlement where registered properties are being bought, sold and transferred via inheritances in a secondary market.

The above three case types mirror the stages of development from informal land rights to formal registered rights in Cape Town. In the end four case studies were investigated: Marconi Beam in Milnerton, Brown's Farm in Philippi, Imizamo Yethu in Hout Bay and Khulani Park in Khayelitsha. These are depicted in figure 1.3. It was not possible to find a Xhosa-speaking settlement with a thriving secondary land market in Cape Town. Consequently Khulani Park, the oldest registered settlement in Khayelitsha was studied. Overall, the four case studies provided sufficient, valid data for this research. Moreover, the case study material was augmented and strengthened by a study of events in the Xhosa-speaking sector of Cape Town's eastern metropole. Although a secondary market in registered property could not be explored, sufficient data from rental schemes and newly registered land in the case studies provided sufficient data. A detailed description of the data collection and analysis is included in section 5.1, which describes the research plan and the research methods.

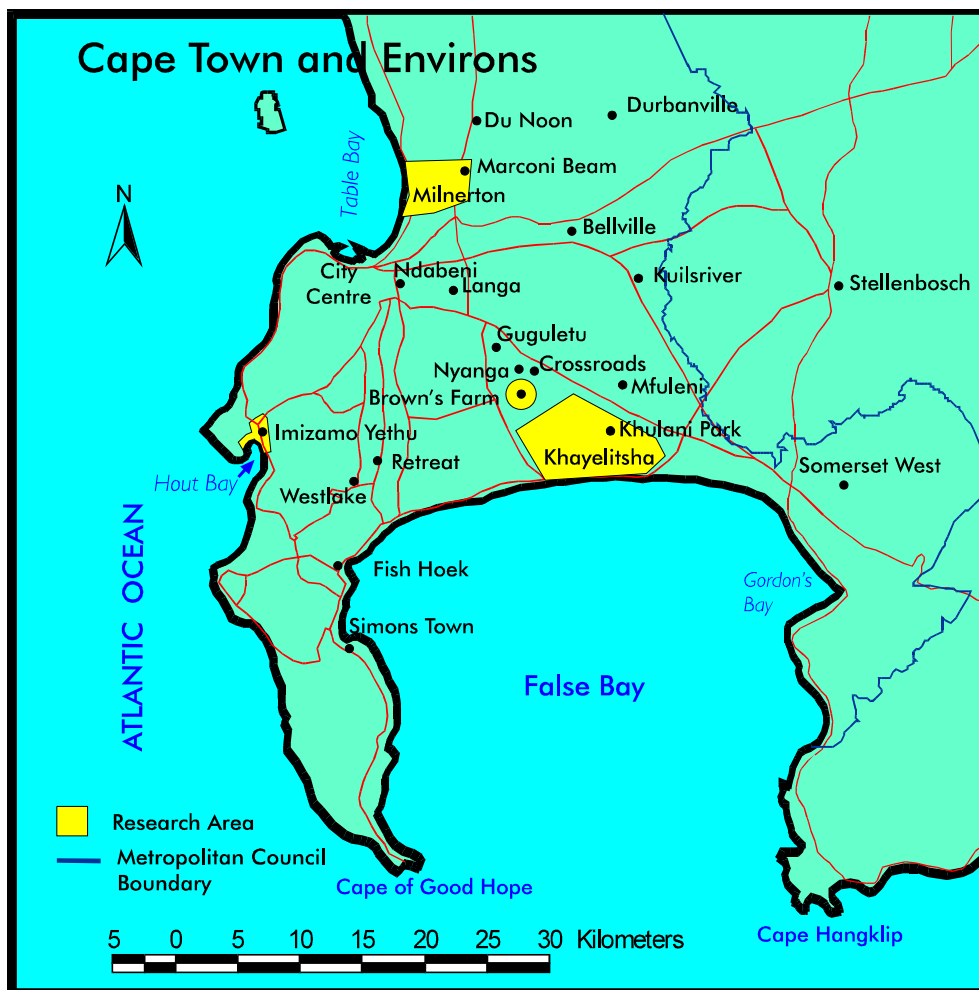


Figure 1.3 Cape Town and Xhosa-speaking Settlements showing the areas where Case Studies were conducted

This dissertation contains sensitive material. To protect the identity of key-informants who were actively involved in the case studies and the eastern metropole, the names of certain people have been changed where deemed necessary by the author. Instances where names have been changed have not been indicated in the work to further protect the identity of these people.

1.6 ASSUMPTIONS

This section describes some of the assumptions that are critical to this research. The first assumption is that the social change model described earlier that has been found to apply to other urban Nguni speaking settlements, applies to Xhosa-speaking settlements in Cape Town.

An assumption that is central to this research is that measuring system usage and potential usage constitutes an appropriate methodology to evaluate cadastral system effectiveness. The rationale underlying this assumption is argued in section 3.1.

A further assumption is that the primary focus of analysing the effectiveness of the cadastral system should be on the cadastral processes and the instruments generated as part of these processes. Structural factors should not be ignored in this primary analysis, but the assumption is that if the processes are found to validly support land tenure security, then an appropriate structure should be engineered around these processes. It serves little purpose to intervene in the structure of a cadastral system, and land administration in general, if the processes that such a structure supports are found to be inappropriate. The rationale underlying this assumption is articulated in chapters 2 and 3.

1.7 ORGANISATION OF THE DOCUMENT

The thesis consists of four parts.

Part I Introduction

Chapter 1

This chapter, chapter 1, develops the statement of the problem, the hypothesis and the research questions and describes the project plan. It also describes the historical and structural context of the research and reviews relevant social theory that has been found to apply in other urban Xhosa-speaking settlements.

Part II Development of Theory

Part two develops theory pertaining to conceptualising the problem of land tenure-cadastral system interrelationships and evaluating cadastral system effectiveness. It is divided into chapters dealing with general cadastral theory, theory concerning system evaluation and a description of the cadastral system and land administration in Cape Town.

Chapter 2

Chapter 2 establishes the operational definitions of particular concepts upon which the theory relating to the research is founded. It then develops a theory of cadastral systems in stable and unstable conditions during periods of change. Soft systems theory is firstly described as a foundation for developing operational definitions and conceptual views of the system of land management. The interrelationships between and within land management systems, cadastral systems, land administration systems, ownership and land tenure systems are conceptualised using systems theory and theory relating to corporate strategy formulation. Finally, having established this conceptual framework, theory concerning instruments and processes internal to a cadastral system is developed.

Chapter 3

Chapter 3 explores a definition of effectiveness and what constitutes an effective cadastral system. It then discusses options for evaluating effectiveness in the context of strategic management theory discussed in chapter 2 and what are the most important criteria for evaluating a cadastral system depending on its state of stability. From this it is concluded that social criteria are most important when the macro-environment is volatile and the cadastral system itself may be in an unstable state. Developing this thinking, social psychology theories that have been applied in the discipline of information systems to establish the effectiveness of a particular system have been reviewed. The theory of reasoned action and the theory of planned behaviour are then synthesised with theory developed in chapter 2 as an evaluative framework for analysing a land tenure system and predicting and analysing behaviour relating to the effective usage of a cadastral system.

Chapter 4

Chapter 4 describes South Africa's cadastral system and the structure of the land administration system in Cape Town. The reason for including these descriptions is that the aspects of the existing South African cadastral system have been used as a benchmark against which to evaluate the cadastral system-land tenure interrelationships found in the study areas.

Part III Data Collection and Analysis:

This section comprises chapters 5 to 10. The case study areas are reported and analysed in chronological order as the study progressed. The eastern metropole study was conducted in parallel with the case studies. The reason for adopting this structure is that the research questions and method of research were not clear at the outset. The focus of the research and the research method were developed as the study progressed. Consequently findings in study areas explored in the early part of the research could be tested and developed in other areas and the research questions and methods refined as these findings were developed.

Chapter 5

Chapter 5 describes the research plan and details the research methods used and the structure of how the data are organised and analysed. It discusses the selection criteria for the case studies, the case studies selected, the spatial and non-spatial data gathering techniques and the execution of the research plan. Moreover it discusses the validity and reliability of the data stemming from the biases and sources of error encountered in the data. Finally it discusses some of the problems encountered in conducting the research and the limitations of the research.

Chapter 6

Chapter 6 describes and analyses the Brown's Farm site-and-service scheme and then augments the findings derived from this case study with key informant interviews and a life history relating to other Xhosa-speaking areas of Cape Town such as Khayelitsha, Langa and Guguletu. It was not possible to conduct interviews in Brown's Farm itself,

but a combination of aerial surveys and key informant interviews proved to be rich data sources.

The chapter investigates the validity of the spatial data capture, processing and analysis used in the research. It then goes on to report the encroachment problems that were identified using aerial surveys, and describes the local level administration of the site as a rental scheme through to registration. Brown's Farm indicates that the existing cadastral system's instruments and processes are appropriate to the wants of the tenure system desired by the community. However, there is evidence of non-usage of the system in Brown's Farm. The reasons therefore are no more than speculative as a full investigation of these are beyond the scope of this dissertation.

Chapter 7

Chapter 7 describes a life history of a Xhosa-speaker who lived in Khayelitsha and had recently been granted registered ownership of a land parcel. It also documents the experiences and beliefs of officials and land professionals who worked or had worked in the Xhosa-speaking sector of the eastern metropole in the former Ikapa, Lingeletu and Mfuleni jurisdictions. This study strengthened the findings in Brown's Farm and given that many of the key-informants had worked in Xhosa-speaking settlements for up to 30 years, it provided a focus for the remaining case studies.

Chapter 8

Chapter 8 describes and analyses the Marconi Beam case. This community proceeded from living in an informal settlement to acquiring registered ownership during the course of this research. The chapter describes the *de facto* tenure system and the local level cadastral system and social processes that supported tenure security. Reasons for the so-called 'failure' of the system are given. The chapter also describes research into the system of beliefs, attitudes and behavioural intentions that residents wanted in the greenfields site to which they were to be moved, namely Joe Slovo Park.

Chapter 9

Chapter 9 discusses the Imizamo Yethu site-and-service settlement in Hout Bay. The settlement was studied due to problems encountered conducting interviews in Brown's Farm.

The Imizamo Yethu study explored beliefs, attitudes, intentions and actual behaviour relating to land tenure and the cadastral system in a settlement where residents expected to be granted registered ownership. Although parts of Imizamo Yethu can be regarded as informal property, the study was limited to formal cadastral parcels that were occupied on a short-term rental tenure.

Chapter 10

Chapter 10 discusses beliefs, attitudes, intentions and behaviour in Khulani Park, a suburb of Khayelitsha. It is one of the oldest registered Xhosa-speaking settlements in Cape Town. It completes the settlement types required to analyse the land tenure-

cadastral system interrelationships from the informal settlement stage through to registered property. A thriving secondary market in land has yet to develop, although a few sales had taken place at the time of the study and one respondent was found to have inherited his home. Moreover, financial institutions had attached a number of homes due to failure of the owner(s) to pay the mortgage bond repayments.

Part IV Synthesis of Case Study Analyses and General Theory and Development of System Design

Part IV consists of chapter 11, the analysis and conclusions to the dissertation. This chapter provides a synthesis of the results obtained in part III and then analyses the validity of the theory developed in chapter 2 and chapter 3. Finally it discusses the effectiveness of the existing cadastral system in Cape Town's Xhosa-speaking communities and some of the biases in this research that might militate against such effectiveness.

1.8 SCOPE AND LIMITATIONS

Security of tenure is a vast and multi-dimensional problem. Many of the variables in this equation are not controllable in that the designer(s) of a cadastral system has to abstract and model patterns that can be incorporated in a design. As is more fully elucidated in chapters 2 and 3, the performance of such a cadastral system depends on a host of social, institutional, spatial development and economic factors, over some of which the system designer(s) has little control and little power to plan and influence. The research is focused on an analysis of users' needs based on behaviour, behavioural intentions, norms and behavioural controls, and attempts to synthesise these needs with national land policy objectives in a cadastral system design.

Following from the above, and as stated earlier in this chapter, the analysis of cadastral system effectiveness in this research has focussed on cadastral processes and instruments. Structural factors such as institutions and human and technical resources have not been the main focus of this analysis.

Whilst being cognisant of costs and economic factors, the research has focussed primarily on social wants for cadastral instruments and processes to support land tenure security. Kotler's (1984:5) notion of demands, defined as wants for specific products that are backed up by an ability and willingness to buy them, has not been researched.

The study is limited geographically to the Cape Town metropolitan area and demographically to communities that are predominantly Xhosa-speaking, where individuals have the capacity, and in most cases the power, to make decisions concerning their family's land holding. Based on work by a number of social scientists discussed earlier, the research assumes that certain tenure practices in these communities may have a customary origin. However, it is beyond the scope of this work to investigate the correlation or possible modification of rural tenure practices with Cape Town's Xhosa-speaking settlement practices. The effectiveness of the cadastral system is influenced by *de facto* tenure practices. The historical development of such practices has

not been researched. The analytical perspective is that of the cadastral system analyst and how he or she can best model and support land tenure systems.

It is assumed that situations where political organisations or powerful individuals evict individuals from the community or coerce individuals to behave in a certain manner under threat of eviction or physical violence can not be controlled and addressed by a cadastral system. Consequently these phenomena have been observed and described but not explored or analysed in depth. These are situations that cadastral system designers and managers cannot control. These situations being where the legal authorities lack the legitimate power to govern effectively.

The scope of research excludes planning in the property development process described in chapter 4. The research is confined to cadastral system processes. Land use and allocation issues have not been explored. They are viewed as constraints, external to the research.

Problems encountered in this research were that access to certain areas was denied by influential groups, thus potential problems in these areas could not be investigated. Moreover, to get a representative sample of employed people who were decision makers in their households, it was necessary to conduct interviews at night. In one case study, security problems prevented the author from conducting interviews himself and these had to be conducted by a research assistant. Furthermore, the case studies involved communities who were willing to participate in the study and therefore the sample is not random or unbiased.

1.9 SUMMARY AND CONCLUSIONS

This research is concerned with the formulation, application and testing of substantive and methodological theory about defining and evaluating the effectiveness of a cadastral system during a period of substantial social, political and economic change. South Africa is currently undergoing such a radical transformation. Land issues are at the forefront of this transformation. The research explores means of analysing the effectiveness of a cadastral system during such a period when the stability of the cadastral system itself is questioned.

A characteristic of this period of change in Cape Town is that there has been a major influx of black Africans from rural areas into the City, many of whom live in informal and semi-formal settlements. Existing models of legal land tenure are being used to deliver rights of ownership to many of these people using the existing cadastral system to create and maintain these rights in land. The question is, firstly, whether this model of land tenure is appropriate and, correspondingly, if the cadastral system is likely to remain effective. Existing theory suggests that land tenure in these informal and semi-formal settlements is a fusion of customary and western tenure practices. This is an area explored in the research hypothesis. Furthermore, existing work suggests that these settlements comprise a plurality of individuals, groups and sub-groups, each with their own goals and objectives. Conflict is inherent in such situations as the forces of fission and integration are played out. Consequently, both group and individual biases in land tenure may be observable in different formats at different times in these settlements.

This study explores analytical frameworks and methodologies to evaluate the effectiveness of a cadastral system in a period of transformation. In so doing, the research explores if there is a suitable legal form of land tenure for people in Cape Town's Xhosa-speaking settlements and if the existing cadastral system will effectively support this. This analysis has to take place whilst the cadastral system serves a set of complex and sometimes competing objectives as determined by South African land policy. The primary objective of the cadastral system is assumed to be the support of land tenure security. Stemming from achieving this primary objective is a set of objectives served by a broader system of land administration that the system cadastral system should also support. As derived from the White Paper land policy document, these are specifically to sustain land as an instrument for loan collateral and to support the operation of a land market. The cadastral system should play a role in creating and maintaining sustainable land use patterns and rapid land release for development. Furthermore it should support land reform strategies implemented in the government's land redistribution and land restitution programmes.

This research has focused on cadastral processes and instruments that should support land tenure security whilst remaining cognisant of structural factors that influence cadastral system effectiveness and the broader land policy objectives that the system should also support.

ENDNOTES

ⁱ The Cape Nguni tribes have their roots in the Eastern Cape province, mainly in the Transkei and Ciskei regions, and speak dialects of the Xhosa language. Hammond-Tooke lists 12 tribal clusters, each with its own history and sense of distinctiveness. These clusters include Xhosa, Thembu, Mpondo, Mpondise, Bomvana, Bhaca, Hlubi, Xesibe, Bhele Zizi, Mfengu (Fingo), and Ntlangwini (Hammond-Tooke 1965:144-145, Davies 1998:67-68). van Warmelo (1974) notes that the three main Cape Nguni tribes in the Transkei-Ciskei region are the Xhosa, Thembu and Mpondo (van Warmelo 1974:61-62). Xhosa-speakers predominantly populated the case studies in this research, but there was also a sprinkling of other ethnic groups such as the so called 'Coloureds' living in these areas.

ⁱⁱ The term Cape Town has been applied to the Cape Town metropolitan area in the remainder of this document. This should not be confused with the City of Cape Town, which is one of six local authorities (municipalities) that comprise the Cape Town metropolitan area (see chapter 4). Where reference is made to the City of Cape Town, this term will be used. Otherwise Cape Town means the Cape Town metropolitan area. The term "City" prefixed by a capital letter means the Cape Town metropolitan area, whereas "city" prefixed with a lower case letter means cities in general.

ⁱⁱⁱ The city of East London in the Eastern Cape province (see Davies 1998).

^{iv} It is a desire not to perpetuate the use of racial classifications in this research. However, given the history of racially based legislation to segregate different races, the use of ethnically descriptive terms is unavoidable. In this research the term black African is applied to members of Africa's negroid tribes who speak a Bantu language such as Xhosa. 'Coloured' in the context of this research is generally a person who is of mixed descent and 'Whites' are people who are of European ancestry.

^v The South African Institute of Race Relations (1996:2) cites the following estimates for 1995:

- 41.9 million by Central Statistical Services
- 44.7 million by Development Bank of Southern Africa
- 44.5 million by Research Surveys.

^{vi} The South African Institute of Race Relations (1996:2) cites Bureau of Market Research figures for population growth rates of 2.4% per year for Africans, 1.3% for Asians, 1.4% for Coloureds and 0.7%

- for Whites. The South African Institute of Race Relations (1994:81) cites The Birth to Ten study figures of an annual rate of increase of Africans in urban areas of 3.5%.
- ^{vii} Observed in title deeds by the author. An example of the application of this strategy is the suburb of Harfield Village in Claremont. Title deed conditions were also used to prevent persons who were not of European descent from living in certain areas, e.g. the suburb of Rondebosch. The author has perused a number of such deeds dating back to the early part of the 20th century.
- ^{viii} van Warmelo (1974:61) notes that there are a number of tribes that make up the three groups in this particular classification. See note I above.
- ^{ix} The *mfecane* (Zulu), meaning a time of troubles, was a series of conflicts in the early 19th century which disrupted communities as far north as modern Malawi, Zambia and Tanzania (Thompson 1990).
- ^x First known as the Native Trust and Land Act but renamed in 1954.
- ^{xi} Author's experience.
- ^{xii} According to Liebenberg the action that sparked the unrest in 1984 was the Lekoa Town council's decision to raise tariffs for municipal services in five townships in the Vaal Triangle (Liebenberg 1993a:501). Rent and service boycotts commenced in the Vaal Triangle in 1984 and petered out in the 1990's (Liebenberg 1993a:508). However, in the author's observation in Cape Town, non-payment of rent and service fees in certain areas continued throughout the 1990's. Liebenberg (1993a:508) cites three reasons for non payment of rents and services: 1) it was a form of political protest; 2) other people felt that they had already paid the government the building costs of their houses and that it was consequently unfair to demand that they continue to pay rent; and 3) a third group could not afford to pay their accounts (Liebenberg 1993a:508).
- ^{xiii} Koen, discussions in 1997/1998, Tygerberg City Council, Khayelitsha Office (formerly Lingeletu West City Council).
- ^{xiv} Josette Cole, 8 October 1998.
- ^{xv} In the author's experience as a land surveyor working for the Cape Town City Council, it was often considered unwise to venture into certain areas because of factional conflicts during this period.
- ^{xvi} The UDF comprised a group of up to 600 organisations outside of the parliamentary process that resisted the State in the 1980's. Liebenberg (1993a:488) labels it "the ANC in disguise". The organisation was disbanded after the unbanning of the ANC in 1990.
- ^{xvii} Graham Lawrence 24 May 2011, Chairman of Executive Committee of South Peninsula Municipality. Lawrence had 34 years of experience in administering informal settlements and site-and-service schemes. He was Town Clerk of Lingeletu West City Council, which he started up in 1983 and he resigned in 1993.
- ^{xviii} Patricia Kreiner 13 September 1993. former Mayor of Cape Town City Council
- ^{xix} Figures derived from Urban Problems Research Unit (1990), and Mostert and Hofmeyr (1990) cited in Metropolitan Spatial Development Framework (1996:16).
- ^{xx} *ibid.*
- ^{xxi} Source Wesgro (1992) cited in Metropolitan Spatial Development Framework (1996:15).
- ^{xxii} Metropolitan Spatial Development Framework (1996) citing Wesgro (1992) and Urban Problems Research Unit (1990).
- ^{xxiii} The White Paper on Land policy presumes a land market (e.g. pages vii, 8, 17-19, 26). However, it became apparent from Land Tenure Reform working group meetings that there is a desire to ensure that formal, urban land is transferable. Moreover it states (p26) that "There is general agreement that the Subdivision of Agricultural Land Act 70 of 1970 must be phased out to free up the land market."
- ^{xxiv} Doug Milne, 23 July 1998. GIS Manager, Cape Town Metropolitan Council.
- ^{xxv} Dale in this instance refers specifically to the Torrens system.
- ^{xxvi} Discussion with John Bruce and Mike Roth relating to their experiences elsewhere in Africa, Land Tenure Centre, Madison, Wisconsin, 23.04.1997.
- ^{xxvii} Kotler (1984) defines a number of company orientations in the market place. Product orientation assumes that creating better quality physical products will stimulate demand. In contrast, a market orientation assumes that products should be created which meet the demands of the customer.
- ^{xxviii} A principle of project management is that the fabrication of any particular product entails a trade off between objectives emphasising quality, cost or time. Emphasis on one of these factors will impact negatively on the other two (Barnes M 1990:9).
- ^{xxix} Person is defined to mean an individual or juristic person in this research.
- ^{xxx} The two fundamental statutes which shaped the operational characteristics of the existing cadastral system are the Land Survey Act 9 of 1927 (replaced by 8 of 1997) and the Deeds Registries Act 47 of 1937. Details of the historical development of the cadastral system and the *modus operandi* of the

systems of land registration and cadastral survey are contained in texts such as Simpson and Sweeney (1973) and Jones (1976).

^{xxxvi} The term wants is preferred to needs or demand. Kotler (1984) classifies a hierarchy of needs, wants and demands. A human need is defined as a state of felt deprivation in a person. When a need is not satisfied a person will do one of two things – look for an object that will satisfy the need or try to extinguish the desire. Human wants are the form that a human need takes as shaped by a person's culture and personality. Wants are defined in terms of culturally defined objects that will satisfy a need. Demands are wants that are backed up by purchasing power. People should have the financial resources to purchase a product or service (Kotler 1984:5). In this research, needs and wants have been investigated, not demands. The term want is preferred to need in that want specifies the form in which a person desires a particular need to be satisfied.

^{xxxvii} The term legal cadastral boundary implies that the parcel boundaries were demarcated and surveyed and depicted on a general plan with the intention of registering the parcels.

^{xxxviii} Centre for Property Studies, University of New Brunswick, unpublished portion of proposal concerning Jamaica received from Wade MacLachlin. 25 May 1998.

^{xxxix} The notion of a residuary right of ownership is discussed in detail in chapter 2.

^{xl} Author's notes from Department of Land Affairs workshops on family titles in Pretoria in 1998.

^{xli} Author's notes. Discussions with Aninka Claassens, 7 April 1997; discussion with Johan Latsky, attorney, 24 May 1997; Louise du Plessis, Legal Resources Centre, Pretoria, 25/7/1997; author's notes from Department of Land Affairs, Land Tenure Reform Working Group, Family Titles Workshop, Department of Land Affairs, Pretoria, 26 March 1998. Apparently two Pretoria Supreme Court cases were *sub judice* on 28 March 1998. Author's notes from Department of Land Affairs, Land Tenure Reform Working Group, Family Titles Workshop, Department of Land Affairs, Pretoria, 23 August 1998

^{xlii} This was generally the male head of house

^{xliiii} The dwelling was normally a shack. The local authority supplied a serviced site with a road infrastructure, a toilet and water borne sewerage, and sometimes electricity. Ownership of the shack or the materials used to construct it at times belonged to partner who had left the site.

^{xliiii} Du Toit, 27 June 1997. Former senior official, Lingeletu West Municipality.

^{xliiii} The problem of high transaction costs deterring people from using the cadastral system is not unique to South Africa or sub-Saharan Africa. In Australia, similar problems occurred with Torrens titles in the early part of the nineteenth century. These have been, or are likely to be addressed by granting ownership based on adverse possession claims. Interviews by the author with land administrators in Victoria (John Barry, Assistant Director (Legal), Land Titles Office 10 February 1998) and Western Australia (Kent Steven Hudson and Kent Steven Hudson 12 February 1998) indicated that similar problems had been experienced in mining towns in these Australian states, where the owners' copies of the title documents had been conveyed privately between buyer and seller without the transactions being registered.

^{xliiii} See Larsson 1991:17 and chapter 2 for discussion on public witnessing.

^{xliiii} Kaffrarian deeds registry in King William's Town.

CHAPTER 2

LAND MANAGEMENT AND CADASTRAL SYSTEMS

“A whole is a synthesis or unity of parts, so close that it affects the activities and interactions of those parts....The parts are not lost or destroyed in new structure...their independent functions and activities are grouped, related, correlated and unified in the structural whole.” Smuts (1926)¹.

2.0 INTRODUCTION

This chapter establishes a framework to conceptualise the internal and external forces that shape the nature of a cadastral system and to understand the manner in which these forces determine cadastral system effectiveness. This conceptual framework is needed to address the major objective of this research, that being to formulate and test theory to evaluate the effectiveness of a cadastral system during a period of substantial change. In addressing this objective, the conceptual framework provides the first step in understanding where the primary focus of analysis should be when evaluating a particular cadastral system.

The conceptual framework is developed using systems theory, strategic management theory and existing cadastral theory. Within this conceptual framework, operational definitions of core concepts germane to this research such as land management, land administration, land tenure, ownership and cadastral systems are developed. Furthermore, to define what constitutes a period of substantial change, systems theory is used to argue that land management systems exist in stable states for long periods, where change is slow and incremental, interspersed with short periods of instability where change is substantial and fundamental. The theory developed in this chapter then leads on to an examination in chapter 3 of what constitutes an effective cadastral system in a particular set of circumstances and what is likely to constitute an effective system in future. Thereafter, an evaluative framework within which to explore, describe and analyse the data collected in this particular study is developed in chapter 3.

The conceptual framework developed in this chapter provides the means to holistically analyse a cadastral system in the context of its role in land management and land administration. The framework enables an analyst to establish which sub-systems of land management should be evaluated and where the focus should be in evaluating each sub-system.

Using the framework in this study has enabled the focus of this research to be established. The historical and structural context of the research discussed in chapter 1 indicates that numerous factors determine cadastral system effectiveness. Moreover, it was shown in chapter 1 that in addition to addressing the objectives commonly served by a cadastral system under stable conditions, in a society undergoing transformation, South African land policy has placed a number of new complex demands on the

cadastral system. The conceptual framework developed in this chapter is intended to guide cadastral system analysis within this multi-variate complexity.

In addition to developing the conceptual framework, what has been established is a set of operational definitions of core land management concepts that are germane to this research. Jeyanandan and Williamson (1990:82) note that there is a broad agreement on the definition of some of the terms used in cadastral research, such as cadastre. However, an investigation of the relevant literature illustrates that precise, universally accepted definitions for the terms land management, land tenure, land ownership, land registration, cadastral system, land information system and land administration have not been established. The distinction between meanings assigned to these terms is often blurred. Consequently, operational definitions have been developed as a synthesis of definitions in the literature and the author's experience.

In defining operational definitions, the Dictionary of Behavioural Science (1973) and the Dictionary of Philosophy (1984) reason that analysts often construct meanings to fit particular situations or their definitions are biased by their own experience. That is, meanings have been defined in terms of operations such as controlled observation or experimentation performed by the researcher. Most often operational definitions are used as a means for partial empirical interpretation of scientific concepts. One and the same scientific concept can be given several operational definitions indicating different empirical situations of applying the given concept (Dictionary of Behavioural Science 1973, Dictionary of Philosophy 1984).

This chapter is structured so that it firstly describes salient features of systems theory. Using systems theory, a theory of states of stability and instability of land management and cadastral systems is developed. The terms land management, land tenure, ownership, cadastral systems and land administration are then operationally defined and the conceptual framework of the interaction between these systems is developed thereafter. Finally, the sub-systems of the cadastral system relevant to this research are briefly described. To avoid repeating material contained in standard texts on land registration and cadastral systems, only details of what are considered to be cadastral sub-systems relevant to the data collected and analysed in this study are described.

2.1 SYSTEMS THEORY

This section describes some salient features of systems theory. Systems theory, and Checkland's (1981) application of systems thinking in particular, was found by the author to incorporate the most suitable methodology for conceptualising the interaction between a cadastral system and the systems of land tenure, land administration and land policy development as sub-systems of land management. In particular, the conjecture that cadastral or land administration systems may exist for long stable periods where change is incremental followed by periods of rapid, substantial change which may radically alter the nature of the system itself is underpinned by systems theory.

Systems thinking has been found to apply when analysing cadastral problems, as it has previously been used in conceptualising cadastral systems (e.g. Dale 1979, Barnes

1990). However, the application of Checkland's (1981) soft systems thinking described in the ensuing section to situations involving land tenure and cadastral systems does not appear to have been reported.

2.1.1 Systems Defined

Systems deal with the complex organisation of a number of different connected elements (Checkland 1981). A system can be defined as a collection of parts or elements that interact with one another to function as a whole, thus showing properties which are properties of the whole, rather than properties of the component parts (Kauffman 1980:1, Checkland 1981:3).

Senge (1990) portrays the philosophy of systems thinking by comparing systems of human endeavour (e.g. land administration) to natural systems such as weather patterns, which he argues are the product of a number of seemingly independent activities. Invisible fabrics of interrelated actions, which often take years to play out their effects on each other, bind natural systems and systems of human endeavour. Because individuals are part of these seemingly distinct actions in systems of human endeavour, it is difficult for them to visualise the whole pattern of change. There is a tendency to focus on snapshots of isolated parts of the system, and consequently the deepest problems do not seem to get solved (Senge 1990:7). Checkland (1981) notes that the philosophy underlying systems thinking is that a particular problem or phenomenon should be defined in terms of an irreducible whole. The components of this whole may be analysed individually but finally it is the whole that should be the focus of analysis. In analysing the above, the author's view is that systems theory espouses holistic methods of observation and analysis of phenomena which is appropriate when analysing cadastral systems, especially during periods of change. Systems theory challenges the reductionist philosophy of breaking down the universe into individual components and analysing them without taking cognisance of the whole.

2.1.2 System Characteristics

There are a number of theoretical standpoints within the systems discipline. For this research, Checkland's (1981) notion of soft systems thinking has been deemed most appropriate. Checkland's (1981) soft systems structure has been adopted as a skeleton for the following discussion, and the views of other systems theorists have been included to augment or clarify the discussion where appropriate. However, the author has devised some of the examples presented to illustrate possible applications of certain concepts to demonstrate the relevance of systems theory to this research.

Checkland (1981) posits that the systems model has four fundamental characteristics when applied to human activity viz. hierarchical structure, emergent properties of the whole, communication, and control. When applied to natural or man made entities, the crucial characteristic is the emergent properties of the whole (Checkland 1981:318). These four characteristics are now described and then the relevance of the theory to the analysis of land management systems and cadastral systems is illustrated.

2.1.2.1 Emergent properties

Emergent properties are the properties that whole entities exhibit which are meaningful only when attributed to the whole, not to its parts. Every model of a human activity system exhibits properties as a whole entity which derive from its component activities and their structure, but cannot be reduced to them (Checkland 1981:314). For example the emergent properties of the whole system of interrelationships between the sub-systems of boundary monuments, cadastral surveying, land registration, land information management and the social system interacting with these sub-systems defines ownership of a specific parcel of land. Individually these sub-systems do not adequately define ownership.

2.1.2.2 Hierarchy

Hierarchy implies that a system comprises a series of smaller entities which are themselves wholes. In the hierarchy, emergent properties denote the levels of each sub-system or component (Checkland 1981:314). For example, the systems of land registration and cadastral surveying can be viewed as sub-systems of the cadastral system, which is itself a sub-system of the system of land administration. Land administration can be viewed as a sub-system of the system of land management. Figure 2.3 is an illustration of a similar systems hierarchy.

2.1.2.3 Feedback communication and system stability

Feedback communication is the transmission of information about the actual performance of a system to the system itself (Kauffman 1980, Checkland 1981). Feedback can be perceived as positive or negative. In negative feedback the modification is to reduce or negate the difference between the actual performance and the desired performance of a system. For example, if a crosswind blows a cyclist off his chosen path, the cyclist will adjust the system comprising his person and the bicycle to return to the stable state of cycling on the chosen path. Negative feedback stimulates modification to negate change in the state of a system, and in simple terms the system oscillates around a particular path (or state) as it attempts to remain on track (Kauffman 1980, Senge 1990). Similarly, if a series of court cases indicate a general problem of land parcel boundaries being inadequately defined, and in so doing impact on the overall risks attached to land as loan collateral, then the authorities are likely to introduce legislation and operational procedures (e.g. cadastral surveying) that will negate this problemⁱⁱ. Negative feedback reinforces stability in a system.

Positive feedback induces instability in a system by reinforcing a modification in performance (Checkland 1981:85). It amplifies, or adds to any disturbance in the system. Each change in the system stimulates the system to cause more change (Kauffman 1980:20). Take for example, a system comprising a microphone, an amplifier and a speaker. If the initial sound signal received by the microphone is amplified and played back to it such that the amplified sound received by the microphone is louder than the initial input, this will cause the system to become unstable and it will very quickly cease to function. This second, louder signal received by the microphone stimulates a set of

repetitive loops of increasingly louder signals to be processed by the system until the signal reaches an intensity with which the system cannot cope (Kauffman 1980:20).

Most systems comprise sets of balancing positive and negative feedback loops. For instance the birth rate stimulates population growth, the death rate negates itⁱⁱⁱ. An imbalance between these counteracting subsystems will change the total population.

Positive feedback is considered explosive. A tiny spark can quickly cause enormous results unless there is a sufficiently strong balancing force (Kauffman 1980). For instance, newly introduced rabbit populations in Australia and New Zealand exploded from a few animals to large populations until stabilising forces checked the growth rate, but the end state is that the larger natural environment contains a far greater rabbit population than the initial input of rabbits.

In the author's analysis, a period where positive feedback is dominant is comparable with Kuhn's (1970) notion of a paradigm shift. Kuhn (1970) argues that scientists in a particular field and in a particular era possess a set of shared beliefs about the universe, and during that time that set of shared beliefs constitutes the dominant paradigm. Experiments are carried out within the boundaries of those beliefs and small steps toward progress are made. A paradigm shift takes place where major discoveries are made and the entire rationale underlying the system of beliefs changes. After a paradigm shift begins, progress is fast though fraught with tension as scientists work toward establishing a new paradigm (Peters and Waterman 1982:42, Checkland 1981:55, Kuhn 1970).

Positive feedback may induce a paradigm shift; a short period of instability as a system rapidly changes from one state to another. This may then be followed by a period of stability as balancing forces halt the rapid change. Thereafter, negative feedback forces are dominant and the system oscillates around this new, stable state or paradigm.

There is empirical evidence that this theory of short periods of rapid substantial change in a system followed by long stable periods applies to land management systems and cadastral systems. However, the theory does not appear to have been fully explored. For example, Williamson (1983) observes that in general change comes very slowly to land administration systems. Williamson's thesis is that major changes in land administration only accompany basic social changes within a country, usually during periods of instability, such as during a revolution or after occupation of a country by a foreign power. As evidence he cites major impacts on Western European cadastres that followed the instability of the French Revolution, which ended the feudal system. The subsequent actions of Napoleon I, who introduced cadastral systems into France but who also viewed a cadastral system as integral to managing an empire, were responsible for these impacts (Williamson 1983:6). Changes in land management practices in the former Soviet Union and Eastern Block countries (e.g. Albania, East Germany) in the past twenty years add support to this thesis^{iv}.

The relevance to this research of this theory of long periods of stability and short periods of rapid change and instability in systems is that, in the author's observation, South

Africa's land management system has been undergoing major changes in the 1990's^v. These changes are caused by social, political and economic forces that have resulted from a negotiated political settlement to a low-key revolution. During this period the cadastral system has come under scrutiny, in particular by government, for major changes. The changes envisaged in the 1990's have explored 1) what should be the emergent properties of the cadastral system (e.g. the tenure systems to be supported and legislation to be supported); 2) the nature of the operational sub-systems (e.g. surveying and land registration) and 3) the institutional structures to achieve these emergent properties (e.g. provincial or national responsibility for surveying and registration)^{vi}.

With respect to systems engineering, it is concluded from the above discussion that it is important in the first instance for the analyst to identify positive forces and balancing negative forces and to anticipate the consequences if positive forces of change should dominate. Thereafter, it is important to identify if a system is in a state of change. That is, is it experiencing a paradigm shift as positive forces dominate, or is it in a stable state? Depending on the particular situation, the analyst then needs to identify what the desired state of the system should be. Identifying if a system is oscillating around a stable state or undergoing a paradigm shift is central to arguments developed in chapter 3 pertaining to the methods used in evaluating a cadastral system in different states.

2.1.2.4 Control

Control is associated with constraints. It is the process by which a whole entity retains its identity and/or performance under changing circumstances. The decision making process ensures that control action is taken in the light of the system's purpose (Checkland 1981:313). Checkland (1981) posits that when taking an account of a control process, one should take into account at least two hierarchical system levels. An upper level system in the hierarchy is an alternative, simpler, description of a lower level system in terms of specific functions which are emergent as a result of the imposition of constraints. The rationale is that a pure description of the part does not determine the emergent properties that it contributes to the whole. The needs of the higher system determine this (Checkland 1981:87).

An example to illustrate the above is the contribution that the system of cadastral surveying (lower level system) makes to a cadastral system (upper level system). For the purposes of this example, the upper level cadastral system has defined as its primary purpose(s) the support of the system of land tenure security. The emergent properties wanted by the upper level cadastral system from the lower level surveying system is that the lower level system demarcates and maintains land parcel boundaries with as little ambiguity as possible so that boundary disputes will be minimised. In this way the sub-system of cadastral surveying contributes to the emergent properties required of a cadastral system. That is land tenure should be secure. In this example, secure land tenure may be a requirement of systems further up the system hierarchy, such as land management. The requirements for secure land tenure in the system of land management may be varied. For example secure land tenure serves a requirement of low risks to investment of capital and labour in their land by landholders. This in turn may contribute to a requirement for social stability and so on.

A detailed description of the sub-systems and processes of cadastral surveying, such as the operational procedures to be followed in the field during surveying, will not yield a useful description of the emergent properties demanded of the sub-system by the cadastral system. However, the primary purpose(s) of the upper level cadastral system of supporting land tenure security had to be taken into account too. Unambiguous boundaries contribute in part to land tenure security. They do not constitute it. More than two levels in the systems hierarchy were taken into account in describing what should be the emergent properties of cadastral surveying. Details of how these emergent properties of the sub-system are determined are not the concern of the higher level systems.

2.1.2.5 Summary and analysis

Checkland's (1981) systems model has four fundamental characteristics; these being hierarchical structure, emergent properties of the whole, communication, and control. The crucial characteristic for a particular system is the emergent properties of the whole, which are determined by higher systems in the hierarchy. Negative feedback communication negates change in a system and where negative forces are dominant, a system oscillates around a stable state. Positive feedback induces instability by reinforcing modification in a system. Where positive forces are dominant, the system endures rapid, substantial change.

The relevance of the above to this research is that in terms of systems theory, a cadastral system analyst should view land management systems and cadastral systems differently during stable periods and unstable periods. In stable periods, the analysis should perhaps be focused on improving how efficiently the emergent properties required of the cadastral system are produced. The emergent properties themselves are not likely to change substantially. This is essentially a focus on improving the operations and structure underlying the processes that create these emergent properties. In an unstable period, the emergent properties required of the cadastral system may change. In such circumstances, the cadastral system analyst needs to adopt a strategic focus on the purposes of the cadastral system in the context of a higher systems hierarchy. These different analytical perspectives of a cadastral system in stable and unstable states is fundamental to the conceptual framework embodied in the discussion surrounding figures 2.1 to 2.4 and in the discussion surrounding efficiency and effectiveness in chapter 3.

2.1.3 Hard and Soft Systems

Checkland (1981) argues that systems may be classified as hard or soft. As discussed earlier, the concept of soft systems is regarded as particularly relevant to this research. In theory, hard systems thinking assumes that problems can be formulated by the making of a choice between alternative means of achieving a known end (Checkland 1981:15). It is assumed that hard systems problems have clearly defined desirable goals, while soft systems problems do not.

Checkland (1981) contends that in contrast to hard problems, soft problems often have obscure goals. It is not always possible to design a system that is necessarily appropriate or in fact desired. Unstructured or soft problems are manifest in a feeling of unease but which cannot be explicitly stated. For example, depending on the context, the question: "Is land tenure in urban Xhosa-speaking communities secure?" does not necessarily identify a hard, clearly identifiable problem. It acknowledges perhaps that some tenure related problem exists in these communities. However, as chapters 6 – 10 in this dissertation will demonstrate, such a problem may be more aligned with other systems such as those designated to enforce law and order, than with systems whose primary purpose is to support land tenure security. For instance, if tenure security is problematic because gangsters or political organisations intimidate and evict legal landholders, then the situation is unlikely to be alleviated by altering the cadastral system. Systems relating to law enforcement, education, economic opportunities and employment opportunities and spatial development patterns are likely to be as much part of such a problem as cadastral and land tenure systems.

According to Checkland (1981), the soft systems methodology expresses the situation in which a perceived problem exists in terms of structure and processes and the relation between the two, rather than as a clearly defined problem. Moreover in soft systems, history always changes the agenda. "The contents of such systems are so multi-various and the influences to which they are subject so numerous that the passage of time always modifies the perception of the problem. Such perceptions of the problems are always subjective and they change with time." (Checkland 1981:155). Consequently, Checkland's model of soft system's practice views unstructured problems as conditions to be alleviated, rather than problems to be solved (Checkland 1981:155).

As is demonstrated in chapters 6 - 10, the emphasis of this research has been more on cadastral system processes than on the structure of the cadastral system itself. Consequently, the way in which structure and processes should be examined needs to be distinguished. Checkland (1981:166) notes that structure may be examined in terms of physical layout, power hierarchy, reporting structure and the pattern of communications, both formal and informal. Process may frequently be examined in terms of the basic activities of deciding to do something, doing it, monitoring how well it is done and its external effects, and taking appropriate corrective action. Checkland's experience suggests that the relationship between structure and process, the climate of the situation, has frequently been found to be a core characteristic of situations in which problems are perceived (Checkland 1981:166).

An analysis of the soft systems conceptualisation of problems as multi-various, subject to numerous influences and where the passage of time changes perceptions of the situation, shows that it aptly describes the social change model which is assumed to apply in Xhosa-speaking communities informal settlements in Cape Town. The social change model is essentially a soft system description of structures and processes. The social change model describes a human activity system that is dynamically moulded by the internal and external dialectics, where there are continual processes of fission and integration and transactional behaviour continually changes the rules. An observer's perception of problems existing in such a system is likely to change with the passage of

time and as one set of problems is alleviated by transactional behaviour, another set will come into play.

Analysing the above, the relevance to this research is that in evaluating a cadastral system, the initial internal focus should be on establishing whether the cadastral system processes are appropriate to what is required of the system. Thereafter the focus of attention should be on the structure underlying a particular set of processes. This is especially important in a period of substantial change, an unstable state, where it is possible that there may be substantial changes in the emergent properties required of a cadastral system. An analysis of structure should also examine systems that are higher up the systems hierarchy than the cadastral system. For example, as stated earlier in this sub-section, systems relating to law enforcement and employment opportunities may strongly influence a situation where a cadastral system is deemed to be ineffective even though the processes underlying the cadastral system may have been found to be appropriate.

2.1.4 Systems, Environments and Components

In the formal systems model, environment is what lies outside the system boundary (Checkland 1981:314). Dale (1979) notes that the basic problem is to isolate a system from its environment, and to determine which components interact. Checkland's (1981) view is that in the hierarchy, what is important to note is the difference between a system and a component that is not considered a system, and between a higher level system and an environment. If analysis is pressed to lower and lower levels in greater detail, then below sub-systems and sub-sub-systems etc. will eventually be found items which from an analyst's view of a particular situation are not systems at all but only system components (Checkland 1981:174). It is concluded that in the analyst's operational definition of his or her system, a component's emergent properties are judged to be static and assumed not to change. Checkland views an environment as a higher level entity, which in the analyst's judgement cannot be engineered, the distinction being that an environment is something that may hopefully be influenced, whereas a wider system can in principle be engineered in trying to achieve a specific objective (Checkland 1981:174).

By way of example, a manager in a Surveyor General's office has the power to engineer certain structures and processes within that office. He or she has limited power in engineering land policy, as this is the domain of politicians and strategic thinkers within the relevant government department. However, this manager can probably influence land policy in terms of what is operationally possible in the domains of cadastral surveying and land information management by lobbying or advising politicians and strategic thinkers^{vii}.

It should be noted that in soft systems thinking the definition of what is a static component and what is an environment is itself not static. The analyst temporarily allocates a particular status to things, but the definition can change as the analysis evolves (Checkland 1981:175).

2.1.5 Systems Thinking and Reality

Checkland emphasises that systems are difficult to identify in reality. The intellectual constructs are themselves simpler than reality, but may be checked against it (Checkland 1981:247). Systems thinking is a way of trying to understand the world's complexity: it is a way of ordering our thoughts to make intellectual constructs pertaining to complex reality (Checkland 1981:3-4). Systems are operational models of the world, not the world itself; i.e. they are imperfect predictions of human behaviour. "(W)hen a model of a human activity system does not match observed human activity the fault might be the model builder's but it also might be due to the autonomous real world behaviour of human beings. We cannot expect a match between model and reality... both because of the multitude of autonomous perceptions and because those perceptions will continually change... They (systems) are tools of an epistemological kind which can be used in a process of exploration within social reality." (Checkland 1981:249).

Cook (1994:20) notes that: "A fundamental starting point in modern general systems theory is that a system can have a number of representations, depending on the 'frames of orientation' or paradigms of different observers. A 'frame of orientation' is the means whereby an observer is oriented intellectually with observations of worldly phenomena."

In a cartographic example, systems are generalisations of reality. A map may be thematically designed as a communication tool for a specific purpose. Different applications or purposes for a map may necessitate different design methodologies and generalisations to communicate different information about the same piece of topography. It is therefore imperative to avoid attempting to elevate an operational model of the world into an absolute reality. Furthermore, in the author's interpretation, conceptual situational views of a system are operationally defined in terms of the higher objectives within which a particular problem situation is categorised. The systems hierarchy and definition of systems, environments and components are assumed to be changeable according to these objectives.

Analysing Checkland (1981) it is concluded that he does not rigorously define boundaries and levels between systems. The definition of a whole or a system is situation specific. It is defined in the eyes of the analyst as an intellectual construct^{viii}. For example, it is difficult to establish clearly and distinctly the relationship between land tenure, a cadastral system and a land administration system. A land administration system can be narrowly defined as a component to support a broad definition of land tenure (e.g. Nichols 1993), but in reality, in most situations land administration encompasses far more than this. A cadastral system may be broadly defined to incorporate all the systems that support land tenure security, but in many situations the information flowing from a cadastral system may be critical to a number of other land administration functions. It is impossible in reality to fully encapsulate a cadastral system as a component of either land administration or servicing land tenure security. It has as a minimum a dual purpose or mission, and in reality serves multiple-purposes.

In analysing Checkland's (1981) work, it is argued that although systems thinking is supposedly the antithesis of reductionism, the analyst nevertheless has to reduce a

conceptual view of a situation to a manageable whole. An analyst has to set hierarchical and, in the author's view, horizontal limits on where analysis, and consequently engineering, of a situation or system is possible and what are components and what are environments. Developing this reasoning within the paradigm of land management, the Venn diagram in figure 2.1 represents a particular, focused analytical view of the sub-systems within land management. In reality, land management, as it is defined later in this chapter, encompasses far more systems than those represented. The interactions between the cadastral system, the systems of land tenure, land administration and land policy development are represented by sets in figure 2.1. In this representation, there are aspects of the system of land policy development that incorporate the cadastral system and aspects which do not pertain to the cadastral system. Similarly there are aspects of *de facto* land tenure which the cadastral system can model and there are aspects which fall outside the domain of the cadastral system e.g. unethical, illegal practices are unlikely to be modelled in a formal cadastral system.

In terms of the above theory, an analyst who uses systems theory to create an intellectual model of a particular situation may set out to evaluate a cadastral system. However, the systems hierarchy that he or she creates in interpreting a given situation may persuade the analyst that it is inappropriate to evaluate the cadastral system at all at a particular time. Instead, he or she should rather focus on intervening in aspects of other systems. For example, if unethical, illegal practices in a system of tenure dominate to the extent that it is not possible for the institutions of government to manage the cadastral system, then evaluating the cadastral system will serve little purpose. Issues relating to governance and the tenure system should be the primary focus of attention. Figure 2.1 provides a graphic representation of how an analyst can conceptualise the interaction of different sub-systems of land management in complex, changing situations where a paradigm shift may be in process.

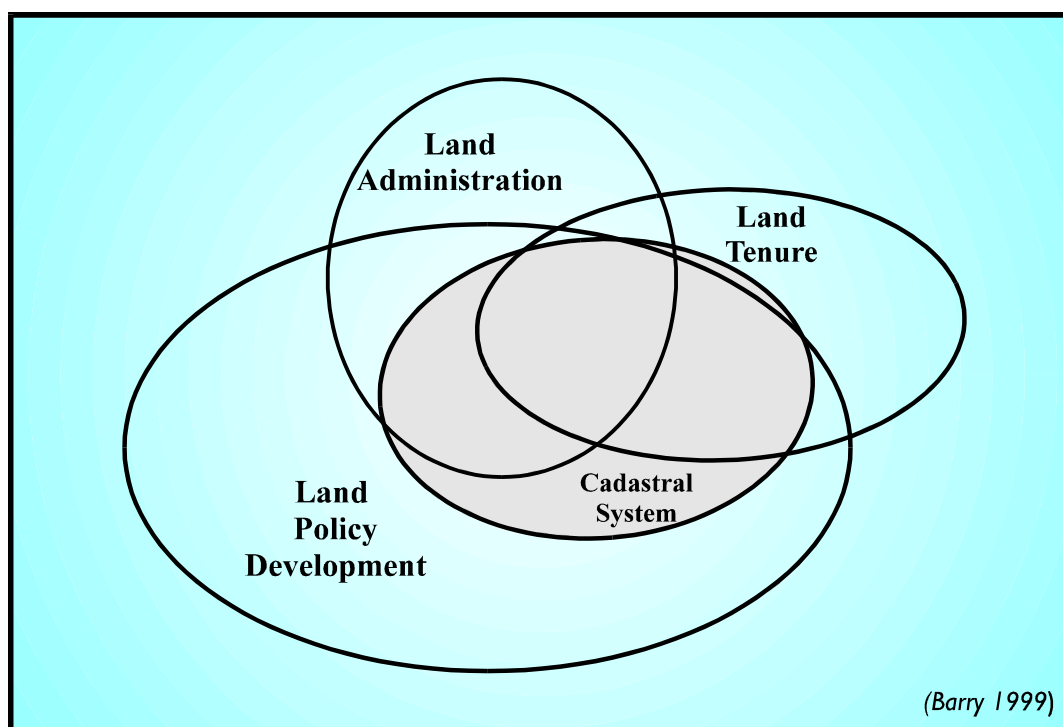


Figure 2.1 Modelling System Hierarchies in Land Management

In the scenario portrayed in figure 2.1, an analyst needs to extract the intersection of interacting components of each system for a given situation and perhaps consider other non-intersecting parts of these systems as environments or separate systems. Having done this, drawing on the cartographic example above, then the analyst should develop a systems hierarchy according to the particular situation that is being analysed^{ix}. For instance, under one set of circumstances a cadastral system may be viewed as a sub-system of land tenure. In another analytical situation a cadastral system may be viewed as a sub-system of land administration which is a sub-system of land tenure or vice versa. Furthermore, there are components of systems that are not contained in the wider system above it in the analyst's hierarchy. For instance, there may be elements of land tenure that do not fall under the umbrella of land policy (e.g. a situation where gangsters control land allocation and occupation).

What is important in the author's analysis though, is that the analyst's conceptualisation of a systems hierarchy comprises an irreducible but manageable whole insofar as the particular situation being analysed is concerned. It may be necessary to construct and reconstruct several systems hierarchies as the analysis of a situation progresses.

In conclusion, systems are imperfect conceptual models of reality. Analogous to operational definitions, systems hierarchies should be defined according to a particular analytical situation. In so doing, the analyst may have to extract parts of a particular system or sub-system to fit it into a particular conceptual hierarchy and exclude other parts of it, which are then viewed as being part of an environment. What is imperative is that the domain of this conceptual hierarchical model is defined sufficiently broadly so that the resulting analysis is valid and essential constituents are not left out.

2.1.6 Systems Thinking and Cadastral Research

Systems thinking is not a new set of principles in the context of cadastral research. It would appear from the literature that researchers have applied systems concepts in cadastral research (e.g. Cook 1994, Dale 1979). However, the theory that underlies systems thinking and soft systems practice application to cadastral research has not been explored in depth.

In this study, Checkland's (1981) soft systems thinking has been used to create a framework for formulating operational definitions, modelling the structural relations between different systems, developing systems hierarchies and establishing the situational analysis in this research. A comprehensive soft systems methodological study of cadastral systems and land management embracing systems thinking and systems practice espoused by Checkland (1981) is an area for further research.

2.2 LAND MANAGEMENT AND THE CADASTRAL SYSTEM

In this section, operational definitions of land management, land policy, land administration, land tenure and ownership and cadastral systems are established. Systems theory, as applied by Checkland (1981), is used to conceptualise the various interrelationships between these systems. The systems hierarchy is constructed from the viewpoint of a cadastral system analyst with the object of developing part of the conceptual framework used to analyse the relationship between a cadastral system and land tenure systems and to evaluate the effectiveness of a cadastral system.

Land management is placed at the top of this systems hierarchy and the cadastral system at the lowest level. The systems are described in a top down structure, commencing with land management and ending with a detailed description of a cadastral system. These systems are the systems of land policy development, land administration, land tenure, land ownership and the cadastral system. However, as the discussion relating to figure 2.1 and figure 2.2 illustrates, the order of these different systems in a systems hierarchy is situation dependent. In different situations and from different analytical perspectives, an analyst may create different conceptual hierarchies of these particular systems.

2.2.1 Land Management Defined

Land management is operationally defined as a system embodying the strategic planning, policy development and policy implementation processes related to land. Within this definition, land management is viewed as including programmes that *inter alia* address land occupation, land use, the natural environment, natural resources, agriculture, transportation and utilities. As discussed later in this chapter, policy implementation is assumed in the main to be executed by the system of land administration.

The literature supports the above broad definition. For example, Nichols (1993:35) describes land management as the process of making and implementing decisions about how land and its resources are distributed, used and protected in society. Dale and McLaughlin (1988:6) view land management as including the policy formulation, land development and land use plan preparation and administration of a variety of land-related programmes involving both the public and private sector. It is concluded that the author's definition is in harmony with these definitions and those of other authors.

2.2.2 Land Management Structure

This sub-section describes the structure of the system of land management. In keeping with the context of this research, figure 2.2 depicts a land management systems hierarchy from the specific viewpoint of a cadastral system analyst. It follows from the earlier discussion on systems theory, in particular the example illuminating the systems comprising land management portrayed in figure 2.1, that different land management systems' hierarchies containing a cadastral system can be constructed, depending on a particular analytical view of a situation. Under different circumstances and different states of stability, the immediate objectives served by the emergent properties of the cadastral system that the system analyst seeks to address may be different. For example,

in a situation where there is fundamental social change, the analyst can be expected to focus on the cadastral system's emergent properties required to achieve secure land tenure. In contrast, take for example a situation where there is social stability and the cadastral system effectively serves the requirements of land tenure security (a harmonious land tenure-cadastral system interrelationship). If society is experiencing an economic boom, the analyst might focus on new land information requirements needed by the system of land administration to support and sustain economic growth. In a stable situation where overall there is a balance between positive and negative forces, the analyst might focus on minor, incremental adjustments to the cadastral system to reduce the number of land related disputes. Concluding, the model assumes that there are numerous systems of which the cadastral system is a sub-system in a complex land management system and these systems vary over time.

In figure 2.2, from the cadastral system analyst's perspective, a cadastral system in a land management hierarchy is conceptualised as comprising an internal system consisting of the cadastral system itself and its various sub-systems which are described later in this chapter. At the next major level in the hierarchy is the cadastral system's immediate task system and above this is the macro-environment.

The task system is the set of systems which determine the tasks, the processes and outputs of these processes, to be performed by the cadastral system. The notion of a task system comprising a number of wider systems that may be viewed in different hierarchical configurations has been adapted from Dill (1957) and from McLachlan (1997). Though not adhering to systems theory, Dill's model of a separate task environment^x and general environment is based on the premise that there are environments that are close to an organisation and those that are further away and therefore less influential in determining organisational behaviour (Dill 1957). This is similar to the systems theory concept of a multi-level systems hierarchy and the author has used both Dill's (1957) theory and Checkland's (1981) theory to create the conceptual model portrayed in figure 2.2.

The task system conceptualised in figure 2.2 comprises all the sub-systems of land management that are above the cadastral system in the land management system hierarchy that set requirements for the cadastral system. The cadastral system performs tasks for the set of land management systems in the task system. These include *inter alia* the systems of land tenure, land administration and land policy development. As discussed earlier in the introduction to section 2.2, in this conceptualisation, the hierarchy of systems in the task system depends upon the particular situation that the cadastral system analyst has to address. The systems of land administration, land tenure and land policy development might occupy different positions in the land management hierarchy for different analytical situations. Consequently, in figure 2.2 they are represented as being on the same level as the task system in the systems hierarchy to be arranged by the analyst in a given situation. The macro-environment is a set of elements external to the system of land management that the cadastral system analyst assumes he or she cannot engineer, but perhaps might influence.

Adapting and extending the work of Aguilar (1967:11) and Fahey (1994:327) on corporate strategy formulation, the macro-environment is defined as comprising a blend of elements commonly listed in descriptions of organisational environment analysis. These elements are the social, political, legal, physical, technological and economic milieu.

It should be noted that the arrangement of internal systems, task systems and the macro-environment is not dissimilar to, and indeed it has been substantially influenced by, the classical model for strategic planning, based on defining and analysing an organisation's internal and external environments. The model is believed to have first appeared in the 1960's (e.g. Aguilar 1967) and has been sufficiently robust to continue to be used in the 1990's (e.g. Fahey 1994, Hamermesh 1990).

Based on Checkland's (1981) application of systems theory, the macro-environment is considered to be a set of systems that a cadastral system analyst cannot engineer. He or she may be able to influence these systems though. However, in this conceptual framework, it may be possible for the cadastral system analyst to engineer certain systems in the task system.

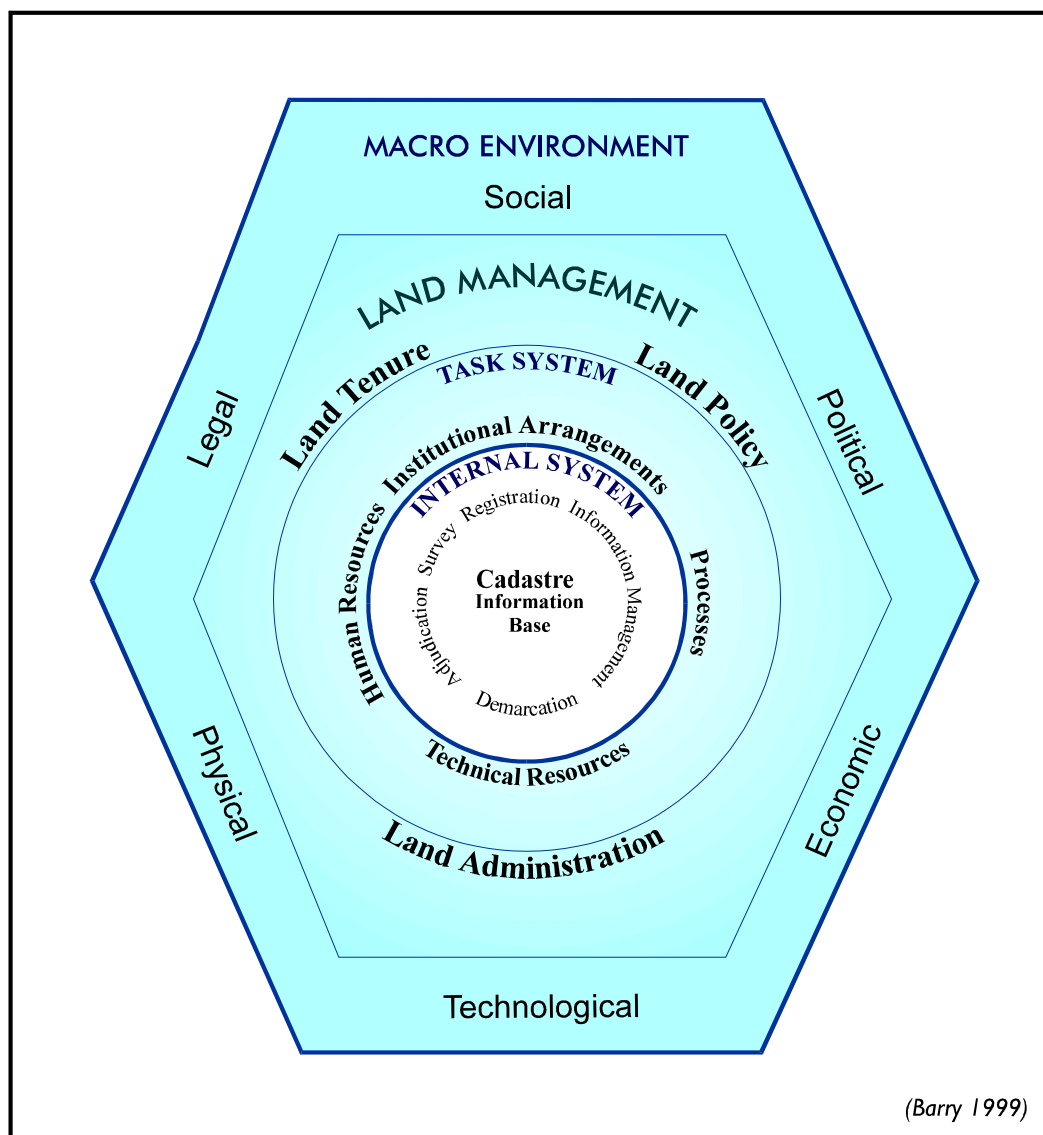


Figure 2.2 Land Management and the Cadastral System

2.2.3 The Macro-Environment

This sub-section briefly describes the set of elements in the macro-environment. Drawing on strategic management theory, in particular the work of Aguiler (1967:11) and Fahey (1994:327), and on cadastral theory by Nichols (1993:35-41), Hoogsteden and van Zyl (1992a) and Larsson (1991), the macro-environment to the cadastral system is defined as the social, political, legal, physical, technological and economic milieu. Details of each of these elements are described below.

1. **The social milieu** consists of demographics, life styles and social values. Social changes can be brought about through shifts in age structure, mobility of the population, how people live their lives and changes in social values (Fahey 1994:328). In the author's view, as argued earlier in this chapter, social change

can have a major impact on the emergent properties of the cadastral system. For instance, a migration from rural areas to urban areas can affect lifestyles in terms of the way people wish to live and consequently the system of land tenure wanted.

2. **The political milieu** consists in the formal institutions of government; these being the executive branch, the legislatures, the judiciary and the regulatory agencies. It also includes the electoral processes and the informal arenas such as the media and local community arenas (Fahey 1994:328). Interpreting Larsson (1991), political ideology and government and land policy establish the vision, goals and general objectives of land management (Larsson 1991:2). The author's observation of South Africa's history of land ownership supports the notion that ideology is a major influence in determining the formal systems of land tenure to be supported in land policy. The author's model in figure 2.2 differs slightly from Fahey (1994) in that the legal milieu is considered a separate environmental element. The author's experience in South Africa suggests that it is necessary to separate the two when conceptualising land management systems as opposed to business management systems.
3. **Economic activity** is reflected in levels and patterns of industrial and agricultural output, productivity, consumption, income and savings (Fahey 1994:328). In the author's opinion, on a national level, formal and informal economic activity and economic policy should be major influences on land policy and on land use planning and administration frameworks.
4. **The legal environment**, in the author's definition, consists of the statutory frameworks, the common law, constitutional law and customary laws that regulate land use and land tenure arrangements. A number of authorities in the domain of land management argue that a country's law and the historical influences on its laws are regarded as a major input into land management and its sub-systems (e.g. Nichols 1993:33, Holstein *et al* 1985 cited in Dale and McLaughlin 1988:7).
5. **The technological milieu** concerns the level and direction of technological progress and advancements taking place in society (Fahey 1994:328). In the author's observation, cadastral systems are often at the forefront of technology. Some twenty years ago, Dale (1979) noted: "The ways that cadastral systems have evolved have often been dependent more on technology and what is technically possible than on the dictates of land law and people." Dale (1979:29). In the 1990's, the author has observed that technological forces are being exerted in land management by substantial advances in information technology, telecommunications, mapping and positioning systems.
6. **The physical environment**, in the author's view, consists of the topography, weather patterns, soil type, water and natural resources. It also consists of the urban and rural infrastructure such as transportation networks. The physical environment is a factor in all the systems that make up the land management

system. In addition to land policy, policies relating to natural resources, transportation, the natural environment and agriculture all have to be served, directly or indirectly, by the cadastral system. Furthermore, as discussed in section 1.3.9, a direct influence on cadastral system structure is the ease of access to the system and costs of providing cadastral benefits.

Acting in concert, macro-environmental factors shape the nature of land management and, through the hierarchical structure, the cadastral system. Much of this theory has been reported before in cadastral literature (e.g. Hoogsteden and van Zyl 1992a:413, Nichols 1993:33), but not in the same conceptual framework developed in this dissertation.

2.2.4 Land Policy

As it is conceptualised in figures 2.1 and 2.2, land policy development within a system of land management applies to a number of interrelated sub-systems such as land tenure policy, natural resource policy, environmental policy and economic policy. The notion of land tenure policy discussed below is regarded as a sub-system of the system of land policy development.

In the author's observation, land policy comprises a complex of social, political, economic and legal prescriptions that dictate how the land and benefits from the land are to be allocated. These prescriptions tend to be responses to challenges emanating from forces in the macro-environment. Policy should express what government envisages within the canons of its social, political and economic philosophy^{xi}. For example, current South African land (tenure) policy's strategic challenges and goals address social and economic objectives as well as land tenure and land use objectives. Broad strategies to achieve these objectives have been formulated in terms of land redistribution, land restitution and land tenure reform programmes (Rep. of South Africa 1997a:8-9).

In the author's view, land policy would ordinarily reside at the top of the hierarchies of most cadastral analysts' land management systems. The reasoning is that in a stable state, land policy would determine the types of land tenure that should be legally supported and the land administration system would be designed to administer these tenure types.

However, the discussion surrounding figures 2.1 and 2.2 illustrates that under certain conditions, it is conceptually possible for land policy to occupy different positions in this land management systems' hierarchy, especially during a paradigm shift. For example, in section 1.3.4 it was stated that the present central thrust of South African land policy is the land reform programme. In the author's observation, an impediment to implementing the land redistribution part of this programme after 1994 was that the cadastral system's information products had not been specifically designed to support such strategies. For example, as part of addressing the objective of rapid land release for development, one task of identifying all state owned land parcels to investigate their suitability for redistribution and development could not be achieved easily. In this case

land policy had created a new requirement of the cadastral system which had little to do with land tenure definition.

A cadastral system analyst in this situation would have to examine the systems in the task system depicted in figure 2.2 and create a systems hierarchy according to the situation at a specific time. In this instance it might mean that for the higher purpose of social stability, information relating to unoccupied state land might be of more urgent importance than long term land tenure security. Consequently this particular requirement of land policy, not land tenure, would occupy the position immediately above the cadastral system in a systems hierarchy.

2.2.5 Land Administration

Land administration is defined in this research as comprising the sub-systems that actualise strategies to implement land policy and other policies within the land management system. Land administration is the binding strategy implementation system. It comprises a number of operational systems, and the emergent properties of each may support a number of different land related policies. For example, the sub-systems of land administration depicted in figure 2.3 each serve their own core strategic objectives, but it is suggested that they are each connected to each other in some way. For example, planning the supply of utilities is likely to depend on accurate cadastral information.

The writings of Alberts *et al* (1995) and Dale and McLaughlin (1988:6) endorse the author's broad land administration definition above. Alberts *et al* (1995) note that: "Land administration serves a number of broad social objectives (e.g. to effect a more equitable distribution of resources); economic objectives (e.g. to foster economic growth by using resources more effectively and to generate revenue); environmental objectives (e.g. to protect scarce and fragile resources); and political objectives (e.g. to connect government more closely to its citizens). As such, land administration is affected directly and indirectly by policies, laws and organisational arrangements which impact first on creating/recognising property rights and second, on imposing restrictions and/or duties related to those rights." (Alberts *et al* 1995:2). Dale and McLaughlin (1988:6) state that land administration includes the functions involved in regulating the development and use of land, gathering revenue from land and resolving conflicts concerning the ownership and use of land.

There are, however, contrasting conceptualisations of land administration to the one espoused by the author, Alberts *et al* (1995:2) and Dale and McLaughlin (1988:6). For example, Nichols (1993) narrowly defines land administration as a mechanism to support the land tenure system. It is the author's contention that land administration serves far wider objectives. However, the debate justifies the approach of using operational definitions in a conceptual framework and the approach of creating different systems hierarchies for particular situations. It was mentioned earlier in section 2.0 that there are diverse, overlapping definitions for many of the terms defined in this section on land management.

Figure 2.3 depicts the relationship between a sample of systems that land administration supports and policies at a higher level in the hierarchy. It is envisaged that each of the sub-systems of land administration (e.g. transportation) represented in figure 2.3 is handled by one or more different institutions.

In harmony with Checkland's (1981) view of systems theory, in the author's experience land administration is a conceptual, not physically identifiable, system. As the discussion on land administration in Cape Town in chapter 4 illustrates, there is seldom a single authority responsible for integrating land administration. The need to share information is actualised in both formal and informal systems of land information management that are perhaps the most visible fabrics of interrelated actions that bind a land administration system. A detailed theoretical description of this falls outside the scope of this work and a brief example of this concept is provided in the discussion on land administration in Cape Town in chapter 4.

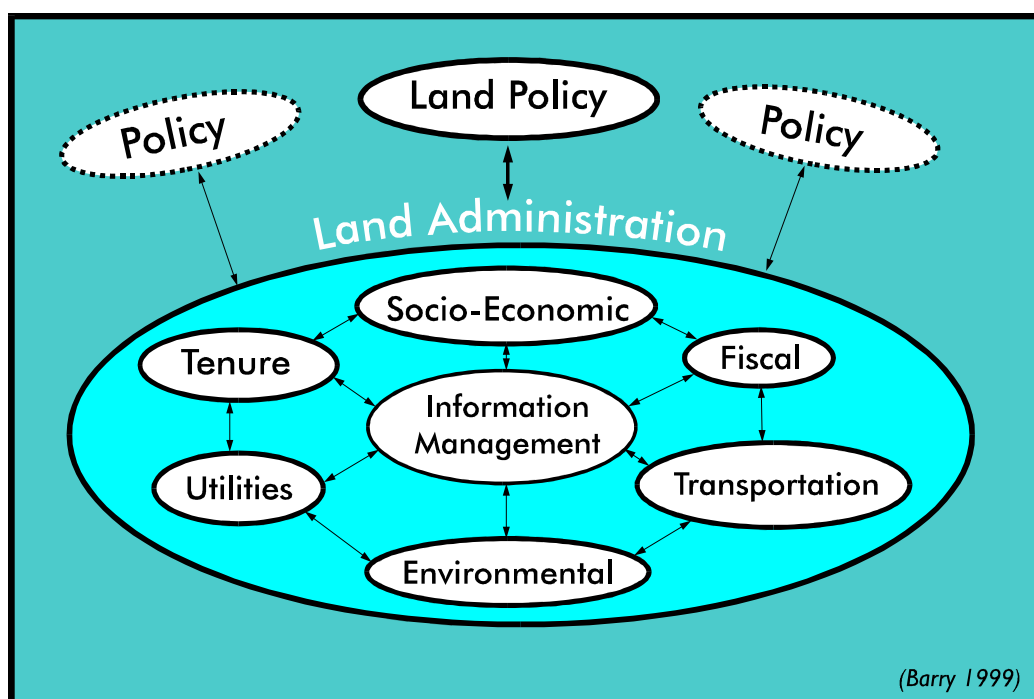


Figure 2.3 Land Administration

The portrayal of land administration as conceptualised in figure 2.3 assumes a stable land management system where the analyst has excised the components of relevant higher and lower systems that are viewed as exogenous to land administration. Referring to figure 2.1, the assumption(s) underlying figure 2.3 is that the *de facto* land tenure systems match *de jure* tenure. That is, *de facto* tenure systems are congruent with espoused land policy. Furthermore, the actual emergent properties of land administration systems are assumed to be in harmony with land policy. In figure 2.3, it is assumed that the cadastral system is wholly a sub-system of land tenure, which falls wholly within land administration etc.

2.2.6 Land Tenure

This sub-section defines land tenure as a matrix of social and legal relationships. Land ownership is subsequently defined as a component of land tenure in section 2.2.6.1.

Land tenure, derived from the Latin *tenere* - to hold (Simpson 1976:27), is defined as a system incorporating the way in which land is defined and held. It is argued in this sub-section that land tenure comprises a matrix of social and legal relationships that support and negate the holding and use of land by individuals or groups of people. Based on Nichols (1993:31), this social-legal matrix is viewed as the system of rights, responsibilities and restraints people have with respect to land.

As the discussion on the social change model in chapter 1 indicates, land tenure is not static as both rules and social relationships continually change. A synthesis of the work of Nichols (1993:31), Home and Jackson (1997:2), Bohannan (1963:103-107) and Barnes (1990:2) points to land tenure being determined by a co-extensive set of political, economic, religious, cultural, historical and legal factors. These factors closely match the macro-environmental elements depicted in figure 2.2, as they are either the same as the macro-environmental elements or sub-sets of them. For example, religious and cultural factors can both be classified as social factors. In the author's view physical factors (e.g. soil fertility) also shape land tenure. Technology too, although perhaps sporadically and infrequently, is also posited as a factor that shapes land tenure. For example, improvements in agricultural implements and methods may foment change in land tenure practices.

Tenure may be regarded as formal, which in most instances is likely to be a legally supported form of tenure, and informal. Informal tenures are likely to be extra-legal, although South African land policy envisages extending security of tenure to millions of people who live in insecure arrangements on land belonging to other people as a challenge to be addressed (Rep of South Africa 1997a:viii). Extra-legal tenure is not necessarily illegal. For example, *de facto* family tenure emanating from unadministered intestate succession is not illegal, but it has evolved outside of the formal legal processes. It is therefore possible for extra-legal tenures to become legally recognised over time.

In the discussion in section 1.3.6.1, it was stated that in urban African settlements there is often not a clear distinction between formal and informal tenure. The work of Davies and Fourie (1998:240) and Doebele (1994:48) suggests that many urban African settlements exist on a continuum of formal and informal processes. There is not a duality of "legal" and "not legal" tenure. The real world contains a complex mixture of formal and informal systems with infinite variations in between.

Analysing the above, the requirements that land tenure systems place on a cadastral system are that the cadastral system should model and administer the aspects of the system of rights, responsibilities and restraints in land that are firstly supported by land policy. Secondly, these land tenure practises should comply with social practises that are

ethically and legally acceptable, or if such practises are not legal in a particular situation there should be the potential for them to become legally recognised over time.

2.2.6.1 Ownership

A definition of ownership is essential to the analysis of a land tenure system and the design of an appropriate cadastral system. Firstly it is necessary to assign distinct meanings to the terms landowner, landholder and tenant. Secondly, defining ownership is important because the discussion in chapters 6 - 10 has shown that there are different sets of beliefs concerning the spatial arrangement of rights of land use and rights of land ownership in Cape Town's Xhosa-speaking communities. Land use arrangements do not necessarily reflect land ownership arrangements.

In defining ownership, Nwabueze (1972) notes that ownership connotes the totality of rights and powers that are capable of being exercised over a thing. It has an allodial character in that it implies that the owner's rights of enjoyment, management and disposal over property is paramount over any other right that may exist in the land in favour of other persons (Nwabueze 1972:7-8). Interpreting this notion of an owner enjoying both rights and powers, a right of ownership in land should be legally enforceable and the entitlement to such a right should be socially legitimate over time to ensure that the owner enjoys the power to enforce that entitlement. The discussion in section 1.3.7.3 on allegiance and affiliation and the discussion in chapter 6 on people being evicted from their homes emphasises the importance of an owner possessing both a legal right to the land and the power to enjoy such an entitlement.

Simpson (1976) likens the collection of rights pertaining to any land parcel to a bundle of sticks, each capable of being held separately. The number of sticks or rights, the quantum of each right and the duration of each right may vary from parcel to parcel as may the number of persons who hold these rights (Simpson 1976:7). Denman and Prodano (1972) define this bundle of rights as the proprietary unit in land and conceptually they separate the spatial and non-spatial components in the bundle. The proprietary unit is defined as the run of property rights (non-spatial component) and the area of physical land (spatial component) to which these rights pertain (Denman and Prodano 1972:18). The run of property rights, or abstract side of the proprietary land unit, is the set of rights in property which give the unit owners (and/or holders) the power to use the land and its fixtures in whatever way they will (Denman 1978:67). This is the matrix of social and legal relationships that support and negate the holding and use of land by individuals or groups of people. In the author's interpretation, the sticks in bundle of rights comprising the proprietary unit may be assigned in such a way that a particular person(s) holds the bundle of rights which connote ownership, whilst other rights in the bundle are assignable to other persons as partial rights.

It is important to distinguish partial rights in land from those that connote ownership. The key aspect of the definition assigned to ownership for the purposes of this research is based on Kleyn and Boraine (1992:163) who emphasise the residuary character of land ownership. The residuary character of land ownership implies that no matter how many entitlements the owner disposes of, he or she retains a reversionary right to these

entitlements. Once all those entitlements are extinguished, ownership automatically becomes unencumbered again (Kleyn and Boraine 1992:163). Lewis (1986:257) considers this residuary character of ownership as the characteristic that distinguishes ownership from all other rights that one may have in a thing.

The terms landowner, landholder and tenant can now be defined for the purpose of this research. A landowner is defined as the juristic person who possesses as a minimum that part of the bundle of rights in which is vested the incident of residuary. The terms landholder and tenant are deemed to have the same meaning. This being a juristic person who holds (has tenure over) at least part of the bundle of rights comprising the proprietary unit, perhaps including rights of occupation, but in whom the incident of residuary does not necessarily vest.

In conclusion, what needs to be modelled and administered in a cadastral system is the proprietary unit in land. Moreover, the part of the proprietary unit that connotes ownership should be clearly distinguishable from the part that confers partial rights in land that are not ownership rights.

2.2.7 Cadastral System

This section creates a definition of a cadastral system that is germane to the theme of the research. It investigates the origin of the word cadastre and the different concepts of what constitutes a cadastre. Based on the literature, an appropriate operational definition of a cadastral system is developed. The importance of the conceptualisation of a cadastral system developed in this sub-section is paramount, as the set of processes defined as part of a cadastral system form the core of the evaluative framework developed in chapter 3 and used in chapters 6 - 10.

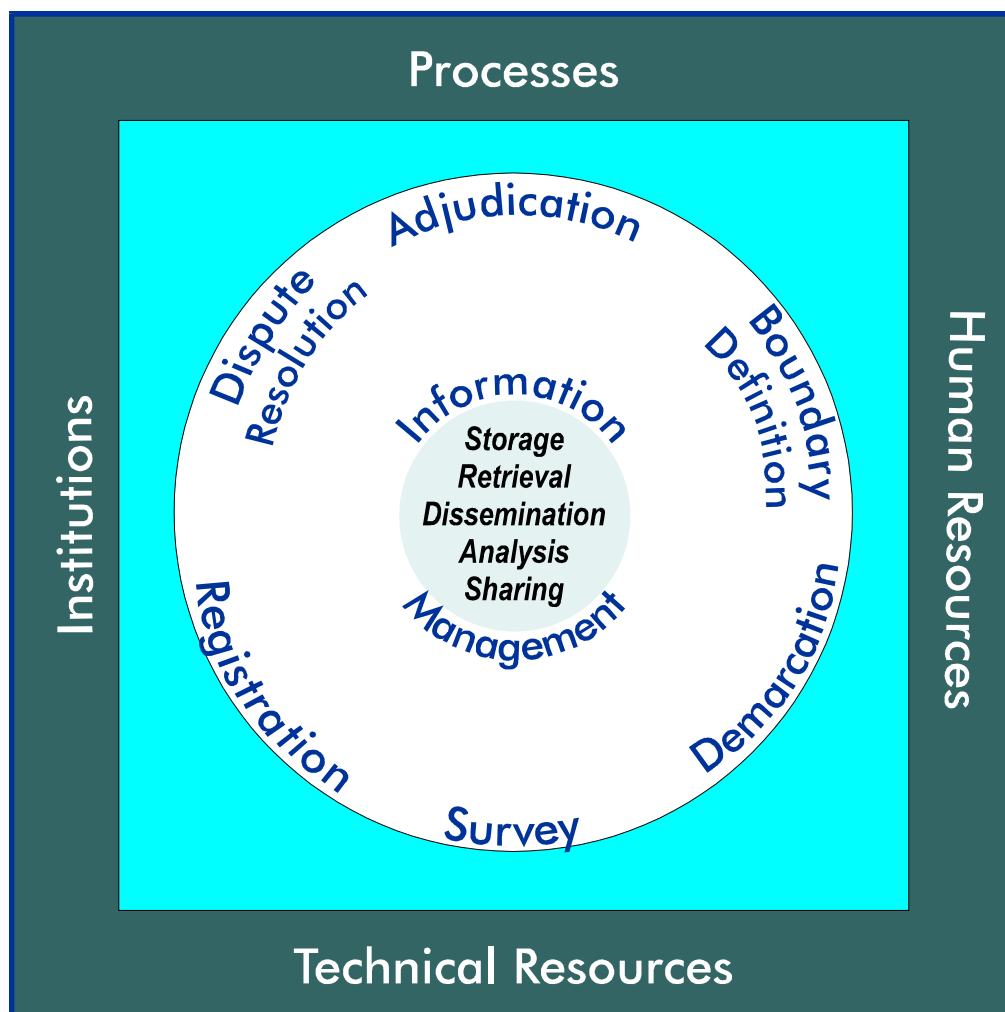
There are numerous, overlapping perspectives as to what constitutes a land information system (LIS), a cadastre and land registration. Numerous works discuss the origins and definition of the term cadastre (e.g. Nichols 1993:7-9, Hoogsteden and van Zyl 1992a, Larsson 1991:15-16, Barnes 1990, Dale and McLaughlin 1988:12, Williamson 1983:3-5, Dale 1979:28-32, McLaughlin and Clapp 1978, Simpson 1976:4, Dale 1976:1, Dowson and Sheppard 1952:47). The etymology of the word cadastre is uncertain. There is general agreement that it stems from the Greek *katastikhon*, which may be interpreted as a tax register (Simpson 1976:4) or a business record (Dale 1976:1). Larsson (1991) notes that historically land (cadastral) records have primarily served a fiscal purpose for land taxation in the public sector. Furthermore they serve as legal records of land ownership for the private sector. However, nowadays the term has evolved to incorporate more land information than fiscal or legal records (Larsson 1991:15-16).

The above authors' writings indicate that there are three common classifications according to the primary purpose of a cadastre^{xiii}: the juridical cadastre that serves as a legally recognised record of land tenure; the fiscal cadastre as a record for property valuation

and taxation; and the multipurpose cadastre, which encompasses both the fiscal and the juridical records with other information. Hoogsteden and van Zyl (1992a:413) point out that the mix of information contained in a cadastre in any particular country will be governed by its social, political and economic history.

For the purposes of this research, a cadastral system is operationally defined as a system that in general has as its primary purpose the support of land tenure security. As the discussion in section 2.1.5 concerning systems thinking and reality indicates, realistically a cadastral system has multiple-purposes and in many situations the information flowing from a cadastral system may be critical to a number of other land management sub-systems. In certain situations it may be necessary for an analyst to construct a systems hierarchy which does not define support of land tenure security as the primary requirement of the cadastral system, but in general this will not be the case.

Combining and adapting the systems approach of Checkland (1981) with the work of cadastral researchers such as Dale and McLaughlin (1988) and Barnes (1990), figure 2.4 depicts a cadastral system model and its component sub-systems.



(Barry 1998)

Figure 2.4 Cadastral System

For the purposes of this research, the cadastral system is operationally defined to comprise the properties that emerge from the interaction of its sub-systems. These sub-systems are the processes and the outputs of the processes of adjudication, boundary definition and demarcation, surveying, registration and dispute resolution. The structure of this interaction is manifest in the formal and informal institutions that underlie these sub-systems; the process and structure of communication and information management; the organisation of power, and the knowledge, skills and capacity particular to its human resources; and the technical resources to operate the processes and manage the information.

In support of the author's definition above, Dowson and Sheppard (1952:47), Hoogsteden and van Zyl (1992a:414) and Dale (1979:30) include the operations that create, manage and disseminate cadastral information in their definition of the cadastre. Dale (1979) sees the cadastre as having four sub-systems each with its own identity and each interacting with the other. "The sub-systems are adjudication, the determination of rights in land; demarcation, the physical or abstract evidence of boundaries; survey, the acquisition of information in the field; and description, the documentation of information about parcels." (Dale 1979:30). Dale and McLaughlin list the components of a juridical cadastre as adjudication, demarcation, survey, registration and information management (Dale and McLaughlin 1988:28). In what is essentially an extension of these views, Barnes (1990:1) describes a cadastre based land information system as a resource that comprises: 1) the institutions required to handle land tenure issues, policies and information; 2) an information base describing the formal (legal) land tenure situation in a given area; 3) the technology used to collect, manipulate, analyse, archive, and disseminate land tenure data and information; and 4) procedures, standards and protocols observed by institutions in carrying out land tenure-related functions. In conclusion, Barnes' (1990) model has been adapted to form the structure of the author's conceptualisation of a cadastral system in figure 2.4. The system processes are derived from a synthesis of a number of other authors' definitions, mainly Dale and McLaughlin (1988), and adapted and extended by the author.

At the core of the cadastral system modelled in figure 2.4 is the information base, or record. On its own, however, the information core is not particularly useful. The constituent sub-systems and the structure of institutions, human resources and technology blend to create the cadastral system as it is viewed by the outside world, the users. These sub-systems are the interface of what have been labelled in figure 2.2, the internal system and the task system of the cadastral system in the land management system hierarchy. The relationship between land management, land administration, land tenure and the cadastral system is now discussed. Based on this discussion, details of relevant cadastral processes and sub-systems are described in section 2.3.

2.2.8 Summary: Land Management and the Cadastral System

A land management systems' hierarchy, as viewed by a cadastral systems analyst, depends on the stability of the macro-environment and the land management sub-systems. The cadastral system's task system, which contains the sub-systems of land

management that place requirements on the cadastral system, comprises the systems of land policy development, land administration, and land tenure will differ in different analytical situations. As was shown in the discussion connected with figures 2.1, 2.2 and 2.3, this systems hierarchy is conceptual, not real. There may be intersecting system interrelationships that are unique to each pair or each triad of systems in this conceptualisation. Furthermore, each system may have certain emergent properties that neither draw on, nor contribute to any of the other systems within this particular universe. Identifying and anticipating the effects of the interrelationships between positive systems reinforcing and catalysing substantial change and those systems that negate it, is crucial to system evaluation.

In a stable state, the top down order in the hierarchy of sub-systems of land management can be expected to be the system of land policy development, land administration, land tenure and the cadastral system. In an unstable state, depending on a particular analytical situation, the order of this hierarchy may change.

Operational definitions have been established for land policy, land administration, land tenure, ownership- and the cadastral system. Land policy is defined as a system comprising a number of different policies relating to land, including land tenure policy. The South African policy germane to this particular study relates to land tenure reform, land redistribution and land restitution. However, there are other government policies that influence the situation such as policies relating to the natural environment.

Land administration is a system designed to implement strategies developed in the different land policies. It comprises a number of interrelated sub-systems, each serving a particular purpose. Land administration is seldom formally constituted as an integrated system for which a single authority is responsible. Integration occurs through a number of formal and informal systems.

Land tenure is a system incorporating the way in which land is defined and held. Land tenure comprises a matrix of social and legal relationships that support and negate the holding and use of land by individuals or groups of people in a proprietary unit. There exists a bundle of rights defining how land may be held. The quantum of each right and the duration of each right may vary from parcel to parcel as may the number of persons who hold these rights. Ownership is defined as the portion of the bundle of rights in which is held the residuary right in land. No matter how many entitlements the owner disposes of, he or she retains a reversionary right to these entitlements.

A cadastral system is defined as a set of processes, human resources, technical resources and institutions for which the primary requirement is the support and affirmation of land ownership and other rights and interests in land. The internal sub-systems consist of adjudication; boundary definition and demarcation; surveying; registration and dispute resolution. This set of sub-systems has been used as the core of the evaluative framework developed in chapter 3 to analyse the effectiveness of the cadastral system in Cape Town. What is important is that in designing and analysing a cadastral system, is that in analysing the primary objective of the system the needs of other systems should be taken into account. Moreover, where there are changes in land policy that directly

affect the cadastral system, there are likely to be changes in the demands of the broader land administration system too. For example in the case of South Africa whereas the cadastral system can be considered a key system in the strategies of land redistribution and land restitution, there are other land administration functions such as socio-economic, environmental and fiscal planning that are also central to these strategies. These other functions in turn place new demands on the cadastral system too.

2.3 CADASTRAL SYSTEM STRUCTURE

This section provides an overview of the structure and processes of the cadastral system portrayed in figure 2.4. Details of the processes or sub-systems that form part of the evaluation framework developed in chapter 3 are described in section 2.4.

2.3.1 The Information Base

The information base is considered by the author to be at the core of the cadastral system as it is an integration of the outputs of all the other sub-systems that comprise the cadastral system. This information base ideally, but not necessarily, should detail both the spatial component and the non-spatial, abstract component of the bundle of rights and interests. In this way a cadastral system resembles a geographic information system consisting of a core of spatial and non-spatial information interacting with a set of processes that use and contribute to this information base.

2.3.2 Cadastral Sub-Systems

The cadastral sub-systems, drawing on the discussion in section 2.2, Dale and McLaughlin (1988), Barnes (1990) and Dale (1979), comprise the following processes:

1. Adjudication, the determination of rights in land;
2. Boundary definition, demarcation, survey and record of the spatial component of the bundle of rights in the land unit, the area (or volume) of physical space to which the run of property rights pertain;
3. Registration, the legal execution and record of the transfer of rights and interests in the ownership bundle;
4. Dispute resolution, legal and legitimate processes to resolve disputes; and
5. Information management, including data capture, information processing and analysis, information storage, information retrieval and information dissemination.

In the author's observation^{xiii}, the above processes are all subject to financial management and control and operations management of production, process control, monitoring and quality. Effective interaction between these sub-systems, and between these sub-systems and the information base are viewed as critical to the primary mission of the juridical cadastral system, namely the support of land tenure security. For this reason, in figure 2.2 the sub-systems have been positioned at the rim of the information core. However, critical to overall system success is that a supporting institutional framework, capable human resources and appropriate technical resources are in place.

2.3.3 The Institutional Framework

The institutional framework in which the cadastral system performs its operations consists of the institutions, both formal and informal, that collectively define, allocate and transfer rights in land and manage the system of land rights and the related information base. The primary mission of some institutions may consist solely of performing cadastral processes and fall exclusively within the domain of the cadastral system. The cadastral system also interacts with institutions falling completely outside it, and others whose mission falls partially in the sphere of the cadastral system.

2.3.4 Human Resources

Human resources comprise the set of people who possess the required knowledge and skills to sustain the system. Capacity implies that there are sufficient people with the required knowledge and skills and there exist the financial resources, organisational and technical infrastructure, and managerial competence for them to operate effectively. Moreover, education and training systems and institutions need to be in place to ensure that the base of human resources remains adequate over time.

2.3.5 Technical Resources

Technical resources, in the author's view, consist of the analogue and digital information storage devices, and communications devices to support the information management processes. The geodetic control infrastructure to support cadastral surveying is also considered to be part of the technical resources that influence the quality of cadastral services.

2.4 CADASTRAL SUB-SYSTEMS

This section describes the cadastral system sub-systems, the processes and the outputs of these processes (e.g. title certificates), that were introduced in sections 2.2.7 and 2.3.2. Where relevant, the alternative forms the processes and outputs (e.g. deed or title registration) may take is discussed. As stated in the research objectives in section 1.2, a possible consequence of the paradigm shift presently being endured in South is that the existing cadastral system processes and the instruments and services that emerge from these processes no longer effectively address the needs and wants of significantly sizeable segments of society and government. As will be shown in chapter 3, the nature of these processes and the alternative forms that these processes may take is at the core of the evaluative framework used in this research.

2.4.1 Adjudication

Adjudication is the authoritative ascertainment of all existing rights in any particular parcel of land (Simpson 1976:194). More broadly, it may entail the determination of existing rights or the agreement as to allocation of land in the process of land reform

(Dale 1976:42). It is an essential prerequisite for certain other land measures such as land registration, land consolidation and disposal of state land (Lawrance 1985^{xiv}).

Chapter 1 introduced the potential difficulties in implementing a cadastral system in Cape Town's Xhosa-speaking communities. When adjudication is a precursor to registration, and there is uncertainty if such registration will be effective in the long term, then the following questions framed by Crocombe (1984:35- 42) are particularly relevant to the adjudication process.

- What unit of people should be registered?
- In whose name should group rights be registered?
- What unit of land should be registered?
- What rights should be registered?
- How should rights be registered?
- When should they be registered?
- How can the register be maintained?

In essence the above set of questions provides a checklist for assessing the registration component of the research questions outlined in section 1.4. They explore what is an appropriate proprietary unit (e.g. family or individual ownership) and who should be the legitimate beneficiaries in a particular situation.

2.4.2 Boundaries and Land Occupation Patterns

Boundary types, beliefs about them and attitudes toward them were explored in this research. Boundaries themselves are not a process, but the definition of an appropriate boundary type and demarcating such boundaries are processes which serve as sub-systems of the cadastral system. In terms of the main hypothesis stated in section 1.4, what needs to be established firstly is what are the normally accepted beliefs and practices with regard to the spatial arrangement of land occupation and usage and the system of boundaries used in this arrangement. Secondly, if this spatial arrangement requires individual parcels of land, then what is an appropriate boundary type(s) to define the extent of these parcels?

Exploring the first issue concerning the spatial arrangement of land occupation and usage in a particular community is likely to yield one of three alternative scenarios:

1. All land is regarded as communal, also known as common property, and there are no clearly defined parcels of land for usage or occupation;
2. Some of the land is common property for the use and enjoyment of all members of the community, whilst there are also clearly defined land parcels for individual usage and occupation and perhaps ownership;
3. The landscape is divided into individual parcels, each capable of being owned by an individual person or a group of juristic persons.

The first alternative outlined above is an unlikely scenario, as the author has not encountered a description of such a tenure system in the literature on land tenure in

southern Africa. It was not encountered in this research either, and consequently it is not explored further. The second scenario can be found in southern Africa both in traditional customary tenure systems (e.g. Letsoalo 1987, Jeppe 1980) and in formally registered land in sectional title schemes in terms of South Africa's Act 95 of 1986. Some evidence of such spatial arrangements in the system of tenure existing in informal settlements emerged in this research, where it was found that land that is not covered by a dwelling unit is regarded as common property for the use of the general community. The dwelling unit and the space occupied by it was generally believed to be for the exclusive use of the shack owner^{xv}. However, this system did not reflect the long term wants of respondents (see chapter 8). The third scenario describes the western tenure system of individual parcels. This system was found to be the prevailing one wanted by Cape Town's Xhosa-speaking communities (see chapters 6 - 10). Consequently, alternative boundary systems are described in the remainder of this sub-section as they are relevant to this research.

What is first required is a definition of what constitutes a boundary and then a description of the different classifications of boundaries. McLaughlin (1976:61) notes: "The creation of a boundary consists of two separate and distinct operations: the delineation or legal describing of the bounds; and the demarcation or physical establishment of the boundary on the ground". In a later work, Dale and McLaughlin (1988) note that there is a distinction between a legal boundary and the objects that people use as monuments to the lines in space occupied by their boundaries. Legal boundaries of a land parcel, in essence, are mathematical lines. That is they have the dimension of length but not breadth. Monuments to a boundary should ideally coincide with the boundary, but they are not in themselves the boundary. People may believe that the physical objects that represent the boundary are in fact the legal boundary, and they may refer to these objects as such. However, these are merely monuments, and not the legal boundary (Dale and McLaughlin 1988:29).

Dale and McLaughlin (1988) note that there are two generally accepted forms of boundary, fixed and general, and there is a longstanding debate surrounding the definition of these terms. There are at least three different concepts of each of a fixed boundary and a general boundary (Dale and McLaughlin 1988:29). A third form, a topological boundary system, has been introduced by the author as an alternative boundary system to be explored. The notion of a topological boundary system is based on proposals for boundary systems and land occupation patterns that were mooted in professional meetings and workshops in the early part of the 1990's and on preliminary research in Brown's Farm (see chapter 6).

2.4.2.1 Fixed boundaries

A fixed boundary is one in which the precise line of the boundary has been determined. Dale (1976:35) classifies the three fixed boundary types as:

- 1) those defined (beaconed) on the ground prior to development;
- 2) those in which the boundary is adjudicated after development;
- 3) those which are defined by surveys to specified standards.

All of these classifications exist in South African land survey practice. However, it is beyond this discourse to describe these in detail. As a general rule South Africa adheres to the principle of “pegs are paramount to plans” (Dale 1976:25)^{xvi}, that is the position of the monument is superior evidence to mathematical or documentary evidence^{xvii}. However, it is possible in South Africa to define a boundary apex mathematically without placing a monument at the position^{xviii}. Fixed boundaries tend to be implemented in jurisdictions where there are high precision standards for cadastral surveys, although this is not necessarily a prerequisite. The logic appears to be that it should be possible to re-establish a fixed boundary in the event that monuments are destroyed or removed. Ideally it should be possible to replace a monument in exactly the same position as the original monument, within a reasonable zone of uncertainty (Simpson and Sweeney 1973:616).

2.4.2.2 General boundaries

A general boundary is one for which the precise line can only be adjudicated on the ground (Dale 1976:35). Dale (1976) describes three categories of general boundaries as:

- 1) those where ownership of the boundary feature is not established and the boundary lies perhaps down either side of the boundary feature or perhaps the middle;
- 2) those where the boundary is the indeterminate edge of a natural feature, such as a seasonal marsh;
- 3) those where the position of any boundary is regarded as approximate so that the register may be kept free from boundary disputes. The monument, such as a hedge is paramount evidence and if the law allows it, the *de jure* boundary can be defined sufficiently flexibly to coincide with the *de facto* position of the monument.

Dale (1976:35, 29-33)

South African law and survey practice recognises general boundaries such as the edge of permanent natural and man-made features listed under 2) above such as a river, a cliff face or a wall^{xix}. Otherwise, geometrically fixed boundaries are used. However, the author observed that general boundaries of type 1) and 3) were mooted in a number of workshops and professional meetings on surveying and registration alternatives as a cheaper, more appropriate alternative to the system of fixed boundaries for communities such as the Xhosa-speakers in Cape Town. Further discussion on this issue is included in section 4.2.2.

2.4.2.3 Topological boundaries

A topological boundary system comprises boundaries that are not rigidly defined in geometric space, and allows for fluid land occupation patterns. It is a concept created by the author for the purpose of this research for which there appears to be no empirical foundation. Topology, sometimes referred to as rubber sheet geometry, is a mathematical concept applied in vector based spatial information systems. Topology is concerned not with maintaining geometric shape, but with maintaining the relationships between neighbouring objects under distortion, such as adjacency, connectivity and

containment (Laurini and Thompson 1992, Dale and McLaughlin 1988:144). The concept is not new in land tenure, as Bohannon (1963) alludes to the notion of topology when he describes land occupation patterns in systems of shifting agriculture. However, the concept of a topological boundary system as it is described here could not be found in the literature. Dale's (1976) notion of general boundaries in section 2.4.2.2 above does not deal with boundaries that may be moved frequently and where this movement may be substantial. Results of initial exploratory analysis of aerial surveys of the as-built positions of fences compared to the positions of the *de jure* boundaries in Brown's Farm (see chapter 6) indicated that exploring such a boundary system is feasible.

A topological boundary system is defined as one where the relative positions of neighbouring parcels in a layout are maintained, that is, the adjacency of parcels. Building on Dale's notion of a general boundary of category 3) above, the positions of the *de jure* boundaries are sufficiently flexible to permit landholders to continually move their boundary fences to accommodate the needs of neighbouring landholders.

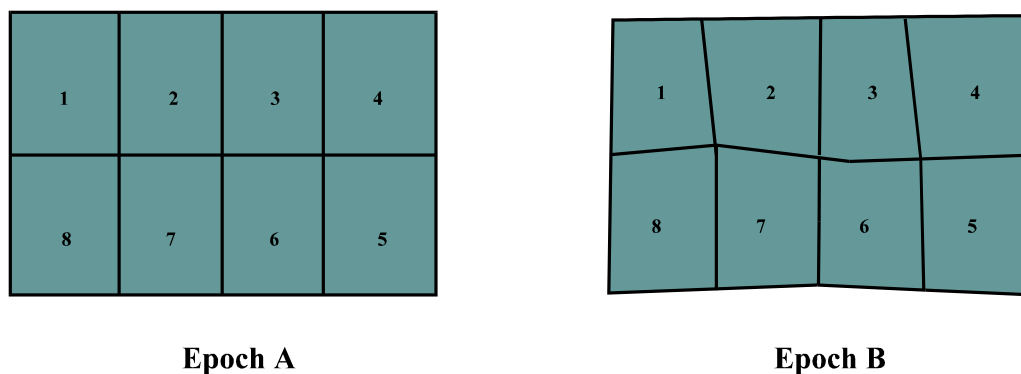


Figure 2.5 Topological Boundary System

In figure 2.5, epoch A represents the layout at the time the parcels are created. Epoch B represents the positions of the objects that residents believe mark the spatial extent of their proprietary unit. A topological boundary system, being a special form of general boundary system, permits the shifting of the *de jure* boundary, the mathematical lines, to match the positions of the fence lines as and when they are moved.

Based on the measurement of actual behaviour derived from aerial surveys of land occupation patterns in the case studies described in chapters 6 - 10, the concept of a topological boundary system was developed as an exploratory hypothesis at the commencement of this research. However, social evidence from interviews and workshop sessions provided little support for the concept and as a consequence the notion of topological boundaries have not been incorporated in the hypothesis in section 1.4. However the issue is covered by the research questions.

South African land law does give credence to topological occupation patterns in rural land, albeit that boundary positions remain fixed. The Fencing Act 31 of 1963 permits fences constructed in rural agricultural parcels to be constructed along a give and take line. The legal boundary position remains as originally defined without giving rise to adverse possession claims, but topological occupation is permitted by give-and-take

agreements between neighbours such that the relative positions of the parcels are maintained but fence positions do not have to adhere to the fixed boundary positions. Section 16(2) reads:

“Any give-and-take line so agreed on or determined shall be deemed to be the boundary line for the purposes of this Act but shall not otherwise affect the title to such holdings.”

Finally, demarcation is defined as the way in which boundaries between neighbours are demarcated. Central to the research questions is how important it is for a boundary and the shape of a land parcel to remain rigidly fixed.

2.4.3 Cadastral Surveying

Cadastral surveys provide a record and therefore evidence of the positions of boundary monuments, and in this way help to avoid disputes. As stated earlier, South Africa's system of cadastral survey evolved as a consequence of a large number of boundary related disputes (see Barry 1995). There are a number of ways in which cadastral surveys can be performed, such as by direct methods of terrestrial surveying or remotely by photogrammetry. What is relevant to the research questions though is to establish if 1) individual units of land are required by Cape Town's Xhosa-speaking communities; 2) if individual parcels are desired, then what type of boundary system is appropriate; and 3) if fixed boundaries are appropriate, to what surveying precision should it be necessary to re-establish a monument if it is destroyed or lost to minimise disputes?

2.4.4 Registration

Land registration is the most common form of recording social relationships, interests and legally defined rights in land and transactions in these rights. The set of commonly used processes and instruments, to effect, secure and record land transactions developed from international experience are described below. Linking this set to the research questions, the processes and instruments used in Xhosa-speaking communities are analysed in terms of these mechanisms in chapters 6 - 10. It was found that in different situations, forms of symbolic delivery using social processes such as oral agreements and private conveyancing systems were used as well as systems that resemble deeds and title registration.

Land registration may serve many purposes and different stakeholders. Simpson (1976) distinguishes between public and private functions of land registration. The State may wish to make an inventory for fiscal purposes or to ensure proper development as a whole. This is different to a desire to secure the rights of the landholders and enable them to conduct transactions in land rights safely, cheaply and quickly (Simpson 1976:3). The discussion on current South African land policy in chapter 1 reveals that the justification for the cadastral system, of which land registration has been defined as a component, is the support of land reform, security of tenure, sustainable land use and release of land for development (Rep. of S. Africa 1997a:7). Furthermore, the cadastral

system should sustain the collateral value of land and the operation of the land market (Rep. of S. Africa 1997a:19).

Numerous authors, for instance Simpson (1976), Dowson and Sheppard (1952), Jones (1964), Jones (1976) and Larsson (1991) have documented the three fundamental classes of registration systems. These classes are private conveyancing, registration of deed and registration of title. Moreover, at the most basic level, land rights may be conveyed by oral agreement (Larsson 1991:17).

2.4.4.1 Oral agreements and symbolic delivery

Oral agreement or symbolic delivery conveys land rights from one juristic person to another without documentation. Tenure security is supported by community knowledge of the transaction; either by witnessing or by verbal affirmation of execution of the contract by both parties. Many early systems of law regarded publicity alone as a sufficiently effective guarantee when land was sold. When communities were small and people knew their neighbours it was practical for land to be transferred by oral agreement in the presence of witnesses. A symbolic act such as the handing over of turf or a twig in the presence of witnesses was adequate to safeguard not only the purchaser but also any third parties that may have an interest in the land (Simpson 1976:13).

Ralawe (1993) describes extra-legal systems of subdivision of land and symbolic delivery in the Eastern Cape Province^{xx}, claiming these occurred because owners felt registration costs were too high (see section 1.3.9). It appears that most transfers took place as a result of death of the owner.

“In the case of a dispute in respect with the sub-division or the transfer of property, the family members would call the headman although his presence was not essential. The claimants or the transferor or transferee together with the family concerned would gather on the land in question. A male resident of the village was appointed master of ceremonies and the other people present, especially males would act as witnesses. White flags were flown on the land and when agreement was reached, stones were placed at the corners of the sub-divided portion. Furrows were also dug to mark the dividing line. After the ceremony, all those present and any resident of the village gathered at the family house and took part in a feast which impressed the event in their memories.”

Ralawe (1993:8-9)

2.4.4.2 Private conveyancing

Private conveyancing by means of a private deed gives effect to the transfer of land rights and interests. In its crudest form a document of rights is merely handed over from the seller to the buyer. In Britain the system is administered by solicitors who draw up an abstract of title, which attempts to trace all transactions in a land parcel for the previous forty years. This should ensure that there are no competing claims for

ownership in case of fraud or defective execution of a deceased estate (Dowson and Sheppard 1952:11-15). Security of tenure is provided by the integrity of the land professionals involved (Dale and McLaughlin 1988:22). Perhaps more importantly, quality of tenure security is provided by the depth and completeness of the lineage of transactions evident in the abstract of title. Experience in England at the turn of the twentieth century appears to be that the lineage was seldom complete and the documents were often defective in their description. Fortescue-Brickdale (1913)^{xxi} noted that 25% of land transactions required site inspections by registry staff. Dowson and Sheppard (1952) also noted that the process was expensive owing to high conveyancing fees.

There is evidence that forms of private conveyancing evolve extra-legally. For example in Australia, Torrens titles have been 'sold' in poor mining communities by handing the owner's copy of the title over to the purchaser, without registering the transaction^{xxii}. Evidence of this practice was also found in the sale of entitlements to ownership in this research in Brown's Farm and Marconi Beam. If this translates into a practise once land is registered, then the legal record of land ownership will be rendered inaccurate.

2.4.4.3 Deeds registration

Deeds registration means the deed is registered, most often at a public office in front of a registry official. The deed is evidentiary; it is not proof of title. For this reason, deeds registration is termed a negative system in that a third party acting on incorrect information from the Deeds Office enjoys no protection (Kleyn and Boraine 1992:99). The completeness and depth of the lineage of transactions is still the main means of affirming ownership claims. Generally the state accepts no responsibility for the correctness of the register or for errors or omissions in the documentation (Kleyn and Boraine 1992:100). In some instances, for instance Singapore's deeds system, it is also not compulsory to register a deed and ownership can be conveyed privately^{xxiii}.

2.4.4.4 Title registration

Title registration, when the term is used to denote a positive registration system, is based on the principle that the registered title itself is proof of ownership. Consequently some authors refer to it as a positive system (Kleyn and Boraine 1992:100). In many cases the state guarantees ownership to the title-holder on payment of title insurance, making the title indefeasible. Registration of title is characterised by two features. Firstly, title to land is dependent on the act of registration and not on the documentary evidence or judicial orders from which they stem (Kleyn and Boraine 1993:107). Secondly, the basic registration unit in the system is the land parcel, not the people to whom the land is attached (Dale and McLaughlin 1988:24).

Registration of deed and registration of title are sometimes difficult to distinguish. Dale and McLaughlin (1988:24) note that there is a continuum of improvements between the most basic form of deeds registration that can make it almost as effective as title registration. For instance the South African registration system has long been the object of debate as to whether it should be classified as a title or deeds registration system (e.g. Jones 1964:62, Simpson 1976:105, Kleyn and Boraine 1993:106-108).

In reality there is no indefeasible operations management system, and the possibility for fraud does exist in positive registration systems (e.g. Kleyn and Borraine 1992:100). Migot-Adholla and Bruce (1994) hold the view that a title is merely an affirmation of a claim against rights in land, it does not constitute the rights themselves (Migot-Adholla and Bruce 1994:8). Interpreting this view, if errors or omissions exist in the modelling of such claims, social processes might well overwhelm the legal processes, particularly in new titling schemes in developing countries^{xxiv}. Dale and McLaughlin (1988:24) argue that attempting to distinguish between the two systems of deeds and title is now irrelevant, and one should use the term land registration.

2.4.4.5 Relevance to the research

The relevance of the above to this research is not the type of registration that is appropriate, but whether registration in any form is likely to be appropriate, or used in the manner that system designer's intend it to be used, in Cape Town's Xhosa-speaking communities. If so, what form of registration is most appropriate? If not, what is an appropriate system to uphold the abstract run of property rights? Furthermore, it is posited that perhaps a hybrid system of registration augmented by social processes can be used. These issues are explored in chapters 6 - 10.

2.4.5 Dispute Resolution

There are in essence two categories of disputes that may arise over the nature and ownership of the proprietary unit. Firstly they can be of a spatial nature, in which case the dispute is likely to revolve around the legal position of the boundaries or the existence and removal of an encroaching structure. Secondly they may arise out of the definition and proprietorship of certain rights in the ownership bundle. Disputes over land rights that can arise are overlapping claims between strangers, conflicts between family members and conflict between individuals and the state.

Systems of dispute resolution straddle the internal system and the task system as depicted in figure 2.2. A dispute resolution mechanism may constitute a formal sub-system of a country or jurisdiction's system of conflict management such as the courts or arbitration systems. Alternatively they may be informal or extra-legal in that they are community based and the decisions and actions of such a system are not legally recognised. In their least expensive form they can consist of social processes at the community level, or within a family, such as that described by Ralawe (1993) above in the discussion on symbolic delivery. At a more formal level, they can be resolved quasi-judicially as in the case of a boundary dispute by a land surveyor adjudicating a contentious boundary in the field (Simpson and Sweeney 1973:709). Similarly a legal expert or land administration official may provide an opinion that should partially resolve the dispute. Tribunals or the Danish system of land courts involving local lay people and legal experts in on-site sessions are another course of action (Haldrup 1996:511). The colony of the Cape of Good Hope legislation of 1859 and 1865 adopted similar procedures^{xxv} to those currently used by the Danish. Failing that, the dispute may be resolved by arbitration^{xxvi} or in the courts.

In summary, there are a number of dispute resolution mechanisms from the local community level up to the highest courts in the land.

2.4.6 Information Management

The sub-system of information management integrates the outputs of all the other sub-systems described above. Moreover it provides the link between cadastral sub-systems and other land management and land administration sub-systems through sharing and disseminating information (see figures 2.3 and 2.4). Quality attributes of information that have been noted are, according to Zwass, that it should be current, accurate, precise, complete, concise, relevant and in appropriate form (Zwass 1992:87). To this list, Dale and McLaughlin add that it should be free from bias, accessible, verifiable, accessible and quantifiable (Dale and McLaughlin 1988:78). These information quality attributes, it is suggested, relate to an ideal system. The quality of information in any system is dependent on the resources available and the quality of the management of the system.

In the author's view the information management sub-system should be engineered after the other cadastral sub-systems have been appropriately designed and engineered. The reason being that in essence it is a sub-system that both serves and integrates all the other systems comprising the cadastral system. For example, the processes of cadastral surveying and registration both produce information that is vital for them to function effectively as stand alone systems. However, it is only when the information produced by both these processes is integrated to cover the entire scope of the proprietary unit in land that the cadastral system can effectively affirm land tenure security. Once the processes in the other sub-systems have been engineered, the information sub-system should be designed and engineered to best serve these processes. This approach is in accordance with approaches commonly adopted in the discipline of management information system design and implementation (e.g. see Miller 1985).

Consequently, information management has not been a focus of analysis in the evaluative framework developed in chapter 3. The argument for this being that it is a sub-system that essentially serves and supports the other sub-systems whilst also integrating these sub-systems. The cadastral analyst should first ensure that the processes forming part of the other sub-systems are correctly engineered and thereafter engineer the information management sub-system accordingly.

2.4.7 Summary and Analysis: Cadastral Sub-Systems

This section described various forms of the cadastral system processes of adjudication, boundary definition, cadastral surveying, registration, dispute resolution and information management. There are a number of alternative ways of implementing these processes, especially the processes of land registration and boundary definition. The discussion in chapter 1 showed that South Africa's existing cadastral system processes, and the instruments and services that emerge from these processes, may no longer effectively address the needs and wants of significantly sizeable segments of society and government. The task of the cadastral system analyst in such a situation is to determine

at the fundamental level if each of these processes is wanted at all. If a particular process is wanted, the next issue is to decide what is the most appropriate form it should take (e.g. general or fixed boundaries) to ensure that a cadastral system is effective. Consequently, in chapter 3 the cadastral sub-systems' processes and the instruments forming part of these processes form the core of the evaluative framework developed for this research.

2.5 SUMMARY AND CONCLUSIONS

This chapter has contributed to the objective stated in section 1.2 of formulating theory about ways of defining and evaluating the effectiveness of a cadastral system during a period of substantial social, political and economic change. A conceptual framework to enable an analyst to view a cadastral system in the context of its broader environment during a period of substantial change has been established. It is within this framework that methods to evaluate a cadastral system can be constructed according to each particular situation.

The structural and historical context to the research developed in chapter 1 revealed that evaluating the effectiveness of a cadastral system is a complex and multi-variate problem. A cadastral system serves a number of purposes. In order to cope with such complex situations, this chapter established a general framework to conceptualise and understand what constitutes a cadastral system and how it interacts with other systems in the system of land management and the macro-environment. Operational definitions of core concepts germane to this research such as land management, land administration, land tenure, ownership and cadastral systems have been developed within this framework.

It has been argued in terms of Checkland's (1981) soft systems theory that analysing a particular situation should focus on the underlying structures and processes. Structure is defined in terms of physical layout, power hierarchy, reporting structure and the pattern of communications (formal & informal). Process is the activity: deciding to do something, doing it, monitoring how well it is done and its external effects. In periods of substantial change, the main focus of evaluation should be on processes above structure. Both structure and process need to be evaluated, but structure is secondary if it is uncertain that the processes themselves address the requirements placed on the cadastral system. Analysis of structure should also examine systems that are higher up the systems hierarchy than the cadastral system. Factors over which a cadastral system's managers have little control may strongly influence a situation where a cadastral system is deemed to be ineffective even though the processes underlying the cadastral system may have been found to be appropriate. This argument is extended in section 3.1 in the section on effectiveness, efficiency and cadastral systems.

The sub-systems internal to the cadastral system, in particular the processes underlying these sub-systems and the instruments forming part of these processes, have been put forward as forming the primary focus for analysis when evaluating a cadastral system. These sub-systems that form the primary analytical focus are the systems of adjudication, boundary definition and demarcation, cadastral surveying, registration and

dispute resolution. The information management sub-system is regarded as an integrating system and should be evaluated once the processes underlying the other sub-systems have been explored and analysed.

The conceptual framework provides the first step in understanding where the primary focus of analysis should be when evaluating a particular cadastral system in a particular situation. Land management comprises a set of systems which define the tasks to be performed by the cadastral system. These higher level systems in the hierarchy are the systems of land policy development, land administration and land tenure. Each higher system determines objectives and emergent properties for the cadastral system. The hierarchy is not static, especially during paradigm shifts, and it may be constructed differently by analysts in different situations.

It is important to establish whether the system of land management is in a stable state or undergoing a period of substantial change when evaluating a cadastral system to ensure that such analysis is conducted systemically. In addition to addressing the objectives commonly served by a cadastral system under stable conditions, in societies undergoing transformation numerous complex demands may be placed on the cadastral system. The conceptual framework developed in this chapter is intended to guide cadastral system analysis within this multi-variate complexity.

The theory developed in this chapter leads on to an examination in chapter 3 of what constitutes an effective cadastral system in a set of changing circumstances and what is likely to constitute an effective system in future. Thereafter, an evaluative framework within which to explore, describe and analyse the data collected in this particular study is developed in chapter 3.

ENDNOTES

ⁱ Cited by Checkland (1981:79) in describing Smuts' concept of holism or organised complexity.

ⁱⁱ In the author's opinion, such a situation was strongly influential in the promulgation of South Africa's Land Survey Act 9 of 1927 (See Barry 1995).

ⁱⁱⁱ Situations dictate if a force is viewed as positive or negative. For example, births may be viewed as positive forces if the birth rate is growing, and negative forces if the birth rate is declining.

^{iv} Author's observation from discussions with a number of land professionals and academics working in these countries.

^v These observations were made in various professional meetings, workshops, working groups and deduced from various policy proposals, documents and statutes introduced.

^{vi} Author's observation from working groups, workshops and professional meetings.

^{vii} The working groups on registration and surveying options that was set up in 1995 and 1996 can be viewed as an influential force on land policy. These groups had little power to engineer this policy.

^{viii} This reasoning was developed in discussion with Tom Ryan, a specialist in systems theory, School of Engineering Management, University of Cape Town, 6 August 1998.

^{ix} *ibid.*

^x Environment in this context is not viewed as a system that cannot be engineered. It is a wider system in the hierarchy which in terms of Checkland's thinking, may be viewed as a system or an environment.

^{xi} Policy may be informal in certain situations. Willi Zimmermann of GTZ stated in discussions with the author (June 1997 and January 1998) that in his experience some countries do not possess a formal, explicit land policy. In such a case, it is assumed that an informal policy exists and that formulation may take place on an ad hoc basis. Moreover, formal policies related to land may not be integrated. Peter Dale,

in his keynote address to CONSAS 1997, Durban (25 July 1997) stated that very few countries have integrated land policies due to lack of integration between ministries.

^{xii} Cadastral definitions based on surveying method and associated accuracy such as numerical, graphical and computational cadastres, discussed by Williamson (1983:3-5), are considered inapplicable to this particular research.

^{xiii} This observation is derived from experience of the South African land administration and cadastral system and site visits in other countries.

^{xiv} Cited by Larsson (1991:101)

^{xv} In this case the owner is defined as the owner of the materials used to build the shack. A resident of an informal settlement does not legally own the land as then the land would be classified as formal.

^{xvi} Dale (1976:25) also described this as “marks before measurements”.

^{xvii} The fundamental law underlying this was developed in the Cape of Good Hope in the Cape Land Beacons Acts 10 of 1859 and Land Beacons Consolidation Act 7/1865. A different approach was adopted in the South African Republic, which to an extent favoured mathematical evidence on surveyors' diagrams over monuments in certain instances. The rules for arbitrators in South African Land Survey Acts 9 of 1927 and 8 of 1997 were developed as a result of a series of court cases such as: *Esterhuizen's Executrix vs Vermeulen* (1868) AD 337, *O'Neil vs Colonial Gold Mining Company and Escombe* (1885) SAR 56, *Barrington and others vs The Colonial Government* (1886) SC 408, *Hirsch vs Gill* (1893) 10 SC 156, *Murray vs Opperman and Erasmus* (1904) TS 965, *African and European Investment Co Ltd vs Warren and others* (1924) AD 308. Authoritative works such as Simpson and Sweeney (1973) provide further information on boundaries and South African survey practice.

^{xviii} Perhaps the best example of a mathematical cadastral boundary in southern Africa is the Orange River boundary between South Africa and Namibia. The centre line of the river was adjudicated from orthophoto maps and the undemarcated boundary apices in the river co-ordinated by vectors relative to a network of reference monuments. (Source: various talks and presentations in 1993-1994 by Ken Lester, former Chief Surveyor General, South Africa). A statutory requirement in the existing cadastral system is that all property boundaries should be surveyed on the national geodetic reference system and the coordinates of at least two official reference marks should be quoted on survey diagrams and general plans. However it remains primarily a monumented cadastre with mathematical evidence providing strong evidence concerning the position of the original monument. As described above, there are valid cases where the principles of a mathematical cadastre may apply.

^{xix} Land Survey Act 8 of 1997 s33, s34, Government Gazette 18229 29 August 1997 Regulations 12(e), 19(m).

^{xx} The majority of respondents in the sample research areas hail from the Eastern Cape Province.

^{xxi} Cited in Dowson and Sheppard (1952:14)

^{xxii} Interviews in Melbourne, Victoria 10 February 1998, Perth, Western Australia, 12 February 1998.

There have been informal transactions in poor mining towns where parcels are small and land values are lower than the costs of cleaning up the title. Adverse possession claims have been used to clean up titles.

^{xxiii} Author's notes from visit to Singapore's surveying and registration offices 1995. The majority of Singapore's parcels are registered under a title registration system.

^{xxiv} Author's notes from discussions with a number of researchers at the Land Tenure Center, University of Wisconsin-Madison, April 1997.

^{xxv} Cape Land Beacons Act 10/1859, Land Beacons Consolidation Act 7/1865.

^{xxvi} Land Survey Act 8 of 1997, S30.

CHAPTER 3

CADASTRAL SYSTEM EVALUATION

“The failure to build greater foresight into our social systems is in many ways the most dangerous and most serious limit we face.” Kauffman (1980:16).

3.0 INTRODUCTION

In this chapter a framework is developed to evaluate the effectiveness of a cadastral system during a period of change, such as is currently being experienced in Cape Town. It is argued that in a situation where substantial change is taking place, cadastral system analysis should focus on two major objectives. The first objective is to assess the cadastral system in the current situation to establish whether it is likely to effectively address the current requirements of higher level systems in the land management hierarchy, such as land tenure. The second objective is to assess future requirements of relevant systems higher up the land management hierarchy (e.g. land policy development) and perhaps systems in the macro-environment to try to predict what the system of land management will look like once the paradigm shift has ended. The analyst, when assessing systems, will try to evaluate how effectively the existing cadastral system processes and structure will address the requirements of its various task systems in the land management hierarchy in this new stable paradigm.

There are diverse methods of evaluating a cadastral system, depending on the demands exerted by the systems of land policy, land administration and land tenure, and on the stability of all systems within the land management system. Chapters 1 and 2 showed that a cadastral system exists in a complex hierarchy of the systems that comprise land management. Using Checkland's (1981) notion of soft systems discussed in section 2.1.3 it is posited that the contents of land management systems are multi-various and the influences to which they are subject so numerous that the passage of time always modifies the perception of the problem. The effectiveness of a cadastral system is dependent on numerous factors, and in periods of substantial change the complexity of how these factors interact increases.

Chapter 2 established a general conceptual framework to understand how a cadastral system interacts with other systems in the system of land management and how it interacts with the macro-environment. In this chapter an evaluative framework is developed in a synthesis of systems theory, social psychology theory and cadastral theory that has been applied in evaluating systems in other disciplines. Systems theory combined with cadastral theory provides a framework within which to conceptualise the interaction between the cadastral system and other sub-systems of land management. This framework ensures that the researcher investigates the most important issues relating to cadastral system effectiveness. A synthesis of cadastral theory and social psychology provides the theoretical framework to structure the data collection and analysis in the particular situations encountered in this research. In situations that are similar to those studied in this research, social psychology theory is a tool that enables

the researcher to develop an evaluative framework from the conceptual framework developed in chapter 2.

The author's search of the literature relating to cadastral theory did not uncover an appropriate methodology to collect and analyse the situations encountered in this research. Consequently, literature relating to the effectiveness of geographic information systems and management information systems (MIS) was explored. Appropriate theory was found to underlie methods and instruments that have been used in the MIS discipline, which could be adapted to cadastral research. It is argued that the theory of planned behaviour (Fishbein and Ajzen 1975, Ajzen and Fishbein 1980, Ajzen 1988, Ajzen 1991), provides an appropriate foundation for analysing a cadastral system during a period of substantial change. This theory provides one of the foundations for the evaluative framework that has been developed for investigating determinants of behaviour relating to usage of cadastral processes and instruments. The framework provides for an evaluation of the current state of the cadastral system in the system of land management. It also provides for the prediction of how effective the cadastral system will be in future.

The chapter commences by arguing that an effective cadastral system is one that is used in such a manner that the requirements of the cadastral system, which are determined by other land management systems, are achieved. In a period of substantial change, where social systems may be volatile, the analyst should not only explore the effectiveness of the cadastral system in a given situation in its current state, but also attempt to analyse if it will be effective in future. The vision of what the future should look like should be extrapolated from policy documents, laws and statements by eminent figures in society. The discussion then goes on to describe theory relating to the measurement of cadastral system effectiveness reported in the literature. Most of this theory does not contribute much to the specific situation investigated in this research. Consequently, theory used in evaluating management information systems (MIS) was explored and the theory of planned behaviour has been adopted for structuring and interpreting data collected to in this research. Finally an evaluative framework is described which integrates the systems hierarchy of land management depicted in figure 2.2 with the theory of planned behaviour.

3.1 EFFECTIVENESS, EFFICIENCY AND CADASTRAL SYSTEMS

This section discusses the concepts of efficiency and effectiveness, what constitutes an effective cadastral system and what should be measured to evaluate cadastral system effectiveness. The concept of an effective cadastral system needs to be clarified and an approach to analysing effectiveness developed. The hypothesis in section 1.4 posits that *"..due to non-usage of parts of the cadastral system, the system does not effectively support land tenure security in the manner that government intends, thus rendering the cadastral system ineffective."* In this section it is argued that an effective cadastral system is one that is used in a manner that meets the requirements of higher level systems. To be used effectively, the cadastral system should have appropriate processes to meet the requirements of higher systems and appropriate structures to ensure that the processes are carried out efficiently. Moreover, the climate in which a cadastral system

operates should be such that it is possible for it to be effective. This entails investigating the current requirements and the future requirements of the cadastral system. In a volatile, changing situation a cadastral system is unlikely to be effective. What the analyst should explore in such a situation is the likelihood of the cadastral system being effective when the situation stabilises.

Although Drucker's (1966) concepts of effectiveness and efficiency are not derived from systems thinking, they can be integrated with systems thinking in a framework to evaluate a cadastral system. In section 1.3.1.2, effectiveness was defined as "working on the right things" (Drucker 1966:4). In contrast, to achieve efficiency the ability to "do things right" is needed (Drucker 1966:2). Integrating these concepts of effectiveness and efficiency with Checkland's (1981) notion of soft systems (see section 2.1.3), the effectiveness and efficiency of a cadastral system in a changing situation may be analysed as a function of process and structure. In terms of the principle of "working on the right things", it is argued that processes should be designed according to the requirements of the cadastral system that are defined by higher systems in the land management hierarchy. It follows that although a process may be performed efficiently, if the process is inappropriate to the requirements of a particular higher level system then the cadastral system will be ineffective in the context of a particular frame of orientation (see section 2.1.5). In this case it is envisaged that the emergent properties of the system will not match the requirements of the higher system. However, for a cadastral system to be effective the processes underlying it should be engineered so that an appropriate internal system structure (see figures 2.2 and 2.4) is in place for the processes to be performed efficiently. It is concluded that the cadastral system analyst should examine relevant higher systems and the emergent properties that will encourage the type of usage of the cadastral system that these higher systems require. Having done this, the analyst should examine the cadastral system processes to evaluate if they will effectively generate these emergent properties and examine the cadastral system structure to ensure the efficient operation of these processes.

In the above conception, usage of the cadastral system has been assumed to be a critical factor in determining if a cadastral system is effective or not. Moreover it has been assumed that measures of actual usage and potential usage are required. Actual usage indicates if the system is currently effective. More importantly a measure of potential usage provides the analyst with an indication of what action to take to ensure that the land management objectives that the cadastral system is supposed to support are realised. It is envisaged that such action may not necessarily mean direct intervention in the cadastral system structure and processes. It could mean intervention is required in a system further up the land management system hierarchy. Consider for example a situation where registering land in ownership of an individual may extinguish *de facto* rights of members of an extended family (see sections 1.3.8 and 1.3.9). The registered owner is legally empowered to evict extended family members who, in terms of the prevailing social system, previously had occupation rights. Moreover, the possibility exists in such a situation that in the case of intestate succession, transfers of ownership will take place informally rendering the register inaccurate. In this case, it may make more sense to formalise land rights using a form of tenure other than allodial ownership, such as leasehold tenure. Instead an approach should be adopted where the rights and the

person(s) on whom they are conferred are re-adjudicated from time to time. Intervening in cadastral processes and structures is unlikely to make a difference.

The rationale for assuming that usage of a system, and forecasts of usage of a system, is a useful measure of cadastral system effectiveness, is based on the fact that they have been adopted and tested in a number of studies of information systems effectiveness (e.g. Miller 1989, Davis 1989, Mathieson 1991). Miller (1989), in developing an instrument to measure information system effectiveness, although not using systems theory to structure his hypothesis, argues for a bottom up evaluation of information system effectiveness. His argument is similar in its construction to the arguments put forward earlier in this section. Miller is critical of the traditional cost benefit analysis emphasising economic benefits of an information system. Rather, he argues, economic benefits of an information system derive from behaviour that users exhibit with respect to the information system and the outcomes of the processes in which such behaviour is involved. "Practical and conceptual problems have forced researchers in the quest for information systems effectiveness back along the logical chain linking information systems to value." This chain is represented by:

ATTITUDES ► BEHAVIOURS ► PROCESS OUTCOMES ► ECONOMIC BENEFITS

(Miller 1989:41).

The role of attitude is discussed later in this chapter. What is important here is that Miller's (1989) work, and the work of other information system researchers, supports the assumption that measuring system usage and potential usage constitutes an appropriate methodology to evaluate cadastral system effectiveness.

It is concluded that in the context of this research, usage and potential usage of the cadastral system are the most appropriate measures of system effectiveness. Measurement of these indicators should include the structures and processes that are defined to be part of the cadastral system itself and those of higher systems in the land management hierarchy.

The distinction between cadastral processes and structures needs to be revisited. To recap on the conclusions drawn in chapter 2, the cadastral system processes that should be evaluated are those of the sub-systems of adjudication, boundary definition and demarcation, cadastral surveying, registration and dispute resolution. Information management is a system that integrates the internal cadastral sub-systems and provides the link with other land management sub-systems. The structures that need to be analysed comprise 1) the cadastral system's institutions; 2) the structure of communication systems and information management systems; 3) the organisation of power, and the knowledge, skills and capacity particular to its human resources; and 4) the technical resources to operate the processes and manage the information. Usage of the cadastral system is dependent on the above processes and structures being suitable to the requirements of higher systems and the structures should facilitate efficient operation of these processes.

As indicated earlier in this chapter, an examination of higher level systems is necessary to establish if the right climate exists for the cadastral system to operate effectively. Extending the discussion on control in section 2.1.2.4 and section 2.5, the structure and processes of the systems above the cadastral system in the land management system hierarchy should encourage effective establishment of the emergent properties required of the cadastral system by these higher level systems. For example, in a volatile situation where there is continual violent conflict over land rights, a cadastral system is unlikely to be effective as a support system for land tenure until the situation settles down. The challenge for the cadastral system analyst in such a situation is to determine the processes and structures that are likely to be effective when the situation has settled.

It follows from the above that in a period of substantial change, analysis of the effectiveness of the cadastral system should examine if the cadastral system is currently effective and if it is likely to be effective when the land management system reaches what McLachlan (1997) refers to as a desired future state. It is envisaged that the definition of this desired future state in the context of land management will be derived from a number of sources such as policy documents, statements by influential persons such as politicians and jurists, a jurisdiction's constitution (if one exists) and existing and planned legislation. For example, the land policy challenges in section 1.3.4 outline a desired future state of land occupation arrangements and relationships in South Africa.

Clearly the desired future state at a particular time and what actually occurs may be substantially different. There is likely to be a difference between the vision that policy makers have for the system of land management at a particular time and the actual outcome at some later date. It follows that it is important to continually re-evaluate the cadastral system in the context of a desired land management system. The vision for the land management system and the objectives for the cadastral system that emanate from such a vision are not static and are likely to change over time.

To illustrate the context of simultaneously evaluating the current situation and some desired future state, take for example an informal settlement in South Africa where the conditions are similar to those described in section 1.3.7. The situation may be so volatile that the cadastral system's rules, procedures and processes that are supposed to support the land tenure system are likely to be ignored or manipulated to a significant degree. Moreover, a few powerful individuals may control land allocation and land tenure. In such a volatile situation, it should soon become obvious to the analyst that the cadastral system will be ineffective in supporting *de facto* tenure in this settlement, as the cadastral system is unlikely to be used by residents in the community (see figure 2.1). However, in this case an examination of elements of higher systems may indicate that the prevailing land tenure system is not desirable in the long term in terms of espoused social ethics or land policy (e.g. the land policy objectives outlined in section 1.3.4). What should be examined in such a case is the system of tenure wanted by residents in the informal settlement in the long term and their intentions concerning the usage of various alternative cadastral system processes and instruments in supporting such a system of tenure. These wants and stated intentions should then be measured against land management goals. Any action that results from this evaluation should reconcile the land management goals and the general wants of residents in a significant number of informal settlements.

In terms of the above scenario and the hypothesis and the research questions outlined in section 1.4, it is argued that social measures are first and foremost required to establish if the existing cadastral system is appropriate in supporting *de facto* tenure. These social measures should evaluate behaviour with respect to usage of the cadastral system. Further measures should establish the type of tenure system wanted in the long term and establish whether a cadastral system is likely to be effective in supporting this desired system of tenure. In addition, the system of tenure wanted by a community in the long term should be examined to see if it is in harmony with land policy, the law and ethical standards. For example, in South Africa these ethical standards are embodied in the constitution. Thus the interaction between the cadastral system and land tenure system should be examined as well as the requirements of both of these systems by systems further up the land management hierarchy.

In volatile or unstable situations, such as some of those investigated in this research, indicators to predict usage of the cadastral system as well as measures of current usage are required. The data collection process should address questions such as how have people behaved with respect to the requirements of the cadastral system? For example, have people used land registration to effect a transfer in land rights or used some extra-legal process? Furthermore, how do people intend to behave and how likely are they to convert their intentions into action? Do people intend to use land registration in future, and if so, what is the likelihood that this will actually happen?

In conclusion, social measures to evaluate the usage or potential usage of the cadastral system are first and foremost what are required in uncertain situations such as those presently being experienced in Cape Town's Xhosa-speaking communities. However, in terms of the changed requirements of land policy, land administration and other land management sub-systems, these social measures should be augmented by a number of other broadly defined measures. This set of measures should evaluate the requirements of a number of systems in the land management hierarchy should ensure that the unit of evaluation is not too narrowly defined and that the significant complex interrelationships between various systems contributing to cadastral system effectiveness are included in this evaluation unit.

3.2 CADASTRAL SYSTEM EVALUATION THEORY

This section overviews existing cadastral system evaluation theory and describes other cadastral theory that is germane to this research.

In terms of the discussion in chapter 2, it is suggested that the broad set of measures to evaluate a cadastral system, according to the needs of different levels in the systems hierarchy, should cover the main elements in the macro-environment. In any particular situation, a basket of evaluation measures could be drawn from the social, political, economic, technological, physical and legal milieu. Literature support for this reasoning is found in the work of Williamson (1997) and Dale and McLaughlin (1988). Williamson (1997) argues that the justification for cadastral systems in developing countries should be based on a set of economic, social, environmental (physical) and political criteria. Dale and McLaughlin (1988:241-248) provide a checklist of 83 items

for evaluating a cadastral system, which covers most of the systems in both the internal and external environments depicted in figures 2.2, 2.3 and 2.4. They identify the questions to be raised but they do not go further by proposing methods to evaluate these issues in depth.

Historically literature on evaluating cadastral systems, particularly that relating to land registration, has focused on identifying a desirable set of attributes for a cadastral system. Jones (1964:70) illustrates what a typical set of desirable attributes of a land registration system should be by reviewing the writings of Torrens (1858-1859), Fortescue-Brickdale (1913:2) and Dowson and Sheppard (1952:71). Torrens(1858 - 1859)ⁱ considered that a registration system should be reliable, simple, cheap, speedy and suited to the needs of the country. Fortescue-Brickdale (1913:2)ⁱⁱ added security and accuracy in place of reliability and used the term suitability to its circumstances instead of suited to the needs of the country. Dowson and Sheppard (1952:71) added the factor “completeness of record”. In a later predominantly Latin American based study, Barnes (1990:40-41), analysing a range of works by different authors, drew up the following criteria for evaluating a cadastre based land information system: maintainability, efficiency, quality, cost, utility and complexity.

The above lists of criteria for evaluation do not provide much guidance for investigating the effectiveness of the cadastral system in a situation such as that of Cape Town's Xhosa-speaking communities, with the exception of the factors utility (Barnes 1990) and suitability to circumstances (Fortescue-Brickdale 1913:2). It is argued that the remaining measures relate to operational efficiency. They are not measures of the suitability of cadastral system processes to user wants. Building on the arguments raised in chapter 2 and section 3.1, when systems higher up the land management system hierarchy are undergoing changes, then an external focus on what is wanted from the cadastral system is required. Efficiency requirements, it is suggested, differ from community to community in a trade-off of cost, time and qualityⁱⁱⁱ. Barnes (1990) supports this approach when he emphasises that different societies, due to differing constraints and needs, will have different priority weightings for criteria such as cost, efficiency and complexity.

The factors utility and suitability to circumstances are regarded as relevant to this research. Barnes (1990:42), in attempting to measure the utility of a cadastre based land information system, defines the utility criterion as establishing who are the actual users and the potential users of a cadastre based land information system. Utility, interpreting Barnes (1990), is a measure of the level of integration of the different land administration sub-systems. It is argued that measuring suitability to circumstances is a measure of whether a cadastral system is effective or is likely to be effective in addressing the wants of its target communities. Suitability to circumstances is interpreted as meaning that the processes and structure of the system accurately model ethically acceptable tenure practices and that the system's products are affordable and of acceptable quality in a given situation.

It is concluded that a methodology to evaluate a cadastral system using social criteria that is germane to this research does not appear to have been developed. However, instruments have been developed and used for a number of years in MIS (e.g. Miller

1989, Taylor and Todd 1995, Davis 1989). By way of explanation, social measures to evaluate the effectiveness of geographic information systems (GIS) were first investigated for the purposes of this research because, in the author's opinion, there are significant similarities between GIS and cadastral systems. When little theory relevant to this particular research in the field of GIS was unearthed, the related discipline of MIS was explored.

3.3 THE THEORY OF PLANNED BEHAVIOUR

Social measures that were identified in the literature to evaluate MIS effectiveness draw on the discipline of social psychology, and in particular on the theory of reasoned action (Fishbein and Ajzen 1975, Ajzen and Fishbein 1980) and on the theory of planned behaviour (Ajzen 1988, 1991). Users' beliefs, attitudes, behavioural intention and behaviour are social phenomena along with subjective norms and perceived behavioural control that are factors considered to be predictors of behaviour (Ajzen 1988, 1991, Taylor and Todd 1995). These theories are described in this section and thereafter a framework for evaluating cadastral systems based on these theories is developed in section 3.4.

In section 3.1 it was posited that measuring usage of the cadastral system is one means of evaluating how effectively the cadastral system supports land tenure, as this is a measure of actual behaviour. Extending this analysis, it is posited that the cadastral system can be regarded as effective if the matrix of social and legal relationships that make up the land tenure system is correctly adjudicated. Furthermore, the cadastral system can be regarded as effective if the register of ownership and partial rights in land mirrors these relationships accurately and the cadastral map accurately reflects the *de facto* pattern of land usage and occupation. Using Denman and Prodan's (1972:18) notion of ownership, there should not be a significant number of disputes over the spatial component of the proprietary unit (boundaries) nor over the abstract run of ownership and partial rights in land. The system is effective if it is being used in the manner intended.

As discussed in section 3.1, what is also needed is a means to predict behaviour to determine if the system will serve the requirements of a particular land tenure system and land management system in future. Such a model was not found in the cadastral literature, but a substantial research effort has been applied in MIS. This theory has been adapted for evaluating a cadastral system in situations where usage of the system is uncertain.

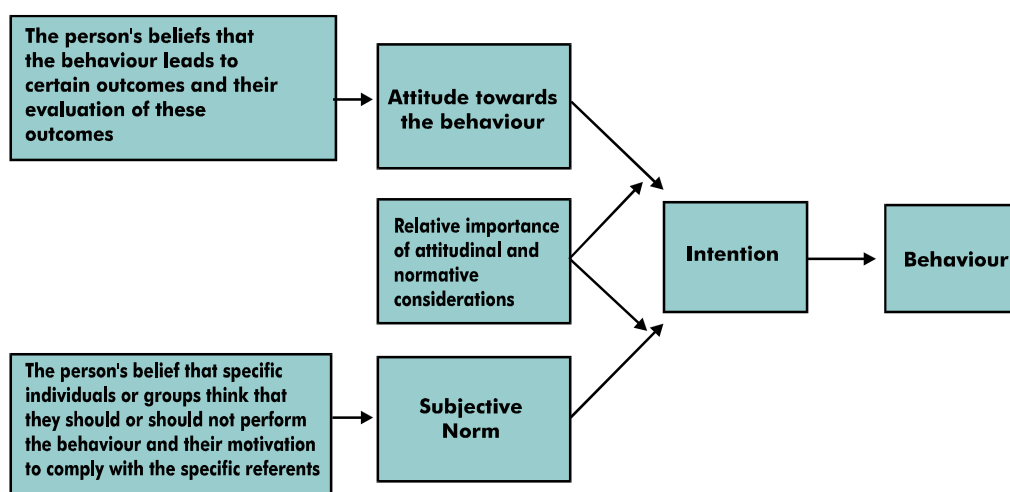
A model that has been used in evaluating management information systems (MIS) is the theory of planned behaviour developed by Ajzen (Ajzen 1988, 1991, Taylor and Todd 1995, Mathieson 1991) and the theory of reasoned action developed by Fishbein and Ajzen (Fishbein and Ajzen 1975, Ajzen and Fishbein 1980, Ajzen 1988). The theory of reasoned action assumes that system users (e.g. landholders) have volitional control over their behaviour. The theory of planned behaviour is an extension to the theory of reasoned action that accommodates situations where people do not necessarily have volitional control over their behaviour. The rationale for exploring these theories is that they have formed the basis of a number of instruments to measure and predict MIS

effectiveness (e.g. Miller 1989, Davis 1989, Taylor and Todd 1995, Mathieson 1991), and are assumed to be robust.

This section starts with a description of the theory of reasoned action, which leads on to a discussion of the theory of planned behaviour. The relevance to cadastral system evaluation is then described. Thereafter an evaluative framework germane to this research is developed in section 3.4, based on these theories.

3.3.1 Theory Of Reasoned Action

Fishbein and Ajzen's theory of reasoned action holds that intention is the strongest predictor of behaviour. There are two main determinants of an intention to perform a particular behaviour. These determinants are attitude toward the particular behaviour and the subjective norm. The subjective norm being what a person believes a significant number of other people will think if they perform the behaviour and it has been labelled a normative consideration in forming an intention to perform a particular behaviour (Ajzen 1988). I.e. do other individuals or groups think that they should or should not perform that behaviour? Figure 3.1 depicts the conceptual model of the relationships between belief, attitude, intention and behaviour developed by Fishbein and Ajzen (1975), and the normative considerations that people have when making a decision to perform or not perform a specific behaviour (Ajzen and Fishbein 1980). A person will weigh up the importance of their personal attitude toward performing the particular behaviour and their normative beliefs, and then frame their intention to perform or not perform the behaviour as a function of these two variables (Fishbein and Ajzen 1975, Ajzen and Fishbein 1980, Ajzen 1988).



(Ajzen and Fishbein 1980:8)

Figure 3.1 Theory of Reasoned Action

It is concluded that in terms of the theory of reasoned action, behavioural intention is first and foremost what should be measured. If this is not possible, then other variables such as attitude or belief should be measured. For example, Miller developed an instrument for measuring MIS effectiveness that focuses on attitude (Miller 1989). Interpreting the sequence in which the variables are arranged in figure 3.1, if a mixture

of variables is recorded in responses, then intention should be assigned the greatest weight followed by attitude and then belief. Subjective norms, what a person thinks other people or groups think about them performing a particular behaviour, should also be measured and weighed up against attitudes to assess how strong is a person's intention. In research surveys where a mixture of intentions, attitudes and beliefs have been recorded, such as this research on cadastral systems and land tenure, it is necessary to distinguish between these variables. If there is a contradiction in responses to a particular question, it follows that the researcher should weigh up the strength of different evidence, based on identifying if a response to a question can be classified as an intention, an attitude or a belief.

In terms of figure 3.1, intention is the most reliable predictor of behaviour of all the variables depicted. It can be measured by recording a statement of intention e.g. "I will force my neighbour to move a structure that encroaches over my boundary". Ajzen (1988), referring to the case of wilful behaviour, states that: "A person forms an intention to engage in a certain behaviour. Intentions are assumed to capture the motivational factors that have an impact on behaviour; they are an indication of how hard people are willing to try, of how much effort they are willing to exert, in order to perform the behaviour. These intentions remain behavioural dispositions until, at the appropriate time and opportunity, an attempt is made to translate the behaviour into action. Assuming the behaviour is under volitional control, the attempt will produce the desired act.... In other words, when dealing with volitional behaviour people can be expected to do what they intend to do. Expressions of behavioural intention should thus permit a highly accurate prediction of corresponding volitional action." (Ajzen 1988:112-113).

Identifying intentions in a set of different responses is then a reasonably simple task. How then does the researcher distinguish between attitudes and beliefs? The description of Ajzen and Fishbein's work that follows will show that attitudes are founded upon beliefs. The major distinction being that attitudes are emotive. Attitudes reflect a like or dislike for performing a particular behaviour whereas beliefs are cognitively formed.

Beliefs are founded on cognition (Miller 1989:62). That is, they are based on knowledge, perceiving or conceiving as opposed to emotion and volition. Formation of beliefs is a rational, thinking process (Miller 1989:62). In brief, assume there is an object of behaviour such as a television set that a person contemplates purchasing. The person forms a set of beliefs about the television set that are based on direct observation or processing of information received. Specifically they form beliefs about certain attributes of the television set. People may differ in their strength of belief in any object-attribute association. Belief, Fishbein and Ajzen (1975) argue, can be measured along a dimension of subjective probability involving an object and some related attribute. Different people have stronger or weaker specific beliefs about an object based on its attributes (Fishbein and Azjen 1975:12).

In contrast to cognitive foundations, the characteristic that distinguishes attitude from the other concepts in the theory of reasoned action is its evaluative or affective nature (Ajzen 1988:4, Miller 1989:62). A person's attitude to an object of behaviour (e.g. television set) is formed upon their set of beliefs about the object. An attitude is a

disposition to respond favourably or unfavourably to an object, person, institution or event. That is, it is formed in terms of positive or negative feelings (Fishbein and Ajzen 1975:11, Ajzen 1988:4). A person evaluates an object based on their set of beliefs about it and develops an attitude to that object based on their evaluation of their salient beliefs (Ajzen 1991:189).

A person's attitude toward performing a certain behaviour is related to their belief that performing the behaviour will lead to certain consequences and their evaluation of those consequences. Thus attitude is viewed as one major determinant of the person's intention to perform the behaviour in question (Fishbein and Ajzen 1975:16).

Fishbein and Ajzen note that attitudes should be measured on a bipolar evaluative or affective scale vis-à-vis a given object (Fishbein and Azjen 1975:11). For instance, if a father has generally favourable beliefs about the benefits of television for his children, this set of beliefs will lead to positive feelings that might be measured on a scale from 'bad' to 'good'. If the father has a positive attitude to television, he is more likely to purchase a set than if he has negative attitude (Miller 1989:2, Fishbein and Ajzen 1975).

Figure 3.2 portrays an example of a bipolar scale on which to measure attitude to a particular object of behaviour.

In terms of the theory of reasoned action, attitude is a more useful indicator of likely behaviour than beliefs. Moreover, the fact that attitude can be measured on an interval scale makes it suitable for quantitative questionnaire studies such as an instrument developed by Miller (1989). However, attitude alone is not necessarily an accurate antecedent of behaviour. Attitude is a predisposition to behave in a certain way rather than the behaviour itself.



Figure 3.2 Attitude Measures on a Bi-Polar Affective Scale

In conclusion according to the theory of reasoned action, a person's behavioural intention is a function of two factors: their attitude to the behaviour and their subjective norm. This intention is viewed as the immediate determinant of the corresponding behaviour (Fishbein and Ajzen 1975:16). The relevance of this theory to this research is that it provides a framework to understand and assign a weight to responses to questions exploring land tenure arrangements and the suitability of particular cadastral processes and instruments. For example, a respondent may indicate that he or she believes that an iron pin demarcates the boundary to his or her land. This does not necessarily indicate that the respondent will build his or her home within the legal boundaries. However, if

the respondent states that if a neighbour erects a structure that encroaches onto his or her parcel they would order the removal of the structure, this is a stated intention to perform a particular behaviour. Thus it can be deduced from this stated intention that people intend to adhere to their boundaries and that they intend to perform certain behaviour to defend their legally defined land parcel. Therefore a system of individual tenure supported by a system of legal cadastral boundaries is *ceteris paribus* likely to be effective. In terms of the theory of reasoned action, in this hypothetical example the stated intention to evict the encroacher is a stronger indicator of behaviour regarding usage of the cadastral system than a belief that a monument demarcates the boundaries to individual parcels.

3.3.1.1 *Relevance to research*

The strength of the theory of reasoned action is that the user of a cadastral system can be assumed to have volitional control over his or her choice of behaviour in what has been labelled the ideal future state in section 3.1. For example it is reasonable to assume in terms of South Africa's constitution (Rep. of S. Africa 1996b) and land policy (Rep. of S. Africa 1997a) that in the ideal situation, the individual can be expected to enjoy the freedom to make personal choices relating to land tenure.

The theory of reasoned action is assumed to be a valid foundation for predicting behaviour and indicating the likely effectiveness of the cadastral system in this ideal future state. In particular, beliefs about alternative systems of land tenure and the processes, instruments and structures to support a desired form of land tenure can be explored. Attitudes to particular behaviour and intentions to perform certain behaviour relating to different systems of land tenure and to the alternative processes, instruments and structures to support these tenure systems can be explored to provide a deeper, more accurate understanding of these beliefs and how they translate into behaviour. It follows that the deeper and more accurate the understanding of a land tenure system, the more reliable the legal model of a particular system of tenure is likely to be, and consequently the more effective the cadastral system should be.

The measurement of attitude on a bi-polar interval scale was not found to be suitable in this research. At the time the data was collected, the situation in the sample areas was too volatile to attempt to measure the strength of attitudes to particular behaviour. The focus instead was to determine beliefs, attitudes and stated intentions and integrate these with descriptions and observations of actual behaviour over time.

A weakness of the theory of reasoned action is that it assumes that the subject, or user in the case of a cadastral system, has volitional control over his or her choice of behaviour. The theory of reasoned action was found to be too narrowly defined for evaluating Cape Town's cadastral system. What people say they intend to do will not translate into action if there are superior forces that will prevent this action. This is founded on the author's observation that individuals in many Xhosa-speaking communities, especially in informal settlements and site-and-service schemes, do not have volitional control over their behaviour in the use of the cadastral system. The power of certain individuals or groups (e.g. warlords, political groups) controls certain behaviour. Synthesising the theory of reasoned action with the social change model described in section 1.3.7,

volitional control is likely to be limited where conflict is inherent and different actors continually compete for land, resources and power.

What is required then is a model that is cognisant of users not having volitional control over their behaviour. Such a situation is addressed by the theory of planned behaviour.

3.3.2 Theory of Planned Behaviour

The theory of planned behaviour (see figure 3.3) is an extension of the theory of reasoned action. It includes the variables attitude and the subjective norm as determinants of behavioural intention included in the theory of reasoned action. However a third antecedent of intention, the perceived behavioural control is added to this model (Ajzen 1991:181). The theory of reasoned action was developed explicitly to deal with purely volitional behaviours; those where people are in control of the situation. Complications are encountered when attempts are made to apply the theory to behaviours that are not fully under volitional control (Ajzen 1988:127).

As with the theory of reasoned action, a central factor in the theory of planned behaviour is the individual's intention to perform a specific behaviour. "As a general rule the stronger the intention to perform the behaviour, the more likely should be its performance" (Ajzen 1991:181, 1988:112-113). However, behavioural intention can find expression in behaviour only if it is under volitional control i.e. the person can decide at will to perform or not perform the behaviour (Ajzen 1991:181-2). However, the degree of success will depend not only on one's desire or intention, but also on such partly non-motivational factors such as availability of requisite opportunities and resources such as time, money, skills and the co-operation of others. These are what Ajzen classifies as behavioural controls (Ajzen 1988:132, 1991:182).

The theory of planned behaviour portrayed in figure 3.3 is an attempt to provide a theoretical model that addresses the problem of incomplete volitional control (Ajzen 1988:132-3). This model adds the third antecedent of intention, the perceived behavioural control to the theory of reasoned action (Ajzen 1988:132). Note that the theory of planned behaviour does not deal directly with the amount of control a person actually has in a given situation. Instead, it considers the possible effects of perceived behavioural control on achievement of behavioural goals (Ajzen 1988:133). Whereas intentions reflect primarily an individual's willingness to try enacting a given behaviour, perceived control is likely to take into account some of the realistic constraints that may exist. The model applies when perceptions of behavioural control correspond reasonably well to actual control.

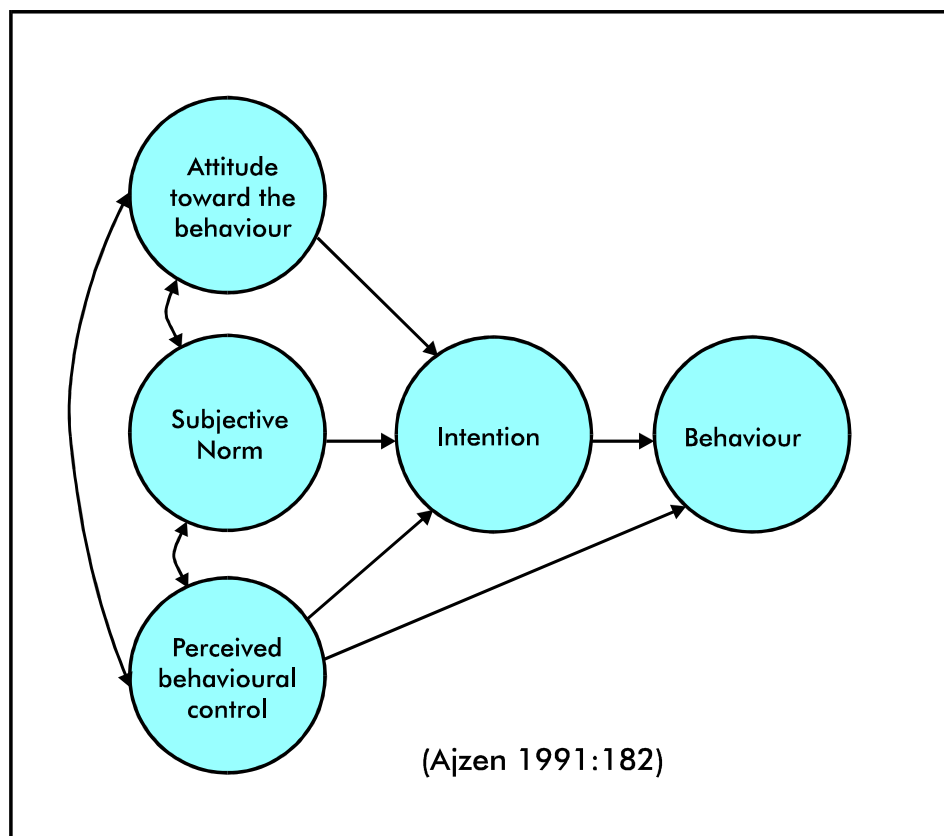


Figure 3.3 The Theory of Planned Behaviour

In the author's interpretation of the theory, controls can be classified in terms of the macro-environmental factors. These being social, political, economic, physical, technological and legal factors that may discourage a particular behaviour. For example Ralawe (1993) and Manona (1987) were cited in section 1.3.9 as ascribing the high costs of land registration as a major (economic) factor underlying the use of extra-legal processes to transfer rights in land.

The distinction also needs to be drawn between a subjective norm and a control emanating from the social environment. In the author's interpretation, a subjective norm is what the person who is contemplating a particular behaviour believes others will think of him or her if he or she performs that behaviour. The thoughts of others are not perceived to elicit physical action in reaction to their performing the particular behaviour. A behavioural control that is socially based is interpreted as being a physical action. For example, a person may build an encroaching structure over a neighbour's boundary even if he or she believes that the general community will view this as greedy and anti-social, but he or she also believes that the community will take no further action. However, if this person believes that the general community may evict him or her from the settlement for such anti-social behaviour, then he or she will not perform the behaviour for fear of the perceived control of possible eviction. This is in spite of being undeterred by what others may think of him or her. In summary, in the author's interpretation of Ajzen's (1988,1991) theory, perceived social behavioural controls relate to possible action by others, subjective norms relate to the thoughts of others.

To summarise, the theory of planned behaviour postulates three conceptually independent determinants of intention (Ajzen 1991:188), as depicted in figure 3.4.

1. Attitude towards the behaviour refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question.
2. The subjective norm refers to the perceived social pressure to perform or not perform the behaviour.
3. The perceived behavioural control refers to the perceived ease or difficulty of performing the behaviour and it is assumed to reflect past experience as well as anticipated impediments or obstacles. (Ajzen 1991:188).

As a general rule, the more favourable the attitude and subjective norm toward the behaviour, and the weaker the perceived behavioural control, the stronger should be the individual's intention to perform the behaviour. The relative importance of attitude, subjective norm, and perceived behavioural control in the prediction of intention is expected to vary across behaviours and situations. In some applications only attitudes and perceived behavioural control are sufficient to account for intentions, and in others all three predictors make independent contributions (Ajzen 1991:188).

3.3.2.1 *Relevance to research*

The theory of reasoned action has been applied in a number of fields and has been found to be suitable where subjects have volitional control over their behaviour. For this reason it has formed a foundation of the evaluative framework developed for this research and a foundation for the type of data gathered. Ajzen (1988:118) indicates that a number of empirical studies support the simultaneous predictive power of attitudes and subjective norms. In addition the theory has been adopted by a number of MIS researchers such as Miller (1989) and Davis (1989) to evaluate MIS. However, without taking volitional control into account it was found to be too narrowly defined for a study of the current situation in Cape Town's Xhosa-speaking settlements. The social change model described in chapter 1 indicates that individuals are unlikely to have volitional control over a decision to use or not to use the cadastral system in many situations. Consequently the more broadly defined theory of planned behaviour has been adopted as more suited to the requirements of this research.

The theory of planned behaviour, in synthesis with cadastral system processes and the macro-environmental elements depicted in figure 2.2, has been used as the basis for the evaluative framework developed in section 3.4. The elements of the theory of reasoned action, in particular intentions, attitudes and beliefs have been used as a structure to interpret the data qualitatively with support of quantitative analysis using naïve statistics. Control factors have been regarded as emanating from elements in the macro-environment and other systems in the land management hierarchy.

Furthermore, this research goes beyond the theory of planned behaviour in that it was possible to measure actual behaviour using aerial surveys and record descriptions of events by key persons. Actual behaviour is regarded as the most reliable indicator as it is an indication of actual usage of the cadastral system. Intentions were the next strongest

evidence followed by attitudes. Controls, both perceived and actual were taken into account in analysing the data collected.

3.3.3 Role of Prior Experience

Prior experience is important in understanding controls on behaviour and it has a strong influence on the accuracy of statements of intention. For example, if a person has previous experience of using land registration then the analyst can assign a greater weight to this person's stated intention to use land registration than to a similar statement of intention by a person who has no previous experience. In this sub-section it will be shown that in situations where a cadastral system is likely to be introduced where it does not currently exist (e.g. an informal settlement), responses indicating an intention to use the cadastral system should be weighted according to the respondents' prior experience. Investigating prior experience provides a qualitative measure of assessing the validity and reliability of responses indicating an intention to use or not to use the cadastral system.

Previous research has shown that experience of a particular situation should narrow the gap between perception and reality in forming an intention to behave. Taylor and Todd (1995:562) cite a number of authors who found prior experience to be an important determinant of behaviour (Ajzen and Fishbein 1980; Bagozzi 1981; Bentler and Speckart 1979; Fishbein and Ajzen 1975; Triandis 1979)^{iv}. Specifically, knowledge gained from past behaviour will help to shape intention (Eagley and Chaiken 1993; Fishbein and Ajzen 1975)^v. Direct experience should result in a stronger, more stable behavioural intention - behavioural relationship (Ajzen and Fishbein 1980).

Taylor and Todd (1995:566) conducted a study of experienced and inexperienced information technology users' perceptions of a new information system that was going to be implemented. Their results indicated that inexperienced users tend to place greater weight on the perceived usefulness of the system. Experienced users placed greater weight on perceived behavioural controls (e.g. finance, human resources) and less weight on perceived usefulness. This suggests that inexperienced users may not adequately consider control information in forming their expectations. In essence they underestimate costs or difficulties, instead focusing on the perceived usefulness or potential benefits of using a system.

3.3.3.1 *Relevance to research*

Prior experience of using a cadastral system should improve users' knowledge of various factors that may impede or encourage their usage of a cadastral system. Moreover, in the author's opinion, experience of using a cadastral system should result in accurate information upon which beliefs about the system are founded. This should result in a more reliable fit between expressed intentions to behave in a particular manner and actual behaviour.

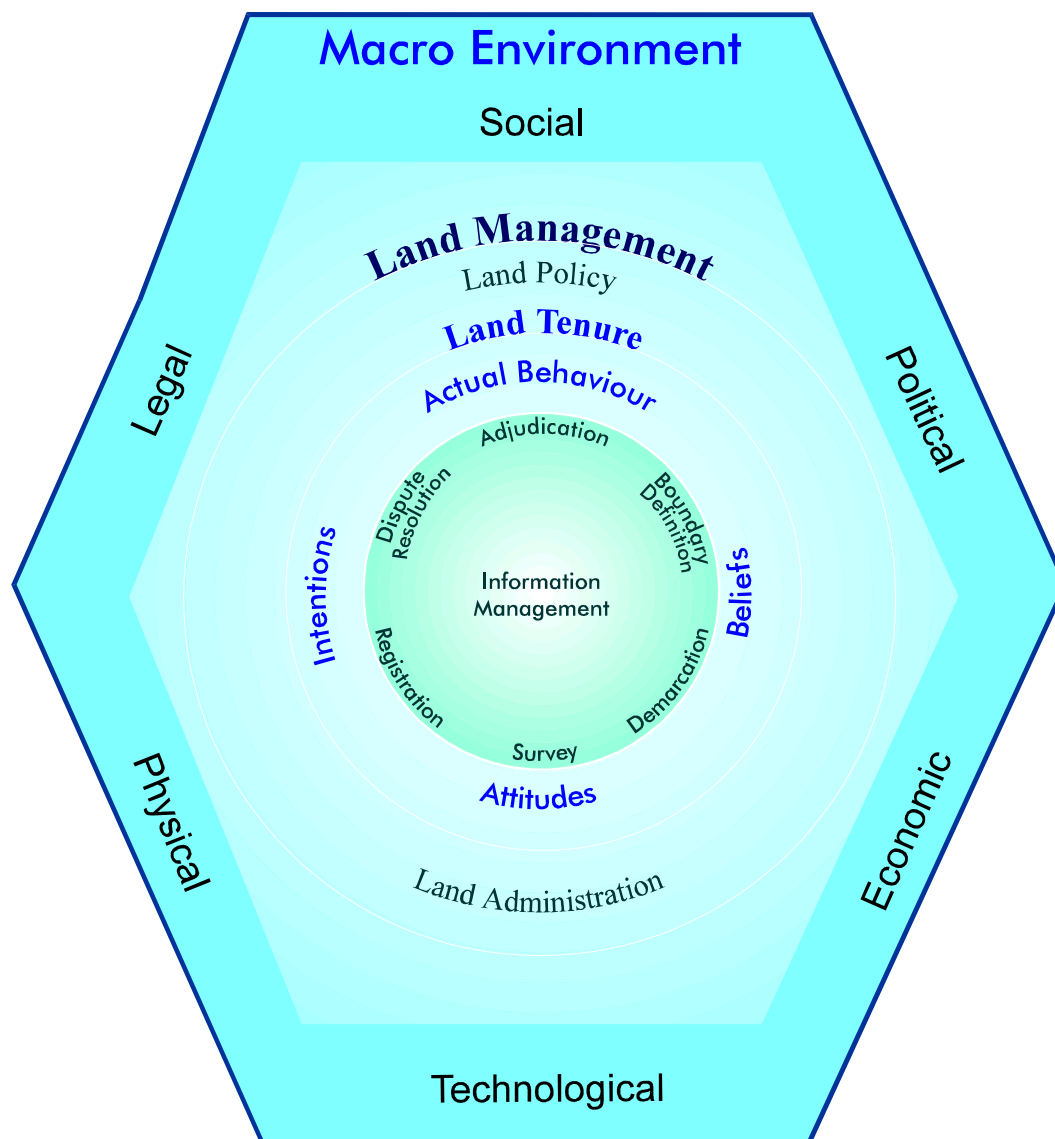
In the author's analysis, prior experience improves knowledge and understanding upon which attitudes and intentions are formed. It does not necessarily follow that because users have prior experience of a similar system that they will use a system in the way it

is intended to be used. However, what became clear in the study of Marconi Beam informal settlement (see chapter 8) and to an extent in the other case studies was that many Xhosa-speakers in Cape Town have prior experience of a system of boundaries and registration of land rights in the Transkei and Ciskei regions of the Eastern Cape. These systems use similar instruments and processes to those used in the cadastral system in Cape Town. Having established prior experience of a similar system, it has been assumed that the beliefs and intentions established in responses are reliable. If landholders have prior experience of using a cadastral system, then their stated intentions should be viewed as more reliable than users who do not have such experience. As stated in section 3.3.2.1 the reliability of some of the results of this research were further improved by comparing measures of actual behaviour with the results of indicators of behavioural intention.

3.4 A CADASTRAL SYSTEM EVALUATION FRAMEWORK

In this section an evaluation framework germane to this research is developed. The framework is built around the cadastral system processes (sub-systems) portrayed in figure 2.4, the theory of planned behaviour portrayed in figure 3.3 and the system of land management portrayed in figure 2.2. The framework is represented by figure 3.4.

The two inner rings in figure 3.4 represent the interrelationship between the cadastral system and the land tenure system being studied. The innermost ring represents the cadastral system processes (see figure 2.4) and the ring outside of that, the land tenure system being studied. The determination of an appropriate land tenure system and the effectiveness of the cadastral system in supporting this tenure system can be recorded and analysed in terms of beliefs, attitudes, intentions and actual behaviour and the behavioural norms, subjective and actual, that are general to a particular community. Actual behaviour is included as well as the antecedents of behaviour on the assumption that actual behaviour, which is reflected in actual system usage, is the most reliable indicator of cadastral system effectiveness. In terms of the discussion in sections 3.3.1 and 3.3.2, subjective norms are considered to be beliefs, that is beliefs about what others may think, and are subsumed under beliefs in the representation in figure 3.4. The rationale being that in terms of the theory of planned behaviour, subjective norms are what a person believes a significant number of other people think about him or her performing a particular behaviour.



(Barry 1999)

Figure 3.4 Cadastral System Evaluation Framework

The outer rings and the macro-environment represent controls. These are systems further up the land management systems hierarchy (e.g. land policy and land administration) and in the macro-environment that place constraints on the type of tenure system that can be legally supported by the cadastral system. Furthermore these higher systems determine constraints on the nature of the cadastral system processes that can be designed and implemented and the structure underlying these processes. For example, the actual cost that a user has to pay for cadastral system services (e.g. registration of transfer) is viewed as an economic factor. Telecommunications infrastructure determines the level of technology that can be used to capture, store and disseminate cadastral information, and so forth.

The framework holds that aspects of the internal dialectic are systems that are external to the land tenure-cadastral system interrelationship. To recap, the social change model described in section 1.3.7 assumes conflict to be inherent in a community. It

incorporates the notion of internal and external dialectics, the notion of ongoing processes of fission and integration and the notion of transactional behaviour. In figure 3.4, the external dialectic is represented by the outer ring of the land management system (including land administration and land policy) and the external environment. Furthermore parts of the internal dialectic are represented as controls in the form of social controls on cadastral system usage. In the construction of the land tenure-cadastral system interrelationship represented in figure 3.4, the actions of powerful individuals or organisations (gangs, political organisations) may prevent a person from using the cadastral system. A further example is that a legal owner may be evicted and informally replaced with a person deemed more suitable by local powerful individuals or organisations, thus rendering the cadastral record inaccurate. Such behaviour means that the cadastral system will be deemed ineffective, no matter how well its processes and structures are designed and implemented. Social power structures that militate against usage of the cadastral system are therefore considered to be controls on cadastral system usage. In terms of the discussion in sections 2.1.5 and 2.2.8 the conceptualisation of the interaction of the cadastral system and the land tenure system, these social power structures are viewed as external controls to the system hierarchy containing the land tenure system and the cadastral system.

3.4.1 Structure for Describing and Analysing Case Studies

The design and structure of this conceptual framework is both theoretically and empirically based as it was developed and refined during the course of this research as the data collection and analysis progressed.

In using the framework, the cadastral sub-systems have served as a structure to describe the data collected in chapters 6 - 10. The primary focus has been on how effectively the processes and the instruments used in these sub-systems (e.g. title deeds, boundary monuments) legally underpin land tenure security and serve the requirements of other systems in the land management hierarchy.

Data have been recorded to measure actual usage of the cadastral system by recording usage of formal, legal cadastral system instruments and processes, such as boundaries and title deeds, and other processes that affirm rights in land (e.g. public witnessing of land transactions). The definition of what is a formal, legally recognised instrument and what is not is blurred at times. In this respect, usage of the surveyed boundaries of unregistered general plans in site-and-service schemes have been assumed to indicate usage of the formal cadastral system. The rationale being that acquisition of real rights is part of a cadastral process. The pointing out of the surveyed boundary monuments of an unregistered parcel is regarded as delivery of the spatial component of the proprietary unit in land, albeit that the person to whom these boundaries were delivered may have been granted personal, contractual rights embodied in a rental agreement. The process of delivery of ownership is regarded as complete when the non-spatial component of the proprietary unit in land, the abstract run of property rights, is registered in private ownership in the deeds registry. This paradigm of phased delivery of ownership applies to the Brown's Farm and Imizamo Yethu case studies and to many areas in the eastern metropole. These studies are described in chapters 6, 8 and 7 respectively.

Potential usage of the cadastral system has been analysed by recording actual usage of instruments and processes that are similar or related to cadastral processes, but not part of the legal cadastral record. Usage of such similar or related instruments and processes is assumed to provide an indication of usage of the cadastral system in future. In a system where land is leased and not owned, a rent card is an instrument that is similar to a registered deed in that it is an instrument used in a system of providing documentary evidence to support rights in land, albeit that these rights are not ownership rights. As the discussion on Brown's Farm in chapter 6 will show, during the course of this research in Cape Town's informal settlements and site-and-service schemes the rent card was more important than an instrument that records a contractual arrangement between lessor and lessee. It was an instrument that was used as part of the process that led to ownership. The rent card was an instrument that provided the holder with formal affirmation of what de Soto (1989) labels an "expectative right" in property^{vi}. In the case of Cape Town's Xhosa-speaking communities that expectative right is the right of ownership in *allodium*. Consequently it has been assumed that formal, official usage of the rent card system to transfer rights to rent a property is an indicator of usage of the land registration system. In a case such as those studied in this research, if the official rent card system is not being used in the manner intended, then it is reasonable to assume that the deeds registration system will not be used in future, thus rendering the cadastral system ineffective.

Potential usage has also been measured using elements of the theory of planned behaviour. In applying the evaluative framework to data collected from key-informant interviews, life histories, interviews and small group workshops, potential usage was derived from descriptions of beliefs, attitudes, intentions to perform particular behaviours and controls on behaviour. The research methods are described more fully in chapter 5.

3.4.1.1 *Describing case material*

In terms of the framework depicted in figure 3.4, the cadastral sub-systems depicted in the inner ring have been used as a structure for the discussion in the sample areas in chapters 6 - 10. This structure is as follows:

1. adjudication and tenure type(s);
2. boundaries and the spatial pattern of land occupation;
3. registration and other processes to affirm rights in land; and
4. dispute resolution.

In terms of the discussion in this chapter and chapter 2, little attention has been given to analysing cadastral system structures depicted in figure 2.4, but clearly they need to be incorporated into a complete analysis of the cadastral system. It has been assumed that the suitability of the processes and instruments must be established first and then attention should be paid to the most suitable structure. To recap on the discussion in chapter 2, the cadastral system structures comprise:

1. the cadastral system's institutions;

2. the processes and the structure of communication systems and information management systems;
3. the organisation of power, and the knowledge, skills and capacity particular to its human resources; and
4. the technical resources to operate the processes and manage the information.

This sub-section has established the theoretical basis for structuring a description of the case study material. Building on the material described within this framework in each chapter, the following structure has been adopted for analysing the case study material in terms of the hypotheses and research questions in section 1.4 in terms of the land management systems hierarchy depicted in figure 3.4.

3.4.1.2 *Analysing case material*

Section 3.4.1.1 outlined how the evaluation framework depicted in figure 3.4 has been used to structure the description of the data collected in each case study. Having used this structure to present the data in chapters 6 - 10, this sub-section describes the structure used in these chapters for analysing the material in each case study.

The first issue to be analysed in each of chapters 6 - 10 is the existing *de facto* system of land tenure and whether relevant parts of the main hypothesis posited in section 1.4 are supported or negated by particular case material. Fourie's (1993) social change model has provided the main theoretical basis for these analyses. The primary focus has been on analysing the conflicting group and individual biases in the *de facto* tenure system and the trends toward individualisation or group tenure that occurred over time in the case studies.

The data analysis has used records of actual behaviour triangulated with reports relating to elements of the theory of planned behaviour to establish the current *de facto* tenure system and the processes, instruments and structures that uphold it, and the land tenure system wanted by communities.

The second issue to be analysed is the effectiveness of the existing cadastral system in upholding land tenure in the situations encountered in the case studies during the course of this research. Moreover, the effectiveness of the cadastral system in upholding the tenure system(s) that the data from these case studies indicated that residents wanted in future is analysed. This second part of the case study analysis addresses the research questions listed as a) to d) in section 1.4. In addressing the research questions, the strategy adopted has been firstly to posit and test hypotheses relating to behaviour with respect to land registration system usage and other processes that support land tenure security that are relevant to the evidence presented in each case. Secondly hypotheses relating to behaviour with respect to cadastral boundary system usage have been posited and tested. To recap on section 1.0, the systems of registration and boundaries have been the primary focus of the empirical component of this research.

The third issue to be analysed is the effectiveness of the cadastral system in addressing the requirements of the systems of land policy development and land administration. In this context the case material has been analysed against salient land policy objectives.

The major criteria to be analysed are the land tenure and ownership systems espoused in land policy and those espoused and practised by residents in each of the areas studied. Furthermore the requirements of the land administration system and the manner in which certain processes of land administration contribute to an effective cadastral system and visa versa in each case are analysed.

3.5 SUMMARY AND CONCLUSIONS

This chapter has addressed the objective stated in section 1.2 of formulating ways of defining and evaluating the effectiveness of a cadastral system during a period of substantial social, political and economic change. Building on the conceptual framework developed in chapter 2, a framework to evaluate the effectiveness of a cadastral system during a period of change, such as that currently being experienced in Cape Town has been developed. Effectiveness was defined as “working on the right things”, which in terms of systems theory emphasises that the primary focus of system effectiveness should be on ensuring that the right processes are in place. Notions of effectiveness and efficiency were defined to ensure that evaluation should firstly be externally focused to ensure that the emergent properties characterised by what the cadastral system supplies matches a community’s land tenure wants. The conceptual systems hierarchy takes into account that intervention, or system engineering, should not be limited to the cadastral system, but should also be directed to higher systems such as land tenure and land administration. Furthermore, in volatile situations such as those encountered in this research, both the current state and some desired future state of the land management system should be taken into account when analysing the effectiveness of the cadastral system.

The theory of planned behaviour has been adopted as the most appropriate theoretical basis for structuring and analysing the data collected. A search of the literature on cadastral systems did not uncover an existing in-depth methodology for tackling the data collection and analysis required for this research. For this reason, methods of evaluation in the related discipline of management information systems were explored. Emanating from this investigation, a theoretical model developed in the field of social psychology, the theory of planned behaviour and a refined form of this theory, the theory of reasoned action, formed the basis of the social evaluation methods explored.

An evaluative framework has been developed and applied in this research that draws on the theory of planned behaviour, the theory of reasoned action, systems theory, strategic management theory, cadastral theory and social change theory. The purpose of this framework is to describe and analyse *de facto* land tenure – cadastral system interrelationships and the relationship wanted by a particular community in the context of some desired future state of the land management system. The framework has been used to design the research methods and to structure and analyse the data collected in this research.

ENDNOTES

ⁱ Cited by Jones (1964:70).

ⁱⁱ Cited by Jones (1964:70) and Simpson (1976:17).

- iii A principle of project management is that the fabrication of any particular product entails a trade off between objectives emphasising quality, cost or time (Barnes M 1990:9).
- iv Cited by Taylor and Todd (1995:562).
- v Cited by Taylor and Todd (1995:562).
- vi An expectative right is a claim on attaining land ownership by informal settlement tenants that strengthens with time spent in a particular informal, perhaps illegal, settlement (de Soto 1989:23-24).

CHAPTER 4

LAND ADMINISTRATION IN CAPE TOWN

4.0 INTRODUCTION

This chapter describes the structures, instruments and processes of land administration and the cadastral system that applied in Cape Town during the course of this research. In addition, it briefly describes some of the law, such as prescription, encroachment and marriage law, which is relevant to this research. The chapter completes the structural context to this research. In terms of the discussion in sections 2.1.2, 2.2.5 and 3.4, this chapter provides an indication of the emergent properties required of the cadastral system by the land administration system. Moreover, the chapter provides an indication of the level of impedance, discussed in section 1.3.9, that Xhosa-speakers in Cape Town may have in using the cadastral system.

An understanding of Cape Town's land administration and cadastral systems is necessary because the analysis of the effectiveness of the existing cadastral system must be executed within the context of the land administration system structure. Furthermore, any action that may result from the findings of this research will have to be founded on an analysis of existing land administration and cadastral system structures and processes. In chapter 3, it was concluded that the primary focus of evaluating cadastral system effectiveness should be on establishing whether the right processes are in place in order to encourage landholders to use the system. However, the existing structure within which these processes take place also needs to be described and analysed. Any intervention to re-engineer cadastral systems to improve their effectiveness has to be cognisant of both processes and structures. However, prescribing corrective intervention in land administration and cadastral system structures is beyond the scope of this dissertation.

The property development and land use planning processes are briefly described, as are the hierarchies of institutions that administer land at the national, provincial and local authority levels. Following this, South Africa's formal system of land registration and the system of boundary definition, demarcation and cadastral survey are described. Enlarging on the discussion on problems of extended family rights mentioned in chapter 1 and the definition of ownership adopted in chapter 2, existing options for forms of registered group ownership and family ownership of land are outlined. Marriage law relating to community of property marriage contracts is also described. Moreover, existing legal remedies to address a situation where the cadastral system is not used in the manner that it is supposed to be used are described. These relate specifically to encroachments and extra-legal transfers of land, which are covered by the Prescription Act 68 of 1969 and common law relating to boundary encroachment, as these are the focus of study in the case studies reported in chapters 6 - 10.

It should be noted that the ensuing description of land administration structure has been written whilst the changes affecting broader South African society are also affecting land administration structures. As part of South Africa's transformation, the structure of national, provincial and local government has changed substantially during the course of this research. Organisational restructuring incorporating both spatial and hierarchical reorganisation has taken place. Provinces have changed in size and definition, as have local authoritiesⁱ. As mentioned in section 1.3.2.1, a comprehensive restructuring of provincial and local government throughout South Africa has been part of this transformation. A structure of four provinces, the TBVC states and a set of self-governing homelands were consolidated and then subdivided to create nine new provinces. Similar consolidation and restructuring has taken place at local government level and at the time of writing this process was still underway. In cases such as Cape Town, the jurisdictions of local authorities have been altered, a number of local authorities have been merged into one and then subsequently been re-subdivided to create substantially different organisations to the original ones. Accompanying this change, there has been organisational design implemented in these new institutions that is different from that in previous institutionsⁱⁱ. Moreover, there has been a major movement of both physical and human resources between previous institutions and the newly created institutions. However no major restructuring of institutions directly responsible for two cadastral sub-systems, the systems of land registration and cadastral survey, has taken place. The deeds registries and the offices of the Surveyors General have remained in the same location and remain in the domain of national government institutions.

4.1 LAND ADMINISTRATION STRUCTURE

4.1.1. Recent Changes in Land Administration

The institutional structure of land administration in Cape Town has changed substantially during South Africa's transformation and further organisational restructuring is under considerationⁱⁱⁱ. Due to mergers and the re-subdivision of a number of local authorities, the adjustments in local authority boundaries have resulted in different local level planning legislation, zoning schemes and building regulations affecting different property developments falling within the jurisdiction of the same local administrative authority.

Figure 4.1 depicts the extent of the six municipalities' jurisdictions that comprise the Cape Town metropolitan area. These six municipalities were created upon the local government elections of 29 May 1996. They were formed from a consolidation and subdivision of a number of different municipalities of varying sizes such as the Cape Town City Council, Bellville Municipality, Milnerton Municipality, Lingeletu West Municipality, Ikapa Municipality and Simon's Town Municipality and from various nominated Interim Local Councils which were formed under the Local Government Transition Act 209 of 1993. In addition to absorbing a number of different municipalities into a total of six large local authorities, the boundaries of these new local authorities were completely redefined.

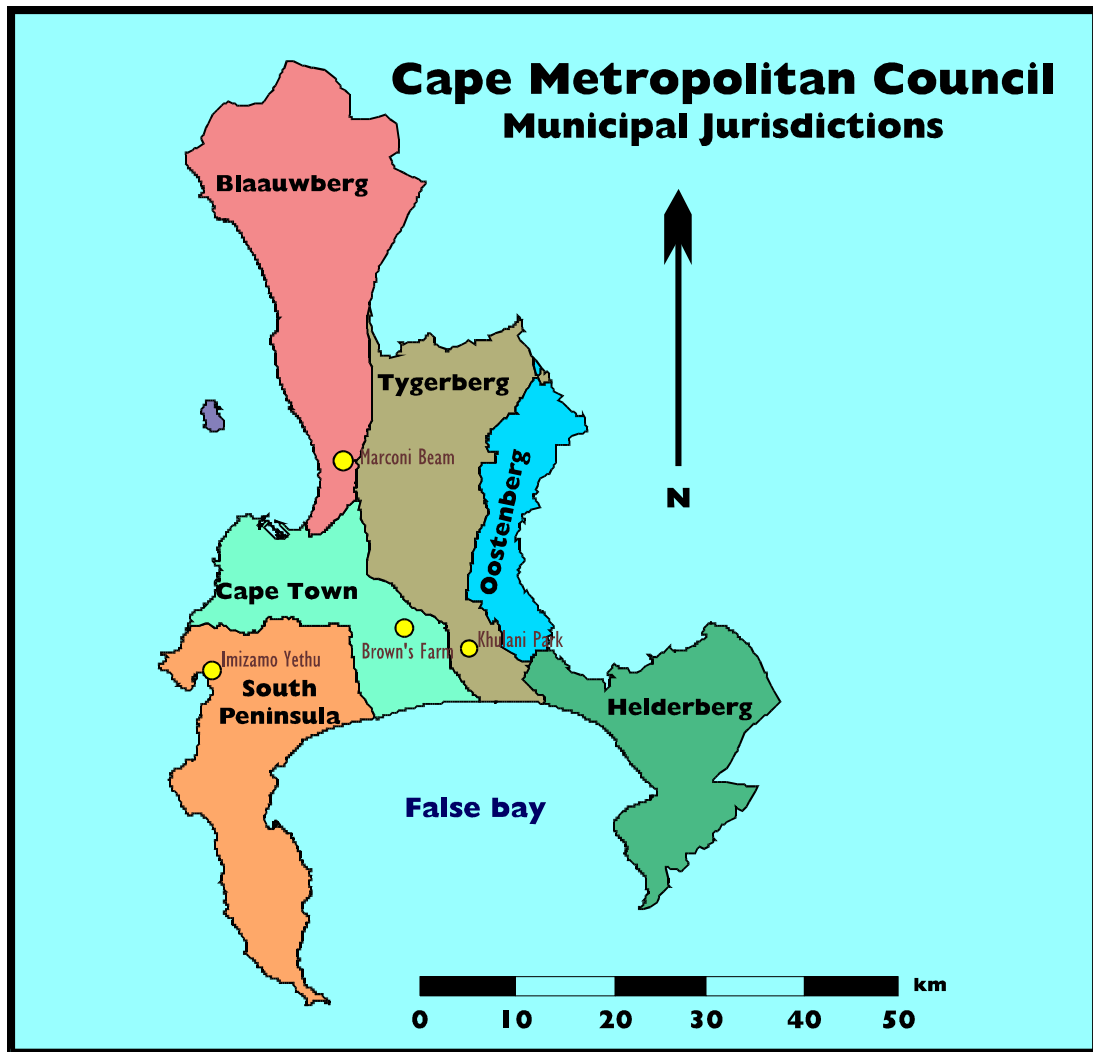


Figure 4.1 Cape Metropolitan Council Jurisdiction
Source of Base Map: Cape Town Metropolitan Council GIS section, 1998.

4.1.2. Administrative Structure

A four-tier institutional hierarchy is used to administer land in the Cape Town metropolitan area. At the top of the hierarchy are national government structures, followed by provincial government, the Cape Metropolitan Council (a new institution in the hierarchy) and the six municipalities depicted in figure 4.1 and table 4.1.

Table 4.1 Cape Town's Land Administration Hierarchy

Government Tier	Administrative Organisation
National Government	Dept. of Land Affairs: Head Office, Pretoria Regional Office, Cape Town Surveyor General's Office: Cape Town Deeds Registry: Cape Town Other bodies such as national government structures that deal with housing, natural environment, mining and natural resources.
Provincial Government, Western Cape	Provincial Administration Planning Department Provincial Roads Engineer Nature Conservation and similar bodies.
Metropolitan	Cape Metropolitan Council
Municipalities	Blaauwberg Cape Town Helderberg Oostenberg South Peninsula Tygerberg

4.1.2.1 National government

National government is represented by the Department of Land Affairs and a number of related departments such as the Department of Housing and the Department of Mineral and Energy Affairs, which have head offices in Pretoria and regional offices in Cape Town. Falling in the land affairs portfolio are the Surveyor General's office and the Deeds Registry. These are the State's functionaries in the cadastral processes of boundary definition, demarcation, survey, registration, dispute resolution to a limited extent, and cadastral information dissemination. Both institutions have regional offices in Cape Town that serve areas extending beyond the Western Cape Provincial boundaries (e.g. see Jones 1964:58).

Cadastral surveying and deeds registration fall within national government structures, both having chief executive officers residing in Pretoria who report to the national Director General of Land Affairs.

4.1.2.2 Provincial government

The provincial government is represented by the Provincial Administration of the Western Cape Province, which has its head office in Cape Town. The provincial land administration functions are in the main the promulgation and administration of planning and development legislation, such as the Land Use Planning Ordinance^{iv} 15 of 1985, and formulating regulations relating to these statutes. The provincial administration also plays an active role in certain land administration activities. For example both the provincial administration and the local authority evaluate proposals to remove title deed restrictions in terms of the Removal of Restrictions Act 84 of 1967. The provincial government also plays a role in adjudicating land development related disputes between the public and local authorities. For example, in the event that a person feels aggrieved by a local authority's decision relating to a particular proposed land development, they can appeal to the provincial premier to consider the decision and perhaps overturn it in terms of the Land Use Planning Ordinance 15 of 1985 s44.

4.1.2.3 Cape Metropolitan Council

The Cape Metropolitan Council (CMC) is an umbrella body for the six municipalities depicted in figure 4.1. Its area of jurisdiction covers that of the six local authorities combined. The scope of some of its activities has not been finalised and some activities (e.g. fiscal) are currently under consideration (Milne pers. com. 1998)^v. The land administration related mission of this organisation includes metro-wide planning, supply of bulk services and metro wide land redistribution (Fisher 1999). The CMC also plays an integrative role in land information management for land administration purposes in that it assimilates cadastral layout data originating in the Surveyor General's office with municipal planning data to facilitate metropolitan wide planning (Milne pers. com. 1998)^{vi}.

4.1.2.4 Municipalities

Municipalities' relevant responsibilities include local land use planning and administration amongst a number of other functions. The majority of land development plans, subject to a number of exemptions that the national or provincial governments declare from time to time, to subdivide land and develop land have to be passed by the local authority in terms of the Land Use Planning Ordinance^{vii} 15 of 1985.

Where informal settlement occurs on municipal land, then the municipality is responsible for adjudicating who is entitled to upgraded rights in land. Certain municipalities are also responsible for administering site-and-service rental schemes such as those studied in this research.

Local government restructuring has resulted in local authorities having to administer a cumbersome, complex web of legislation that originated in the previous national,

provincial and local government structures. For example, according to Milne, as a consequence of the spatial restructuring of local government, local authorities currently have to administer a complex system of land use legislation. Different land use zoning schemes and building regulations apply in different parts of each municipality. Some municipalities have inherited different zoning schemes and building regulations from different administrative structures that existed prior to restructuring. For example the former Cape Town City Council had its own building regulations and zoning scheme. In the area of land that was the former jurisdiction of the Cape Town City Council, these regulations and the zoning scheme have been carried forward so that they now apply in parts of the jurisdictions of the present City of Cape Town, the South Peninsula Municipality and Blaauwberg Municipality. Other regulations and zoning schemes apply in the remainder of these local authorities' jurisdictions. Furthermore, if local building regulations and zoning schemes have not been defined in certain areas of a municipality's jurisdiction, then the national building regulations apply and the zoning scheme defined in the provincial Land Use Planning Ordinance 15 of 1985 apply and have to be administered by the particular local authority (Milne pers com 1998)^{viii}.

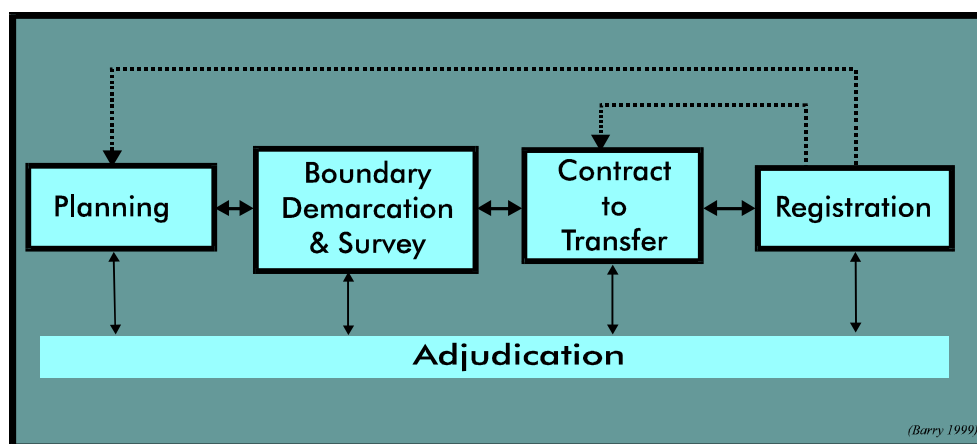
Municipalities also have a role to play in the cadastral system and the property development process. In its role of administering planning legislation, the municipality decides if the creation of the spatial definition of a particular parcel(s) of land is permissible and may determine restrictive conditions pertaining to such a parcel. The municipality, along with structures higher up the land administration hierarchy such as the provincial government, is responsible for adjudicating whether certain spatial definitions of the proprietary unit in land are permissible in terms of land use planning legislation. It also performs quality control on surveys of new parcels in that once a new diagram has been approved by the Surveyor General, it has to be cleared for registration by the municipality. In this regard the relevant municipality checks that the diagram boundaries conform to the proposed boundaries in the original planning documentation submitted in terms of the Land Use Planning Ordinance 15 of 1985 or other relevant legislation.

Analysing the above, and from the author's own observation, the restructuring of land administration has resulted in each municipal institution in Cape Town having to operate in a far more complex legal environment than previously existed due to the rearrangement of administrative boundaries. Consequently, there is a continued need for accurate, current and easily accessible cadastral information for the effective administration of building regulations, zoning schemes and land use applications, the supply of utilities and fiscal administration. In terms of the land administration system requirements conceptualised in figure 2.3, municipal level land administration continues to require good quality cadastral data (see sections 1.3.5 and 2.4.6) to manage the increased complexity induced by the restructuring of the land administration institutional framework.

4.2 LAND ADMINISTRATION PROCESSES

The description of land administration processes is limited to a discussion of the property development process portrayed in figure 4.2.

Property development in Cape Town commences with land use planning. Planning involves submitting an application to the local authority in terms of the relevant act or ordinance, such as the Land Use Planning Ordinance 15 of 1985, and in some cases to the provincial administration for consideration^{ix}. For example, in the case of a subdivision, if the application has been approved by the relevant administrative authority, boundaries are demarcated and surveyed and diagrams^x lodged by the surveyor and examined and approved for registration by the Surveyor General. Contracts to transfer ownership of the new parcel(s) can then be entered into. This normally takes the form of a deed of sale. In terms of the Alienation of Land Act 68 of 1981 s2(1) a valid contract of sale and purchase in immovable property must be written. As opposed to a contract of sale and purchase, the transfer of ownership or transfer of a partial right in land can also result from the execution of a will or as a consequence of a prescriptive claim. In simple terms, registration can only take place if a conveyancing attorney has validated the contract of sale or in the case of a will that the executor of an estate has correctly identified the person to whom the land is to be transferred. For example, the conveyancing attorney should ensure that the contracting parties are authorised to enter into such a contract. Details of different processes by which ownership of property can be acquired in South Africa are contained in standard texts such as Kleyn and Boraine (1992) or Jones (1991).



Property Development Process

Figure 4.2 The Property Development Process

The cadastral system is also integrated with municipal fiscal processes. All municipal rates^{xi} have to be paid in full before a parcel of land may be transferred. This latter condition can be viewed as a fiscal constraint on the juridical cadastral system. Once a parcel is registered in the name of an owner, it can then be resold in execution of a further contract of sale or bequeathed to an heir(s) in a secondary land market. However, in each case the municipality has the power to prevent the transfer if municipal rates have not been paid.

Throughout the entire process, adjudication of who is entitled to certain rights and the nature of those rights, and perhaps dispute resolution, may take place. For example, in the author's observation, in the upgrading of an informal settlement, part of the planning process is to determine which community should be allocated land rights in a

particular development and to adjudicate in whose name(s) each parcel should be registered. If it is an *in situ* upgrade, then adjudication of boundaries needs to take place. In the case of an existing legally defined land parcel, adjudication also takes the form of validating if two contracting parties in a sale of land are entitled to enter into such a contract.

Furthermore, in the case of inheritance the conditions of a will or codicil have to be interpreted by the executor of an estate. Subject to their being no challenges to a will nor objections to the executor's liquidation and distribution account lodged with the Master of the Supreme Court, an executor will distribute an estate in accordance with the will. Once the process of advertising for objections, and if necessary dealing with them, has been completed, the executor instructs a conveyancing attorney to register the real rights in land in according to the will. A will may be challenged in court, but the onus rests on the challenger to show that the will is flawed (Kahn et al 1984).

4.2.1. Land Registration

The South African cadastral system supports different legal tenure types ranging from different forms of community based ownership to individual registration of individual parcels. Historically, distinct cadastral systems were developed to support tenure for black Africans in the homelands and for whites and other non-whites in the remainder of South Africa under racially based land legislation. The formal systems of tenure for black Africans and the cadastral system to support these tenure forms are not described in this work, as they did not apply in Cape Town. They are described in works such as Jones (1964) and Jones (1976). The separate systems of tenure and registration for black Africans have been revoked in terms of legislation such as the Abolition of Racially based Land Measures Act 8 of 1991 and the Upgrading of Land Tenure Rights Act 112 of 1991.

South Africa uses a negative registration system that, in terms of the discussion in section 2.4.4, is difficult to define as either a deed or title registration system. It is a negative system in that a registered deed is evidentiary, and a deed may be overturned in the case of fraud (Kleyn and Boraine 1992:100). However, authors have classified it as title registration due to the quality of the documentation and processes that, arguably, have created a reliable accurate record (e.g. Simpson 1976). Barnes (1994) labels South Africa's system an improved deeds system. In the author's observation, the improvement arises out of the quality assurance structure and the quality controls that the state imposes on registration. The state examines deeds independently of the conveyancing attorney and the Registrar of Deeds is empowered to reject a deed for registration if it does not meet the requirements of the Deeds Registries Act 47 of 1937 S3(1)(b).

The issue of positive or negative registration has not been a major issue in this research. It will be shown in chapters 6 - 10 that Dale and McLaughlin's (1988:24) view that registration *per se* is what is important and not the classification thereof, holds for this research. The first question to be explored is whether registration is at all appropriate in upholding tenure security. It follows that if registration is viewed positively by landholders, the next question to be explored is where registration is likely to fit in the hierarchy of evidence and the range of processes and instruments

that landholders use or are likely to use to affirm a right in land. For example, do landholders believe documentary evidence to be superior to the knowledge of members of the community or are both elements essential to affirm rights in land? At the stage when these questions are being explored, the classification of such registration as positive or negative, or as a deeds or title system, is considered by the author to be irrelevant. These are structural issues that should be addressed once the fundamental questions described above have been explored.

In South African law, the principle that registration is essential for a deed to be legally recognised was established as early as 1844 in the case *Harris vs Buissinne's Trustee*^{xii}. Praedial rights can only be acquired or affirmed through registration. Private conveyancing of real rights in land is not legally recognised.

All registration of the definition of rights in land falls under the umbrella of the Deeds Registries Act 47 of 1937. In terms of this act, an individual parcel must first appear on the land register for it to be considered capable of ownership. Primary registration instruments are deeds of grant, deeds of transfer, certificates of title and notarial deeds. Deeds of grant are issued when unalienated state land, that is previously unregistered land, is first registered and granted to a third party by the State. Deeds of transfer are registered when existing alienated registered land is transferred between parties. Deeds of transfer are also used for transferring subdivisions of existing alienated parcels. Certificates of registered title (CRT) are registered when a change of ownership does not take place but there is some other need to reregister a parcel. Notarial deeds are used to alter the nature or holding of the bundle of rights represented in an existing deed. For example a notarial deed can be used to create or extinguish servitudes and leases.

4.2.1.1 Collective ownership

The land registration system, matrimonial law and the company registration system can be used to create and administer collective ownership of land. Collective ownership can be registered in the Deeds Office using land registration models that vary in their level of formality and complexity. Collective forms of ownership can be registered in the Deeds Office itself as land held in undivided shares, as a Communal Property Association in terms of Act 28 of 1996 or as a Sectional Title Scheme in terms of Act 95 of 1986. Interpreting Visser and Potgieter (1998) marriage in community of property in terms of the Matrimonial Property Act 88 of 1984 also comprises a form of collective ownership between spouses as in essence the marriage contract bestows joint ownership of property on the spouses upon or during marriage. Moreover the spouses enjoy equal management powers to administer and control the common estate (Visser and Potgieter 1998:86-87).

As an alternative to registration in the Deeds Office, collective ownership can be registered with the Registrar of Companies in terms of the Companies Act 61 of 1973. In such a case, a group of people creates a juristic person in order to own property. The administration of this juristic person falls within the powers and duties of the Registrar of Companies, not the Registrar of Deeds. The title deed in such a case reflects the name of the juristic person as the owner. For example if land is owned by a private company ABC (Pty) Ltd, the name of the company ABC (Pty) Ltd appears on the deed, not the

names of the individuals who are owners or members of the juristic person. A model that has been used specifically in upgrading informal settlements is a non-profit company in terms of the Companies Act 61 of 1973 s21^{xiii}. Other models that can be used for collective ownership of property are a Shareblock Company in terms of Act 59 of 1980, a Timeshare Scheme in terms of Act 75 of 1983, a Closed Corporation in terms of Act 69 of 1984 as amended^{xiv}, or a trust.

Collective ownership can also be used to acquire ownership of land on behalf of a community for division into individual parcels later on. For example, in the case of Marconi Beam described in chapter 8, the Marconi Beam Development Trust (MBDT) acquired ownership of a parcel of land in Joe Slovo Park. This land was then developed as a greenfields site. The land was subdivided, and individual parcels were transferred from the MBDT to household heads in the Marconi Beam informal settlement.

4.2.1.2 *Partial rights in land*

Partial rights in land are relevant to the discussion concerning family rights introduced in section 1.3.8 and discussed further in chapters 6 - 10. The issue of partial rights as opposed to ownership did arise in the interviews conducted in this research. Partial rights in land, as opposed to the residuary ownership right, can be registered in the form of a long-term lease^{xv}, servitude or a *fidei commissum*^{xvi}. A personal servitude *par excellence* can take the form of a usufruct, *habitatio* or *usus* (Kleyn and Boraine 1992:385)^{xvii}. Details of these forms of rights are beyond the scope of this work. Where appropriate, reference notes have been made in the text and descriptions of these forms of rights are incorporated in the glossary of terms and abbreviations to this dissertation.

4.2.1.3 *Relevance to research*

The South African land registration system provides for a comprehensive set of land tenure requirements and can accurately reflect complex individual and collective bundles of rights in land. In the author's observation, the stringent quality assurance embodied in the processes of deeds registered in terms of the Deeds Registries Act 47 of 1937 ensures that the record is generally accurate, and few challenges to the correctness of what is written in the deeds occur. In terms of this act, the Registrar of Deeds submits each deed to a stringent examination before it is accepted for registration. This includes a verification of the lineage of transfers in a particular parcel to ensure that the chain of evidence contained in the historical record is complete.

However, the outcome of the complexity and high quality of the system is that there is a high impedance (see section 1.3.9) to usage of the registration system, especially for informal settlement dwellers who are generally poor. These impedances take the form of high costs, potentially long periods of time to effect registration and numerous actors and institutions involved in the registration process. Transfers of land rights and notarial generation of partial rights involves attorneys and the associated costs of professional services. Moreover, registration also involves the local authority, which in terms of the Municipal Ordinance 20 of 1974 s96 has to issue rates clearance

certificates before registration is permitted^{xviii}. In the cases of transfer of land rights in accordance with a will, an executor of an estate plus the Master of the Supreme Court are additional actors who become involved in the process.

The challenge for providing a cadastral system that is suitable for Cape Town's Xhosa-speaking communities is firstly to establish if the process of land registration is appropriate to the wants of the respective communities. The second challenge is to assess if the level of impedance in the registration system is such that communities are able to use it. The costs of registration and the accessibility to the system (e.g. physical distance to attorneys' office, time taken to effect a transfer) are crucial to such a system being used.

4.2.2. Boundary Definition and Cadastral Survey

South Africa uses a system of fixed, monumented boundaries and natural or artificial curvilinear general boundaries such as rivers, kranz's (cliffs), the seashore and man made walls (Simpson and Sweeney 1973:802). The notion of topological boundary arrangements introduced in section 2.4.2.3 whereby boundaries can be moved and rearranged by negotiation between neighbours is not legally supported.

There has been a rich history of litigation over boundary disputes in South Africa. This sub-section will show why a rigorous cadastral surveying system exists and it describes some of the principles of cadastral surveying in South Africa.

In terms of the discussion on boundaries in section 2.4.2, and in terms of the Land Survey Act 8 of 1997 and case law^{xix}, the author's definition of a legal general boundary in South Africa is a line defined as being coincident with the edge or centre line of a physical feature or it is a line that is a specified distance from such an edge or centre line. The physical definition of such an edge or centre line varies from feature to feature and can be adjudicated in the field with varying degrees of precision. In the author's experience^{xx} two independent adjudications of the position of such a boundary may yield slightly different results when the surveys of the boundary are overlaid. The major significant factor in the uncertainty between the two surveys is likely to be the imprecision in identifying what is the exact location of the imaginary boundary line, not surveying precision. However, in the event of a dispute, it is the feature itself that defines the boundary. The survey provides evidence as to the most probable position of the boundary. Furthermore according to Kleyn and Boraine, a natural general boundary is likely to be subject to natural accession or *alluvio*, that is it is not a measured field or *ager limitatus* but an *ager non limitatus* (Kleyn and Boraine 202-204). There is ample case law to support this reasoning^{xxi}.

In general, fixed boundaries have been used to define the extent of land parcels in Xhosa-speaking settlements in Cape Town at present. However, there have been proposals to implement a system of general boundaries where fences are recognised as representing the boundary^{xxii}. This is an issue that this research explores.

In the case of a dispute over fixed boundaries there is a hierarchy of evidence that derives from the Rules for Arbitrators in the Land Survey Act 8 of 1997 s30 and from case law that should be used in the adjudication of such a dispute. Firstly, the

positions of original beacons pointed out at the time that a land parcel was created are the primary evidence. If these cannot be determined with sufficient certainty, then it is the wording of the original grant to which the adjudicator should look for direction. Thirdly, the mathematical evidence derived from the surveyor's diagram should be examined if the first two criteria do not yield adequate evidence to adjudicate such a dispute^{xxiii}. Fourthly, if beacons have been recognised by all parties to the dispute as the correct beacons for a period of more than thirty years, then they will be recognised as the beacons demarcating the apices of the various parcels. This in effect enables *de facto* boundaries to become the *de jure* boundaries in a process that is similar to prescription. However, this provision in the Act may not be used as a mechanism to effect a transfer in land. If the original beacons are found, then they represent the boundary apices, in spite of the fact that other beacons may have been recognised for a long period by all the parties to the dispute. In practice, a land surveyor would examine all of these factors when re-establishing the most probable position of a parcel apex.

In a part of South Africa, the former South African Republic^{xxiv}, in terms of *Volksraad Besluit 1870 (V)* mathematical evidence was held to be superior to other evidence if the adjudication and survey had been procedurally correct and the survey diagram had been signed by the State President. The courts applied this principle even if the survey diagram did not mirror conditions on the ground and the survey was erroneous. A benchmark case reinforcing this principle was *Murray vs Opperman and Erasmus (1904)* where the surveyor had inadvertently represented a working station as a boundary beacon on the original diagram. The court ruled that the boundaries were according to the mathematical and graphical evidence on the diagram because, as the State President had signed it, the diagram was an unimpeachable document. This was in spite of the fact that the respective landowners had adhered to boundaries that matched the original boundary monuments pointed out to them. However, in a number of preceding cases, such as *O'Neil vs Colonial Gold Mining Company and Escombe (1885)*, the mathematical evidence was held as inferior to the original monuments. The court's decision was founded on the fact that there had not been strict adherence to procedures concerning informing adjacent owners and interested parties of an impending survey prior to getting the State President to sign the diagram.

In the author's analysis, the above constitutes a form of positive registration in that the documentary evidence was deemed superior to physical and social evidence. However, it also indicates that positive registration systems are inappropriate in situations where there is likely to be uncertainty in the definition and record of land rights, lack of clarity in the interpretation of the law and where users lack comprehension of the system. At that time, the case law suggests that there were significant disparities in education and literacy levels in the ruling populace throughout South Africa^{xxv}. Moreover, the quality of cadastral surveys was often poor and there were physical difficulties in transport and communications. All these factors resulted in insecure land tenure concerning the certainty of boundaries^{xxvi}. Furthermore, the evidence presented in *O'Neil vs Colonial Gold Mining Company and Escombe (1885)* suggests that the situation where a diagram signed by the State President was impeachable encouraged educated elites to attempt to manipulate the law to grab land.

The common law principle applying in the South African Republic was overturned in the case *African and European Investment Co Ltd vs Warren* (1923) in which the positions of original monuments were deemed to be superior to mathematical evidence in the whole of South Africa. The principles to be adhered to when re-establishing a boundary or adjudicating a boundary dispute set out in the Land Survey Act 8 of 1997 s30 were first applied to the whole of South Africa in the Land Survey Act 9 of 1927 s19. These were an adaptation of what had been used in the Cape Province up to that time^{xxvii}.

4.2.2.1 Cadastral survey

As mentioned in section 1.3.5, South Africa's cadastral survey system is noted for its technical quality. In the author's observation, it is a high accuracy, integrated, coordinated cadastral record. The nature of the regulations to the first Land Survey Act 9 of 1927^{xxviii}, which set out in rigorous terms the method to be used when performing cadastral surveys, were probably strongly influenced by the litigation cases cited above. This Act and its regulations (which were amended periodically) set out principles and methods relating to:

1. Stringent surveying precision requirements;
2. Sufficient field and office checks to ensure accuracy of results;
3. Quality controls in the form of examination of cadastral surveys by the State;
4. The storage of cadastral survey records and access to these by registered land surveyors; and
5. The incremental integration of cadastral surveys into the national geodetic control network.

In the author's analysis, the above quality assurances incorporated in the Land Survey Act 9 of 1927 were founded on a desire to minimise the zone of uncertainty in cadastral boundaries. Interpreting Simpson and Sweeney (1973:114), a zone of uncertainty in the most probable position of a boundary monument, which has been lost or destroyed, arises out of errors in the various survey data that bear evidence to the position of the particular monument. In the author's analysis, a land surveyor should ensure that gross and systematic errors should be eliminated from his or her work. A zone of uncertainty should result from random errors that arise from the capability of the technology that is acceptable for performing cadastral surveys at a particular time, the precision of the control network and the atmospheric and physical conditions that prevailed when each relevant survey was performed. The overarching philosophy in South African cadastral surveying practice is that the position of the original monument remains the primary evidence. However, the mathematical data should be of sufficient quality to restore a monument to ensure that it constitutes the strongest evidence to the position of a boundary monument in the event that the monument has been destroyed or lost.

The Land Survey Act 9 of 1927 has been superseded by the Land Survey Act 8 of 1997, which although not differing substantively in principle from the previous act reduces the activities of the State in the cadastral surveying processes. The underlying principles of cadastral surveying remain the same, but in the author's analysis the regulations to the new act are more in the form of quality assurance guidelines than a specification for the methods to be employed in cadastral surveying processes.

Moreover, in practice the role of the State in quality control has diminished in that where formerly the Surveyor General often performed a rigorous examination on cadastral surveys, a complete examination is seldom done nowadays. The responsibility for quality rests firmly with the professional surveyor.

The Land Survey Act 8 of 1997 imposes control over how cadastral surveys should be performed and the manner in which records are to be prepared. All cadastral surveys, with the exception of some surveys carried out under the Development Facilitation Act 67 of 1995, have to be performed under the supervision of a graduate professional land surveyor. Diagrams and general plans have to be approved by the State, represented by the Surveyor General, before they will be accepted for registration. The Surveyor General partially or wholly examines all cadastral surveys submitted to him or her. Similar to the Registrar of Deeds, the Surveyor General is empowered to reject documents deemed unfit for registration.

A result of the introduction of a high quality cadastral survey system is that the incidence of litigation over the correct positions of parcel boundaries has largely disappeared since 1927. A contribution to this situation is that the authority to arbitrate disputes over uncertain boundaries has been conferred on the professional land surveyor in terms of the two Land Survey Acts (9 of 1927 and 8 of 1997).

A further role played by the Surveyor General is the storage, collation and dissemination of cadastral data. This data serves as a body of evidence and as an integrated information infrastructure that supports ongoing cadastral surveys. Moreover, this data serves as the base map for local authorities' land administration systems. In the latter case, these base maps can serve as precise digital cadastral databases if the data has been captured using processes that incorporate good quality assurance (author's experience at Cape Town City Council, Nel 1997, de Wet 1995).

South Africa has been incrementally implementing a co-ordinated cadastre over a period of more than fifty years. All modern South African cadastral surveys have to be based on the South African geodetic control network in terms of the Land Survey Act 8 of 1997. Over a period of more than fifty years, certain surveys have had to be connected to geodetic control. The classification of these surveys has been gradually broadened to the extent that currently all cadastral surveys have to be connected^{xxix}. It is now possible to derive coordinates for most South African parcel apices with a reasonable degree of accuracy (e.g. see Nel and Barry 1997). Such surveys were formerly based on the Cape Datum, Clarke 1880 modified ellipsoid but the country changed to the WGS84 datum and ellipsoid in 1999. This change has been induced by the substantial influence of the global positioning system (GPS) in spatial information capture and positioning systems.

Geodetic control coordinates are published in plane coordinates in the Transverse Mercator Gauss Conform map projection using panels spanning two meridians of longitude. The projection uses a single central meridian as a line of zero-distortion. The system is commonly known as the Lo system. For example, during the data collection for this research Cape Town's cadastral survey diagrams quoted Lo19^o as their reference system^{xxx}. This means that the coordinates of boundary monuments are

quoted in plane coordinates using the meridian 19° east of Greenwich is the line of zero distortion.

4.2.2.2 *Relevance to research*

Analysing South Africa's cadastral survey system, it is of a high technical quality that provides security of tenure in that boundary disputes have been minimised. It has minimised the threat of eviction from land as a result of uncertain definition of boundaries. Moreover, it is an integrated system and the quality of the data meets the requirements of land administration.

Case history reveals that South Africa experienced a period where the courts were burdened by litigation due to poor cadastral surveys and adjudication of boundaries. Moreover, in a part of the country, the former South African Republic, a system analogous to positive registration resulted in incorrect diagrams being superior to physical conditions and social processes concerning behaviour with respect to boundaries. The quality of the cadastral record should be high and there should be general understanding of the system by users for introducing a system where mathematical evidence on the diagram is held superior to the monuments on the ground.

As this research reveals in chapters 6 - 10, Cape Town's Xhosa-speaking communities had strong beliefs and behavioural intentions concerning the position of a boundary and encroachment over it by neighbours. The position of a monument and the zone of uncertainty in its restored position should it be removed or destroyed was found to be of paramount importance to respondents. However, the results of aerial surveys overlaid on existing legal cadastral layouts indicated that perhaps a negotiable, topological boundary system is appropriate. Exploring the question of boundaries formed a major part of this research.

One aspect that may dissuade Xhosa-speaking communities from using the cadastral surveying system is cost. In section 1.3.4, a problem identified in the White Paper is that transaction costs in land are regarded as high, and that cadastral surveying and land registration costs act as a disincentive to the public to register transfers of ownership (Rep. of S. Africa 1997a:19).

The relevance to this research is that what should be established firstly is whether the system of fixed boundaries are appropriate and whether the outputs of cadastral surveying processes are deemed to be appropriate. If these two issues can be shown to hold, then an issue for further research is to address the issue of costs.

4.3 LEGAL REMEDIES TO INSECURE TITLE

This section describes some of the legal principles and remedies currently available to clean up a title in the event that the cadastral system is not used in the manner intended by land administration authorities. It also outlines the implications of the cadastral system not being used in the manner intended.

4.3.1. Encroachment

Encroachment was found to be a substantial problem in two existing site and service schemes in this study. Consequently, beliefs, attitudes, intentions and actual behaviour concerning encroachment were explored in depth in this research. This formed part of the endeavour to examine the system of beliefs described in section 2.4.2 as to whether land should be divided into parcels or regarded as common property for the use of a community as a whole. Moreover, if a system of individual parcels was found to be wanted by respondents, then an appropriate system of boundaries needed to be explored.

In terms of common law, encroachment is governed by the year-and-a-day rule. In essence, a servient party has a year and a day of becoming aware of an encroachment to order an encroacher to remove the encroaching structure, otherwise he or she must content himself with the damages (*Frank and Co vs Duveen 1919*)^{xxxii}. Where an owner allows an encroachment on the understanding that it should be removed at a later date, this right remains intact and is superior to the year-and-a-day rule (*Cape Town Municipality vs Fletcher & Cartwright (1936)*)^{xxxiii}. This latter phenomenon of contractual encroachment was found to underlie a number of the instances of encroachment observed in this study.

Alternatively, the servient party may eject the encroacher and pay the encroacher compensation for the structures that he or she now possesses. Alternatively, the encroacher may be forced to subdivide and take possession of the relevant portion of the servient party's land and pay damages and all the planning, survey and transfer costs (Simpson and Sweeney 1973:615).

4.3.1.1 Relevance to Research

As chapters 6 - 10 will show, encroachment by fences and shacks over legal cadastral boundaries was found to be a significant land occupation pattern in Khayelitsha, Imizamo Yethu and Brown's Farm. The relevance to this research is to establish what type of boundary system is most appropriate to the wants of these communities and to establish why this pattern of encroachment occurs. If parties to an encroachment dispute can resolve the issue informally then it should not become a major issue. However, if recourse to the law is required, it becomes an expensive process that is beyond the means of most of the members of the communities where this research was conducted.

4.3.2. Prescription

Prescription is a legal remedy for dealing with cases of intestate succession and informal transfer of ownership such as those described in sections 1.3.8 and 1.3.9. Prescription, in terms of the Prescription Act 68 of 1969 s1, is a method whereby a person acquires ownership of a thing (e.g. an area of land) by openly possessing it as if he or she was the owner thereof for an uninterrupted period of thirty years. In terms of acquiring ownership of land by prescription, the thirty years may comprise the combined period of possession of land by a person and periods of possession by their

predecessors in title. In terms of the Prescription Act, a possessor becomes the owner of the thing and is entitled, indeed advised, to demand that it should be registered in his or her name (Kleyn and Boraine 1992:240).

In the context of this research, prescription may not run against the State nor the local authority. A person may grab land from his or her neighbour and in so doing ultimately become the owner of the portion of land possessed. Grabbing land from the State or a local authority does not ultimately confer ownership on the encroacher. In terms of the State Land Disposal Act 48 of 1961 s3, prescriptive claims against state land had to have run prior to 28 June 1971. Similarly, in terms of Prescription (Local Authorities) Ordinance (former Cape Province) 16 of 1964, claims against a local authority had to have run prior to 7 August 1974. In this research it was found that a number of the encroachment problems in the study areas did involve land that is owned by the State or its delegated local authority. However, the parcels in the Xhosa-speaking settlements studied in this research were created after it was no longer possible to claim ownership of land vested in the State or a local authority. Consequently in cases identified in this research where state land has been grabbed, it is not possible to claim ownership by prescription.

As discussed in section 2.4.2.3, fences erected in terms of the Fencing Act 31 of 1963 s16(2) are not considered encroachments, nor may prescriptive claims of ownership be lodged in terms of land possessed within the confines of such a fence. This statute did not apply in the cases studied in this research however.

In conclusion, under current legislation, if a person encroaches onto state land, they will not acquire ownership of it by prescription. However, under current legislation they may acquire ownership of a neighbour's land. Where the Fencing Act applies, then possession does not give rise to ownership of land belonging to a neighbour. Legislation similar to the Fencing Act may provide an option to address the problem of encroachment, whereby topological land occupation patterns are recognised but the spatial definition of the proprietary unit, the land parcel, is not challengeable.

4.3.2.1 Relevance to Research

Prescription is the legal remedy for a person to claim ownership if he or she has possessed a piece of land openly as if he or she was the owner for at least thirty years. It is a legal remedy in cases where the cadastral system is not used in the manner that was intended by the authorities. However, in the author's experience in the Cape Town City Council, prescriptive claims are lengthy, expensive procedures that may take years to resolve and the costs of such a process are often beyond the means of many middle class households and certainly beyond the means of the poor.

The relevance to this research is that if non-adherence to legally determined parcel boundaries and informal transfers and intestate successions become the norm in Cape Town's Xhosa-speaking communities, under existing law this may create an untenable situation. Future generations may be burdened by a plethora of prescription and encroachment cases that in terms of current law and administrative procedures will be unaffordable. This has serious consequences for the formal land market, as land

parcels in areas affected by such a situation are unlikely to be able to attract credit as collateral (see section 1.3.9). The risks to the lending institutions are high if ownership of all or part of a parcel is unclear.

4.4 SUMMARY AND CONCLUSIONS

This chapter described pertinent features of the land administration system, the cadastral system and the law that applied in Cape Town during the course of this research. Moreover, it provided an indication of the level of impedance that Xhosa-speakers in Cape Town have in using the cadastral system and the difficulties that might arise if they do not use the system.

Chapter 1 established the historical and structural context to Cape Town's Xhosa-speaking communities and reviewed existing theory relating to land tenure in urban African settlements. In this way a hypothesis and a set of research questions was generated that focuses on the cadastral system and land tenure. Chapter 2 established a conceptual framework to analyse a cadastral system within a hierarchical structure of systems and sub-systems that constitute the system of land management during a period of substantial change. The framework is intended to guide an analyst in establishing on which interrelationships between a cadastral system and other systems in the land management environment he or she should focus during a cycle of change or instability. Chapter 3 refined this conceptual framework to develop theory to evaluate a cadastral system in a situation where the primary focus is on whether the cadastral system is likely to be used in supporting land tenure security, but other objectives for the cadastral system have to be taken into account at the same time. This chapter completes the contextual description of this research. It has described the existing cadastral system and the structure of the land administration system in Cape Town and how these two systems interrelate, and it has described relevant elements in the legal environment.

In Cape Town, land administration and the cadastral system are inter-linked in an institutional structure that spans local, metropolitan, provincial and national government. The creation of new land parcels, new rights in land and new cadastral information is the result of a cycle of processes involving the local authority, at times provincial government institutions and national government administrative institutions. The Surveyor General and the Registrar of Deeds are administered at national government level. Throughout the property development process, certain cadastral surveying and land registration processes require input from the local authority, which in turn requires accurate, current information from the Surveyor General and the Deeds Office to provide various services and for fiscal administration.

The institutional structure of land administration in Cape Town has changed substantially during South Africa's transformation and further organisational restructuring is under consideration at the time of writing. As a result, the complexity of the situations that land administrators have to manage at local level has increased substantially. Quality cadastral information is essential for effective land administration, even more so given the increased complexity of local level land administration.

The land registration and cadastral surveying systems are of a high technical quality and the record is currently accurate. Whilst South Africa has a negative system of land registration, the quality of the cadastral record is arguably sufficiently high for a positive system of registration. Disputes seldom arise due to an inaccurate record nowadays. In this manner the system serves the demands of middle class landowners and the requirements of the land administration system. The question is whether these systems are appropriate to the tenure wants of Cape Town's Xhosa-speaking communities and if so, whether they are accessible and affordable. Accessibility and affordability are functions of the level of impedance in the cadastral system and the land administration system.

South African law accommodates a variety of individual and collective forms of land ownership and partial rights in land. Different laws can be used to create collective ownership of land and partial rights in land. Moreover, different institutions, such as the Registrar of Deeds or the Registrar of Companies administer particular laws. Laws that are relevant are those relating to land ownership, land registration, collective registration (e.g. communal property association), marriage, inheritance (e.g. *usufruct*) and corporate entities (e.g. a company). The challenge is to adapt the law and the land registration system to address the wants of Xhosa-speaking communities and the system should be accessible and affordable. Moreover, in the author's analysis, Xhosa-speaking communities will have to adapt their wants to accept what is feasible in terms of government's administrative capacity.

If the systems of cadastral boundaries and land registration are not used in the manner the authorities' intended, unless there are vast improvements in the efficiency of current legal dispute resolution systems, future generations may be burdened with a plethora of expensive prescriptive claims and encroachment disputes. This is likely to impact on the operation of the formal land market and on the quality of the land information needed by the land administration system. If the ownership of a land parcel is not clearly identifiable, then it is not possible for lending institutions to execute their rights of repossession in lieu of unpaid debt, and affected land will not attract credit as collateral. Furthermore, in the author's analysis the increased complexity of the situations that local authorities have to administer means that it is essential that land information is accurate and current. It is therefore essential for the cadastral system to be effective.

In conclusion, the current state of land administration in Cape Town indicates that creating and maintaining an effective cadastral system will have to involve trade-offs in addressing different objectives. The cadastral system should have appropriate processes to meet the land tenure requirements of Xhosa-speaking communities as well as the information requirements of land administration and financial institutions. Moreover, there should be appropriate structures to ensure that the processes are carried out efficiently.

ENDNOTES

ⁱ A municipality is a form of local authority. In the Cape Town metropolitan area, local authorities are municipalities.

ⁱⁱ For example in the City of Cape Town, which is located in the same building as the civic centre of the former Cape Town City Council, the Department of Surveys and Land Information of the former Cape Town City Council has shed a number of departments such as property valuation and subdivision application evaluation.

ⁱⁱⁱ At the time of writing, implementation of the concept of a mega-city administrative structure for Cape Town was under consideration, Doug Milne, pers. com. 23 July 1998, Ursalino Gonsalves pers. com. 4 February 1999.

^{iv} At the time of writing the Land Use Planning Ordinance (LUPO) 15 of 1985 was in the process of being replaced by a new provincial statute, the Western Cape Planning and Development Act 7 of 1999. This Act was published in P.N 133/1999 dated 9 April 1999, but it had not come into effect and regulations had not been promulgated.

^v Doug Milne, 23 July 1998. CMC GIS manager and former Director of Surveys and Land Information at the (defunct) Cape Town City Council,

^{vi} Doug Milne, 23 July 1998.

^{vii} The Development Facilitation Act 67 of 1995 does not apply to land use planning in the Western Cape.

^{viii} Doug Milne, 23 July 1998.

^{ix} For example an application to remove a restrictive title deed condition(s) in terms of the Removal of Restrictions Act 84 of 1967 has to be submitted to both the Provincial Administration and the Local Authority (Municipality) for consideration.

^x Diagram is defined as including both diagrams and general plans as defined in the Land Survey Act 8 of 1997.

^{xi} Land taxes.

^{xii} *Harris vs Buissonne's Trustee (1840) 2 Menz. 108.*

^{xiii} e.g. Cato Manor in Durban.

^{xiv} Amendments in terms of Acts 38 of 1986, 64 of 1988 and 17 of 1990 (Beuthin and Luiz 1992).

^{xv} A registered lease should have a term of ten years or more in terms of the Deeds Registries Act 47 of 1937.

^{xvi} *Fidei commissum* is a spes or hope in ownership. E.g. Property is to be left to A, and on A's death it is to go to B. If B predeceases A, then A may gain absolute *dominium* in the property; B's estate has no claim. This is the major difference with *usufruct*.

^{xvii} Usufruct is the right to use and enjoy property belonging to another and enjoy it while maintaining the substance of the property (*salva rerum substantia*) (Justinian Institutes). Usufructuary does not acquire *dominium*. In land law generally refers to rights of heirs such as a son having *dominium nudum* and possibly spouse having usufructuary rights (Gibson 1970, Kleyn and Boraine 1992:386). *Usus* resembles a usufruct, but *usus* holder may not take the fruits and sell them. The holder may take the fruits for daily needs and those of his or her household but nothing in excess of that (Kleyn and Boraine 1992:388). *Habitatio* is the right to take absolute possession and live in the house of another with his/her family without detriment to the substance of the property. This right may be leased to another but right of *habitatio* ceases upon the death of the holder. It is different to *usus*, which may not be alienated by way of a lease (Kleyn and Boraine 1992:388).

^{xviii} A rates clearance certificate certifies that all municipal rates have been paid up to date.

^{xix} For example *Coetzee vs Potgieter, 26 S.C. 668 (1909)*, *Van Niekerk & Union Govt vs Carter: The de Bad Case (1917) AD 359*, *Riverton Diamond Syndicate vs Union Government and the Municipality of Windsorton (1921) GWLD 207*, *Lange and Another vs Minister of Lands (1957) AD 297*.

^{xx} For example, an adjudication of the high water mark in a boundary dispute at Cape Aghulas, Western Cape.

^{xxi} The debate over natural, general boundaries being *ager limitatus* or *ager non limitatus* is debated in cases such as *Van Niekerk & Union Govt vs Carter: The de Bad Case (1917) AD 359*, *Riverton Diamond Syndicate vs Union Government and the Municipality of Windsorton (1921) GWLD 207*, *Lange and Another vs Minister of Lands (1957) AD 297*, *Durban City Council and Others vs Minister of Agriculture (S.C 1979 – 1982)*.

The definition of what is natural accession by *alluvio* and what should not be considered such is considered in the case: *Coetzee vs Potgieter and others (1909) 26 SC 668*.

^{xxii} E.g. Department of Land Affairs working groups in Pretoria and from professional meetings held by Institute of Professional Land Surveyors of the Western Cape.

^{xxiii} See *Esterhuizen's Executrix vs Vermeulen (1868) AD 337*, *Barrington and others vs The Colonial Government (1886) SC 408*, *Hirsch vs Gill (1893) 10 SC 156*, *Reid vs Surveyor General (1897) 14. SC 34*, *Surveyor General Cape vs Estate de Villiers (1923) AD 588*, *African and European Investment Co Ltd vs*

Warren and others (1924) AD 308. See also Cape Land Beacons Act 10 of 1859, Cape Land Beacons Consolidation Act 7 of 1865, Land Survey Acts 9 of 1927 and 8 of 1997.

^{xxiv} Now included in the provinces of Gauteng, Mpumalanga, North West and Northern Province. From 1910 to 1994, this area was known as the province of Transvaal.

^{xxv} E.g. *Esterhuizen's Executrix vs Vermeulen (1868) AD 337*.

^{xxvi} For example see: *O'Neil vs Colonial Gold Mining Company and Escombe (1885) SAR 56*, *Cathcart vs Main Reef Gold Mining Company (1889) SAR AD 308*, *Nabob Gold Mining Company vs Phoenix Gold Mining Company (1890) 3. SAR 142*, *Bezuidenhout vs Bester (1890) SAR 236*, *Murray vs Opperman and Erasmus (1904) TS 965*, *African and European Investment Co Ltd vs Warren and others (1924) AD 308*. The case *Esterhuizen's Executrix vs Vermeulen* indicates that the principle of mathematics holding precedence over monuments also applied in the Cape of Good Hope in the 1840's until the promulgation of the Land Beacons Acts 10 of 1859 and 7 of 1865.

^{xxvii} *Barrington and others vs The Colonial Government (1886) SC 408*, *Esterhuizen's Executrix vs Vermeulen (1868) AD 337*. See also the Cape Land Beacons Act 10 of 1859 and the Cape Land Beacons Consolidation Act 7 of 1865.

^{xxviii} Superseded by the Land Survey Act 8 of 1997.

^{xxix} The coordinated cadastre has been introduced incrementally over a number of years. For example, in 1948 in regulation 11 of the Regulations (GN 326 of 1948) to the Land Survey Act 9 of 1927 a survey had to be based on tertiary triangulation if surrounded by such stations. As technology improved and the density of geodetic control increased, so the requirements to connect cadastral surveys to geodetic control were tightened.

^{xxx} The national geodetic and cadastral survey datum was changed to Hartebeeshoek94 and the reference ellipsoid was changed to WGS84 on 1 January 1999 (*Hartebeeshoek94* 1998). See section 6.2.1.

^{xxxi} *Frank and Co vs Duveen (1919) CPD 300*.

^{xxxii} *Cape Town Municipality vs Fletcher & Cartwright (1936) CPD 347*.

CHAPTER 5

RESEARCH METHOD AND PLAN

5.0 INTRODUCTION

This chapter describes the research methodology and the research methods used. It builds on the rationale underlying the criteria used to select the case study areas introduced in section 1.5 and then describes the sample areas researched in outline. The chapter goes on to describe the spatial and non-spatial data collected, and the methods and equipment used to acquire and analyse this data. Thereafter the execution of the research plan is described. Finally, the chapter discusses the biases in the data collected, the limitations of the research, the problems encountered in the execution of the research plan and how these problems were addressed.

5.1 RESEARCH METHODOLOGY

An inductive research methodology has been utilised. Section 1.5 outlined the research method and introduced the view that the research problem(s) was not clearly identifiable at the outset. In accordance with the soft systems approach (Checkland 1981), the focus of the research converged over time as the study developed. A founding hypotheses was formulated and augmented by a set of questions, which were refined and revised as the research progressed and the author developed a clearer understanding of the situation.

A number of different research techniques were used in attempting to obtain well-triangulated results (Leedy 1985). Elaborating on the discussion in section 1.5, data collection and analysis in the sample areas used qualitative and quantitative techniques. These techniques included aerial mapping for time-series analyses, key-informant interviews, life histories, interviews and small group workshops involving residents in the sample areas, and monitoring the sample areas between 1996 and 1999. The Brown's Farm case was monitored for a longer period as the author had surveyed part of the cadastral layout in 1991 and sporadically monitored the area since then. This was augmented by desktop studies and wide-ranging interviews and discussions in Cape Town, South Africa and internationally. These are discussed in more detail in section 5.4.

In some of the sample areas the research took on the character of a case study (Yin 1984, Benbasat *et al* 1987, Lee 1989, Onsrud *et al* 1992). That is the researcher(s) played the role of participant observer and the activities of the researcher may have influenced the results. In Marconi Beam and Imizamo Yethu some data were collected over time by interacting with and observing the behaviour of residents directly in interviews and meetings. Moreover, the research in these areas formed part of a larger UrbanModeler research project¹ where the application of spatial information systems and spatial data capturing techniques in informal settlements were being studied. In these two cases the activities of the researchers may have influenced behaviour and the responses in

interviews in the latter part of the research. The research activities informed community leaders and other members of the communities of the nature of cadastral systems and the implications of usage or non-usage of a cadastral system. In Brown's Farm and Khulani Park the researcher(s) was a non-participant observer. In Brown's Farm, residents were not interviewed. In Khulani Park, interviews were conducted over a short period of time and the research activities were unlikely to influence the responses in interviews or the behaviour observed as part of the research. A sample of residents were interviewed over a short period of time and the results of conflating all the data from a variety of sources relating to these latter two study areas indicate that the interviews of the residents had little influence on the results reported in this dissertation.

A simultaneous narrow focus on the sample areas and a broad view of developments in Xhosa-speaking settlements in greater Cape Town, and national and international experiences was maintained throughout the course of the research. The aim was to strengthen the validity of both the research context and the research questions. The narrow focus involved both aerial mapping and interviews conducted in each of the study areas, where possible. These were snapshots of the situation at particular stages of the development cycle from informal to formal property rights in each settlement, within a broader environment of a country undergoing transformation. These data gathering exercises attempted to measure behaviour and establish beliefs, attitudes and behavioural intentions, plus norms and controls using the evaluative framework developed in chapter 3. The author considered that a valid portrayal of the relationships between land tenure and the cadastral system required that each data set be augmented by further data obtained over a longer period. Consequently, with the exception of Khulani Park, the study areas were monitored by periodic site visits and ongoing discussions with key-informants. Moreover, in addition to studying four cases studies, the author interviewed officials and land professionals who worked in the former Ikapa and Lingeletu West local authorities which administered most of Cape Town's Xhosa-speaking suburbs in the City's eastern metropole. In addition, a life history of a Xhosa-speaker from Khayelitsha who had lived in Cape Town for more than 25 years under various forms of tenure was recorded.

The nature of the problems that might be expected in the study areas and the hypotheses, and research questions were tentatively formulated initially upon a review of existing work and a set of interviews with land professionals in Cape Town. Furthermore, as data were acquired and analysed in each successive area, it was possible to draw comparisons between case studies and establish if particular explanations for a particular type of behaviour (e.g. encroachment) applied to Xhosa-speaking communities in Cape Town in general. Moreover, studying a number of case studies and conducting interviews in the broader eastern metropole ensured that gaps in the data acquired in a particular case study could be filled by data acquired in another case study.

5.2 CASE STUDY SELECTION CRITERIA

As discussed in section 1.5, three case types that mirror the stages of development from informal land rights to formal registered rights in Cape Town were studied. The settlement types identified to sample the stages of development of Xhosa-speaking settlements in Cape Town included 1) an informal settlement that is expected to be upgraded to formal land rights, 2) a site-and-service scheme, and 3) an existing

registered township. This section outlines why the three different sample types should provide a valid representation of the development cycle from informal settlement to registered ownership in Xhosa-speaking settlements. As it turned out, the informal settlement and one of the two site-and-service schemes had proceeded to formalisation and registration by the time the research had been completed. Registration was in process in the second site-and-service scheme. Therefore, although a formal secondary land market had not yet developed in the sample areas, the property development process as depicted in figure 4.1 through to registration was observed in three settlements. Moreover, a settlement where property had been registered for a number of years was researched.

5.2.1 Informal Settlement

The rationale underlying studying an informal settlement that is scheduled to be upgraded to formal rights is that it should give insights into the instruments and processes that underlie tenure security during the informal stage. Moreover, it should also provide insights into how people intend to make use of a cadastral system that's purpose is to support residents' formal land rights.

The author's assumption was that it should be possible to observe and, where appropriate, measure a sample of the components outlined in the analytical framework developed in chapter 3, during the cycle transformation from informal to formal property. Studying an informal settlement is the first phase of this cycle. Site-and-service schemes constitute the second phase in terms of the practices that applied in Cape Town when this research commenced. As the Marconi Beam case study will show in chapter 8, residents of informal settlements can proceed directly from the informal settlement stage to individual ownership of newly constructed houses without experiencing the site-and-service phase.

A further, fundamental, assumption underlying this study is that certain theory of planned behaviour (TPB) components such as beliefs, attitudes and norms may change continually given the dynamics of a transforming informal settlement. This assumption builds on the discussion in section 1.3 of existing theory concerning land tenure in urban African settlements and the social change model. To recap, it was argued that land tenure in informal settlements is not static and subject to continual change as conflicting forces influence behaviour. The real world contains complex mixtures of formal and informal systems with infinite variations in between (Doebele 1994). Tenure practices in informal settlements exist not in terms of legal, illegal, spontaneous, planned, formal and informal concepts, but on a continuum of these concepts (Fourie 1994, Comaroff 1982, Davies 1998).

The author based the assumptions which follow upon the social change model, the observations of Durand-Lasserve and Clerc (1996) and the author's own observations during the course of this research. As residents become educated in the requirements of owning a home, they should become sensitised to the strengths and weaknesses of the set of alternative formal and informal processes and instruments available to secure their rights and interests in land. They should form, refine and perhaps revise beliefs, attitudes and behavioural intentions throughout the development cycle. Moreover, social norms may evolve and internal and external forces could alter both perceived and actual

behavioural controls. For example, social norms may alter in response to education programmes on land ownership. At the beginning of a development programme, it might be acceptable in the broader community for land to be registered in the name of the head of house. Subsequently, an education programme may indicate that such registration may alter the power relations within families (see section 1.3.8), perhaps allowing the head of house to sell the land without consulting the rest of the family. This may alter the general wants of the majority of residents in a settlement. For example residents may change their wants from individual title to family titleⁱⁱ.

Internal controls, for example, may emanate from pressure from recent arrivals in a settlement such as lodgers or extended family members to accommodate them in the land delivery process. This pressure may constrain the way in which adjudicated landholders behave. Using Payne's (1997) taxonomy, for example an agreement between adjudicated landholders, or "winners" and land administration authorities not to allow backyard shacks to be erected on a greenfields site may become inoperable. People excluded from acquiring long term or permanent land rights, the "losers", may force the "winners" to accommodate themⁱⁱⁱ. Changes in legislation, administrative institutional arrangements, funding availability or invasions of a community's greenfields site by another community are examples of external controls on behaviour that may transpire. These controls may cause people to alter their attitudes, subjective norms, behavioural intentions and behaviour.

5.2.2 Site-and-Service Scheme

At the commencement of this study in 1996, the author observed that a typical site-and-service settlement in the Cape Town Metropolitan area consisted of a formally planned, surveyed and monumented land parcel, which had tarred access roads, the basic infrastructure for engineering services in place and, as a minimum, a flush toilet. Landholders were expected to construct their own dwellings, which with a few exceptions consisted of a galvanised iron shack. Although it was possible to register these site-and-service parcels in formal ownership very few had been registered at the commencement of this study. The majority of these parcels were rented from a local authority on a short-term lease for a nominal service fee (Schweller pers com 1997, Ngeze pers com 1996). Interviews with a number of key-informants indicated that formal transactions in these short-term leases were based in principle upon a purchaser or new occupant being expected to pay for the improvements that the existing tenant had made to the site. In general this price for the improvements was the cost of the materials used to construct the dwelling.

An analysis of a site-and-service scheme is assumed to provide a link between informal rights in property and formal rights of ownership upheld by the instruments, processes and structure of the existing cadastral system. A site-and-service scheme such as those that existed in Cape Town at the commencement of this research where landholders expected to be granted ownership rights in future affords the analyst the opportunity to study actual behaviour and determinants of behaviour with regard to cadastral system usage. The systems in Cape Town that are used to adjudicate, register and transfer lease rights in site-and-service schemes are in effect a form of cadastral system. Although these rental registration systems were found to differ slightly in different local jurisdictions, they were similar in many ways. The name of the leaseholder(s) was

recorded in an official document which is kept in a local authority's office. With the exception of Imizamo Yethu settlement, the leaseholder was also given an outcopy of the document that affirms his or her rights of occupation. Moreover, the boundaries in Cape Town's site-and-service schemes are the surveyed, fixed boundaries defining the geometric location of the parcel. It is therefore reasonable to assume that residents of site-and-service schemes have prior experience of a system upholding individual land tenure security that is similar to the formal cadastral system. Studying such a settlement afforded the opportunity to study actual behaviour from adjudication through occupation to registration. It was also possible to study actual usage of the systems used to administer the rental schemes and beliefs and attitudes concerning these cadastral sub-systems. From this exercise it is reasonable to assume that actual behaviour and a study of determinants of behaviour in these settlements should provide an indication of the effectiveness of the cadastral system's instruments and processes in upholding land tenure in the long term. In terms of Taylor and Todd's (1995) theory discussed in chapter 3, given that residents in site-and-service schemes have experience of using a system similar to the formal cadastral system, they should have a superior knowledge of the controls on using the formal cadastral system in Cape Town than a resident of an informal settlement. Furthermore, it was possible to explore beliefs, attitudes and intentions concerning usage of the formal cadastral system in future.

5.2.3 Registered Settlement

An established registered settlement, ideally where formal or informal transactions in land have taken place in a secondary market, completes the development continuum from informal rights to registered ownership. Such a settlement should provide a measure of the full set of TPB components. Most important, a measure of system usage is determined by observing actual behaviour. The spatial component of the ownership bundle can be determined by observing adherence to boundaries. The abstract run of property rights can be determined from use of the registration system.

In practice, it may be difficult to establish if extra-legal transactions take place however, because if residents who indulge in these practices are aware that these activities are extra-legal, they are unlikely to admit to them. However, in the Khulani Park case study the parcels were mortgaged. If properties are mortgaged, to hide an extra-legal transaction the buyer and seller of these rights would have to ensure that mortgage bond repayments are continued, otherwise the parcel will be repossessed. In the author's understanding of the situation, such a transaction is unlikely to take place. Extra-legal transactions are unlikely to take place if land is encumbered by a mortgage that is registered in the name of a third party.

5.3 CASE STUDIES SELECTED

Four urban sites in the Cape Town Metropolitan Area were researched. In addition to the different characteristics discussed in section 5.1, accessibility to and cooperation of the community was a key factor in carrying through the work in a particular site once it had been selected. Four sites depicted in figures 1.3 and 4.1 were studied:

- Marconi Beam in Blaauwberg Municipality as an informal settlement;

- Brown's Farm in Philippi in the City of Cape Town as a site-and service scheme;
- Imizamo Yethu (Mandela Park) in Hout Bay in the South Peninsula Municipality as a site-and-service scheme;
- Khulani Park, Khayelitsha in the City of Tygerberg Municipality where the individual titles were registered.

The sites were selected on the basis of communities allowing access to the author and the fact that they are located in four of the six different local authorities comprising the Cape Town Metropolitan Council. This wide distribution of sites throughout the City should reduce the risk of localised biases in the data discussed in section 5.6. Two site-and-service schemes were selected because it was not possible to obtain access to conduct interviews in Brown's Farm. This is discussed more fully in chapter 6 and chapter 9.

5.4 NON SPATIAL DATA GATHERING TECHNIQUES

Building on section 1.5, spatial and non-spatial data was collected using a number of different techniques.

5.4.1 Wide-Ranging Data Collection

Interviews were held on an ongoing basis throughout the research with a number of Xhosa-speaking township residents outside of the study areas, local politicians, planning and land administration professionals, local government officials, development project managers, NGO employees, international development workers, South African land tenure lawyers and academics. The author interviewed numerous officials from the Department of Land Affairs and other land administration institutions in South Africa, and land professionals working in the Durban and Cape Town areas. In addition, the author was a member of two Department of Land Affairs working groups in Pretoria during the course of the research. The first group investigated cadastral surveying and land registration options for South Africa. The second was a sub-group of a land tenure reform working group, which investigated the development of legislation to protect the rights of extended family members when land rights are adjudicated, registered and inherited. Furthermore, the author has detailed knowledge of a number of Cape Town's land administration institutions such as the Deeds Office, the Surveyor General's offices and municipalities. The author visited a number of international cadastral institutions and academic institutions. Internet listserver groups were also used to collect information from experts and analyse international experience in particular issues, such as family titles, that arose during the course of the research.

5.4.2 Data Collection in Cape Town

The following non-spatial data were collected from Xhosa-speakers in the sample areas and in greater Cape Town. Data was collected from Xhosa-speakers outside the sample areas in the city's eastern metropole to ensure that the data collected in each area was representative of the City and not local phenomena. The data collection methods comprised:

1. Open ended key-informant interviews relating to the study areas. These included key-informants from leadership and management structures within the sample areas and key-informants such as land professionals, academics and officials who worked on these projects;
2. Life histories of Xhosa-speakers outside of the sample areas who had lived in Cape Town for a number of years;
3. Structured interviews and focus groups sessions involving individuals and groups of residents in the sample areas. This involved group discussions and workshopping of various tenure issues, cadastral processes and instruments in the study areas, broadly outlined in section 5.1. The questionnaires in appendix B were developed as a structure to these sessions, but not all issues were raised in each interview. In these sessions, models were often used of shack layouts and housing layouts and fences to explore beliefs, attitudes, behavioural intentions and anecdotes of behaviour concerning boundaries, documentation and social processes to support tenure security and issues connected with family rights, sale and inheritance.

5.5 SPATIAL DATA GATHERING TECHNIQUES

Spatial data comprised aerial imagery of all four sample areas and digital maps of the legal cadastral boundaries in Brown's Farm, Imizamo Yethu and Khulani Park. The digital cadastral maps were created from calculations using approved general plans filed in the Surveyor General's office. The aerial surveys used analogue stereo imagery obtained from local land administration institutions and digital video imagery that was captured as part of the UrbanModeler project. The spatial data were used for time-series analysis by overlaying successive aerial surveys to monitor changes in spatial development patterns on the ground in the Marconi Beam informal settlement. In Brown's Farm, Imizamo Yethu and Khulani Park the aerial surveys were overlaid on digital maps of the surveyed cadastral boundaries to compare the *de facto* settlement patterns with the *de jure* cadastral boundaries.

5.5.1 Survey Precision

The analogue stereo photography ranged in photographic scale from 1:3000 to 1:10000 depending on what was available. Digital video still imagery in Marconi was captured with pixel sizes of between 15- 18cm on the ground. The precision of the photography was tested in Brown's Farm and Marconi Beam to establish to what precision objects such as roof corners could be identified and surveyed. In theory, it should be possible to extract well-defined point features such as house and fence corners from 1:10000 scale photography with a planimetric accuracy in the order of 10-20cm (Kraus 1993, Kraus 1994, Barry and Mason 1997). However, the results of this study, detailed in chapters 6 and 8, yielded a planimetric accuracy that was no better than 0.5 metres. Consequently the procedure was adopted that if an object appeared to encroach over a cadastral boundary by more than 0.5 metres on the overlay of an aerial survey on a digital cadastral map, then it was viewed as being a possible encroachment. As chapters 6 – 10 will show, the interpretation of these

overlay maps required a substantial amount of qualitative analysis and the figure of 0.5 metres has been used as a guideline.

It has been assumed that all cadastral surveys were performed to the precision stipulated in the regulations to the Land Survey Act 9 of 1927^{iv}. Consequently a precision estimate of 5-10cm is realistic for the positions of the boundary apices in the digital cadastral maps.

5.5.2 Control Surveys and Ground-Truthing

Ground control surveys and some ground-truthing of aerial surveys was carried out using GPS surveys. In general the precision of these surveys was within 2 cm. See section 6.2 for a detailed discussion. A list of surveying equipment and software is included in appendix A.

5.6 EXECUTION OF THE RESEARCH PLAN

5.6.1 Data Collection and Analysis Strategy

A strategy was used of identifying local patterns in a particular sample area using the evaluative framework developed in section 3.4 and then verifying the findings in the case studies against the material from the eastern metropole and against the other case studies. In this way an overall picture for analysis and conclusions was developed. The results of each sample area are reported in the order that research in these areas commenced. That is Brown's Farm is reported first in chapter 6, followed by the research in the predominantly Xhosa-speaking part of Cape Town's eastern metropole in chapter 7. These two studies entailed recording experiences of officials and key-informants and the author examined a number of official documents and plans. In Brown's Farm, aerial mapping was conducted to analyse patterns of land occupation relative to the surveyed cadastral layout. Interviews of residents could not be conducted in Brown's Farm. In the eastern metropole, a life history of a person who was granted registered ownership of a site in Khayelitsha was recorded, and two other residents were interviewed. A comprehensive set of interviews of residents in the broader eastern metropole outside of Khulani Park was not conducted.

The Brown's Farm case and the eastern metropole study are followed by the Marconi Beam, Imizamo Yethu and Khulani Park case studies in chapters 8, 9 and 10. These three case studies comprise the case study types required in terms of the discussion in section 5.2. In these case studies, comprehensive sets of data were collected. In contrast to Brown's Farm and the eastern metropole, a comprehensive set of interviews or group discussion sessions with residents was conducted in each of these case studies. Brown's Farm and the eastern metropole recorded actual behaviour and records of experiences of actual behaviour. The other three case studies recorded elements of the theory of planned behaviour as well as actual behaviour.

This strategy's rationale was to validate or falsify each new finding as it emerged in a particular case study and, if valid, to augment the finding with further data from different areas in Cape Town. This augmentation should build strong, conclusive or

persuasive arguments where possible and remove the effects of some of the biases mentioned in section 5.7 below.

Falsifiability implies that it should be possible to negate the results (Pelto and Pelto 1978). The greater the number of situations in which hypotheses have been exposed to falsification and survived the test, the greater the credibility of the theoretical model (Leedy 1985). If a finding was not supported by data from elsewhere, then it was not necessarily rejected. A finding may have been “false” for one of the following reasons:

- 1) It is a local phenomenon in a particular sample area;
- 2) It is a phenomenon that exists more widely in Cape Town, but evidence to support it was not observed in this study;
- 3) It is a result of false information provided by respondents;
- 4) It is incorrectly observed or incorrectly interpreted information.

This research adopted the philosophy that in the case of potentially false findings from a particular sample area emerging, then the author would attempt to establish which of the above categories it falls within. If the finding could be shown to be false, then in principle it would be dismissed as incorrect. Otherwise, only speculative arguments could be raised against such evidence to provide pointers for further research.

5.6.2 Sequence of Data Collection and Analysis

As discussed in chapter 6, Brown’s Farm, had been surveyed by the author in 1991 and the author had been aware of events relating to Brown’s Farm for a five-year period prior to when the research commenced in 1996. Brown’s Farm was used to establish if the problem of boundary encroachments existed. In addition, the adjudication and administration of the rental scheme up to registration of parcels in the area provided data relating to the other cadastral system processes depicted in figure 2.3 and the land tenure relationships relating thereto. A final year BSc (Survey) project (du Plesses 1996) captured the positions of dwellings (shacks) and fences in Brown’s Farm using different scales and epochs of aerial photography. These were compared with the legal cadastral layout. These surveys provided an indication of the precision of the aerial photography available for identifying objects on the ground in settlements in Cape Town. The author later re-evaluated and analysed the data independently. Officials (key-informants) who had delivered the land to the residents, had been involved in the negotiations for occupation of the site, and had been involved in administration of Brown’s Farm land rights were interviewed between the beginning of 1996 and October 1998. From December 1996 to January 1997, the author unsuccessfully attempted to conduct interviews with landholders in Brown’s Farm. After negotiations with local political structures (local African National Congress Committee), requests to interview community members were rejected with no reasons given.

In May 1996, digital video aerial surveys of Marconi Beam were completed as part of the UrbanModeler project and the spatial patterns compared with 1994 aerial surveys of the shacks. Interview studies were commenced in Marconi beam from September 1996 to December 1996 during which time a total of 59 people were interviewed. Key-informant interviews were used to generate a questionnaire to conduct quantitative interviews. However, as detailed in chapter 8, quantitative interview

surveys were abandoned as the author deemed the subject material too complex to obtain meaningful results. Structured qualitative interviews and group sessions were used instead.

The transformation process from an informal settlement and relocation to a registered greenfields development at Joe Slovo Park was observed and monitored through to the end of 1998. By this time more than 80 people had registered their sites. In this phase, data were acquired through periodic site visits and discussions with key-informants.

Imizamo Yethu was selected as a second site-and-service site due to difficulties in conducting interviews in Brown's Farm. Comparisons of aerial surveys of occupation patterns in Imizamo Yethu settlement were compared with the legal cadastral plans in 1997 as a final year BSc (Survey) project (Gildenhuis 1997), and the data analysed independently by the author. Based on the interview structure and content developed in Marconi Beam, the author conducted a set of interviews in this settlement in June 1997 and monitored it until October 1999. Gildenhuis (1997) conducted a further set of interviews in October 1997 that confirmed parts of the results obtained in the author's interviews.

Aerial surveys of occupation patterns in Khulani Park, Khayelitsha, were flown in March 1997 and overlaid on cadastral maps that were surveyed in 1985. Key-informant interviews and structured interviews with a number of residents were conducted in July 1997.

The research in the wider eastern metropole was conducted in parallel with the case studies. Interviews and discussion were held with officials and land professionals in Cape Town's eastern metropole from 1995 to 1999. Interviews were held periodically between 1996 and 1999 with a person living in Khayelitsha in the eastern metropole whose life history was recorded as part of this research.

5.7 VALIDITY OF DATA AND SOURCES OF ERROR

This section describes some of the biases that the author perceives may exist in the data and the procedures adopted to eradicate them. Potential sources of error, biases and limitations in the validity of the data were:

- 1 **Gender bias:** There are potentially different results emanating from interviews of different sex groups. An attempt was made to address this issue, however gender bias is not viewed as a major constraint. Initially in Marconi Beam an attempt was made to ensure an equal number of males and females participated in the group discussion sessions. Overriding this however, was the need to ensure that respondents were decision-makers and that the majority of interviewees were shack owners who held an expectation or *spes* of a house in Joe Slovo Park. Decision-makers are the people who can be expected to use, or not use the cadastral system. As the research progressed, the author considered gender bias not to be a significant factor and attempts to get a sample of equal numbers of males and females were abandoned. However, all the samples did contain a representation of males and females. Moreover, many of the interviews

were conducted when the spouse or common law partner was present and interviews then became family group discussions.

- 2 **Temporal bias:** interviews were taken over a short period in the sample areas. These periods ranged from one month in Khulani Park to three months in Marconi Beam. Consequently, they provide a snapshot of beliefs, attitudes and behavioural intention during a short epoch. These may change significantly over a long period. This problem is offset by the fact that three different types of sites in different stages of development were studied and actual events were monitored over the study period. Furthermore, findings were continually explored in depth through follow up interviews with key individuals in these settlements and checked with Xhosa-speakers who live outside of the sample areas in Cape Town.
- 3 **Spatial bias** could result from local conditions that are unique to a particular part of a sample area and from conditions that pertain to a particular sample area that are not representative of Cape Town's Xhosa-speaking communities. The first strategy to diminish this factor was to select the areas to be researched in different parts of the City. To reduce the incidence of local conditions in a settlement biasing the data, with the exception of Brown's Farm, each sample area was divided up into a number of sectors from which a minimum number of decision makers or potential decision makers were interviewed. For instance in Marconi Beam a grid was overlaid on a mosaic of aerial photographs of the settlement and a minimum number of respondents were interviewed or participated in group sessions from each grid cell. In Imizamo Yethu and Khulani Park, a minimum number of people were interviewed from each block in the formal township layout.

A further strategy adopted to alleviate both temporal and spatial bias was to conduct a study of the Xhosa-speaking settlements in Cape Town's eastern metropole, which is documented in chapter 7. Data collected in this study was in the form of interviews with officials and land professionals, official documents and newspaper reports, and a life history of a Xhosa-speaker who lived in Khayelitsha.

- 4 **Economic bias.** At the time that the research was undertaken, the State provided a subsidy of R15 000 for first time home-owners who earned less than R3000 per month. The subsidy covered the cost of the services and professional fees to create the serviced parcel and whatever was leftover could be used to construct a dwelling. The land was essentially given away for free. A condition of this subsidy was that the land should be registered. This financial incentive may have influenced respondents to view the cadastral system positively, although the responses in Marconi Beam did not illustrate that this should have any influence. It was not possible to measure the influence of this factor as the issue is complex and in the author's interpretation of the situation it would have been difficult to collect meaningful data. Moreover, time and interviewee fatigue militated against attempting to measure this. For example, some of the workshop sessions in Marconi Beam lasted for more than two hours.

- 5 **Interviewer bias.** The author's background as a land surveyor influenced the way questions were formulated and phrased and the way in which the entire problem was conceptualised. In attempting to minimise this bias, the author consulted a number of people from a variety of disciplines about the research itself in terms of formulating the research questions. Similarly, the research methodology and data gathering and analysis techniques were discussed with anthropologists, architects, economists, human geographers, lawyers, planners, social scientists, statisticians and surveyors.
- 6 **The research itself influenced results.** As discussed in section 5.1, some of the research assumed attributes of case study method, and the research itself is likely to contribute to sensitising and educating people. As residents become educated in the requirements of owning a home, they become sensitised to the strengths and weaknesses of the alternative processes and instruments to secure their rights and interests in land. They form and refine attitudes and behavioural intentions throughout this cycle.

The research was designed to address the above biases where possible and to minimise their influence on the results.

5.8 PROBLEMS AND LIMITATIONS

There were some difficulties in collecting data, but overall in the author's opinion these did not adversely affect the results of the research. One problem was gaining access to communities. In the case of Brown's Farm, permission to interview people in the settlement was denied by a local political grouping. However, this was overcome by studying Imizamo Yethu as an additional site-and-service area. A further problem was that interviews could be long resulting in fatigue and loss of interest on the part of respondents. Some of the early group workshop sessions in Marconi Beam lasted up to three hours. To address this, as convergence of findings on certain issues was reached, the emphasis of particular workshops and interviews was changed. Certain questions were eliminated whilst new ones were added. Access to communities was also inhibited by a perceived threat to the researchers' personal security. During the interview sessions and throughout the course of the research, violent crimes including murder were reported in Khayelitsha, Brown's Farm, Marconi Beam and Imizamo Yethu. Whereas the researchers only experienced petty crime and threatening behaviour in two instances, after discussions with a number of key individuals, it was considered too risky for the author to conduct interviews personally in Khulani Park at night. Consequently, a research assistant conducted these interviews and good quality, reliable data were collected.

Overall, in spite of these problems, it will be shown in chapters 6 - 10 that the data are valid and that the research design has addressed most of the potential biases, problems and limitations. Volatility is to be expected in a country undergoing substantial change, and researching a cadastral system during such a volatile period is one of the major thrusts of the research outlined in section 1.2.

5.9 SUMMARY AND CONCLUSIONS

In summary the research is inductive and the hypothesis and research questions were developed and refined as the research progressed. As chapters 6 - 10 will show, a range of data were collected and analysed using qualitative and quantitative techniques in four case studies and the wider eastern metropole. The data collection techniques included aerial mapping for time-series analyses, key-person interviews, life histories, interviews and small group workshops involving residents in the sample areas, and monitoring the sample areas during the study period. The validity of the analysis was strengthened by key-informant interviews and recording a life history of a Xhosa-speakers who live outside of the sample areas.

Three settlement types were identified to sample the stages of property formalisation of Xhosa-speaking settlements in Cape Town. The set included 1) an informal settlement that is expected to be upgraded to formal land rights, 2) a site-and-service scheme, and 3) an existing registered township. In the end four settlements were studied, the Marconi Beam informal settlement, Imizamo Yethu and Brown's Farm site-and-service schemes and the registered township of Khulani Park in Khayelitsha. By August 1999, the first three settlements had proceeded to registration or were in the final stages of registration of the first set of parcels so it was possible to monitor proceedings from the informal settlement stage through to registration.

Biases, or potential biases, identified in the data collection were gender bias, spatial bias, temporal bias, economic bias, biases emanating from political conditions during the study, the author's own biases in the research planning and execution and the fact that the activities of the researchers may have influenced the results. Problems and limitations in the data collection arose out of inability to interview residents of Brown's Farm, some difficulty in getting residents to participate in the research.

Overall, in spite of the potential biases, problems and limitations, the research execution has addressed most of these issues and it will be shown in chapters 6 - 10 that the data are comprehensive and valid. A settlement where land has been registered for upward of ten years has been studied. In addition, the timing of this research has permitted the other three sample areas to be studied in the sequence from adjudication through to registration during a period of social and political transition. Furthermore, in terms of the discussion in chapter 4, as part of this social and political transition there has been institutional and legal transformation. The four sample areas studied and the study of events in other Xhosa-speaking settlements in Cape Town have provided a rich source of data for studying the effectiveness of a cadastral system in a period of transition.

ENDNOTES

ⁱ A research project in the Department of Geomatics, University of Cape Town.

ⁱⁱ Author's notes from Department of Land Affairs, Land Tenure Reform Working Group, Family Titles Workshop, Department of Land Affairs, Pretoria, 23 August 1998.

ⁱⁱⁱ Hypothesis founded upon observations in study areas forming part of this research and from descriptions of other informal settlements in the Western Cape province.

^{iv} Superseded by Act 8 of 1997.

CHAPTER 6

BROWN'S FARM

6.0 INTRODUCTION

Brown's Farm was the first sample area to be studied. It provided an initial, exploratory understanding of usage of the cadastral system in Cape Town's Xhosa-speaking communities. Brown's Farm is one of two site-and-service schemes studied in this research. One of the reasons for choosing this site was the author's familiarity with its layout and his awareness of some of the early issues surrounding adjudication and allocation of land. The author performed the cadastral survey of 220 parcels in Brown's Farm at the beginning of 1991 when the settlement was being created. During the course of surveying the site in 1991, the author observed on-site negotiations between community leaders and the provincial authorities, concerning who should occupy the site, and some of the problems that arose during these negotiations. Aerial surveys of the as-built structures overlaid on this cadastral layout and key-informant interviews relating to land tenure and the cadastral system were conducted between 1996 and 1998. Data for this case study were derived from these 1991 observations, from newspaper reports between 1991 and 1999 and from data collection activities conducted as part of this study between 1996 and 1998.

Being the first site to be studied in this research, two questions were explored initially. These questions were revised and refined as the research progressed in Brown's Farm, Marconi Beam and the wider Cape Town eastern metropole, culminating in the hypothesis and research questions expressed in section 1.4. The first question that the data collection activity explored was the hypothesis that township residents were not adhering to legal cadastral boundaries¹. To effect this, an aerial survey of the as-built structures (shacks and fences) in a sample of 350 parcels in Brown's Farm was overlaid on the surveyed cadastral layout. This sample included the 220 parcels surveyed by the author in 1991. The second question that was explored was posited as a solution to the "problem" perceived in the first question above. Prior to this research commencing, a number of proposals in professional planning, land registration and land surveying meetings and workshops advocated a form of group tenure based on the notion of block ownership, similar to a sectional title scheme. In broad outline, the proposal was that a group of people should be allocated a block of land, and adjudication, allocation of land for individual use and scheme administration would vest in the block community (see Barry 1995, Jeyanandan and Williamson 1990). Moreover, a proposal for a topological system of boundaries as described in section 2.4.2 was also mooted as part of this group tenure system.

The hypothesis that this form of group or block tenure with a topological boundary system is appropriate was abductively conceived. The hypothesis had not been investigated in urban African communities in South Africa and the notion of block ownership and a topological boundary system constituted a preliminary hypothesis with which to explore the situation in Brown's Farm. According to Pelto and Pelto,

abductive logic is initiated when surprising phenomena are encountered and these would not be surprising if a (new) hypothesis were true. They (the surprising phenomena) would follow as a matter of course from that hypothesis. There is thus good reason for elaborating and proposing it as a possible hypothesis (Pelto and Pelto 1978:254). In the author's observation the group tenure and topological boundary hypotheses were often proposed as foundations for a "solution" to tenure issues such as those in Cape Town's Xhosa-speaking settlements. Given the social-political situation at the time, it was important that these hypotheses were tested.

This chapter firstly outlines the situational context and the history of Brown's Farm. It then discusses the data collection procedures used to study the area. It reports on the spatial data collected, the accuracy and reliability of such data, and the suitability of the analogue photography used in Brown's Farm and other sites in this research. Thereafter it reports on the data collected concerning the cadastral system processes of adjudication, boundaries, registration and dispute resolution. These data are classified and analysed using the evaluative framework developed in chapter 3. In Brown's Farm, the majority of the data are descriptions of actual behaviour. Beliefs, attitudes and intentions were not explored because residents of Brown's Farm were not interviewed. The chapter also describes and analyses the relationship between land administration and the cadastral system in Brown's Farm and analyses the Brown's Farm situation in the context of pertinent land policy objectives.

A complete study of Brown's Farm was not possible due to difficulties in data collection. The author attempted to interview a sample of the residents after the local government elections in May 1996, but this was prohibited by political structures (a local African National Congress committee) in the community. Consequently, non-spatial data collection was restricted to interviews and discussions with key-informants involved in the administration of the settlement over the years and discussions with local politicians.

The advantage of the Brown's Farm case study was that it was possible to interview an official who had participated in adjudicating and allocating sites in 1991. Moreover, he was still administering the settlement up until the end of the data collection period in 1998, when most of the parcels had been registered in ownership. This continuity of one individual working on a particular settlement in the entire process from adjudication of rights in the informal settlements, through land allocation in the site-and-service scheme to registration did not occur in the other three Xhosa-speaking settlements studied. It was possible to discuss issues relating to all these processes with this official, whereas in the other case studies, the officials who had been involved in the original adjudication and land allocation could not be traced.

The Brown's Farm study evaluated the suitability of different stereo-analogue photography and surveying techniques for this research. The largest and smallest scales of photography used in this research were applied in Brown's Farm, so the sample area was used to set parameters on what should and should not be counted as an encroachment over a legal cadastral boundary. A complete set of spatial data of as-built occupation patterns was collected in Brown's Farm as the Cape Town City Council had flown the site in 1995 using two different scales of large format aerial

photography (23cm x 23cm); these photographic scales being 1:3000 and 1:10000. With the exception of Marconi Beam, where the site was mapped using rectified monoscopic digital video imagery as well as stereo-photogrammetry as part of the UrbanModeler research projectⁱⁱ, this study used existing aerial photography flown on behalf of various land administration authorities in Cape Town. The photography was evaluated to establish what could accurately be interpreted as encroachment in terms of the planimetric accuracy of the aerial survey of a particular object (see section 5.5).

6.1 SITUATIONAL DESCRIPTION AND HISTORY

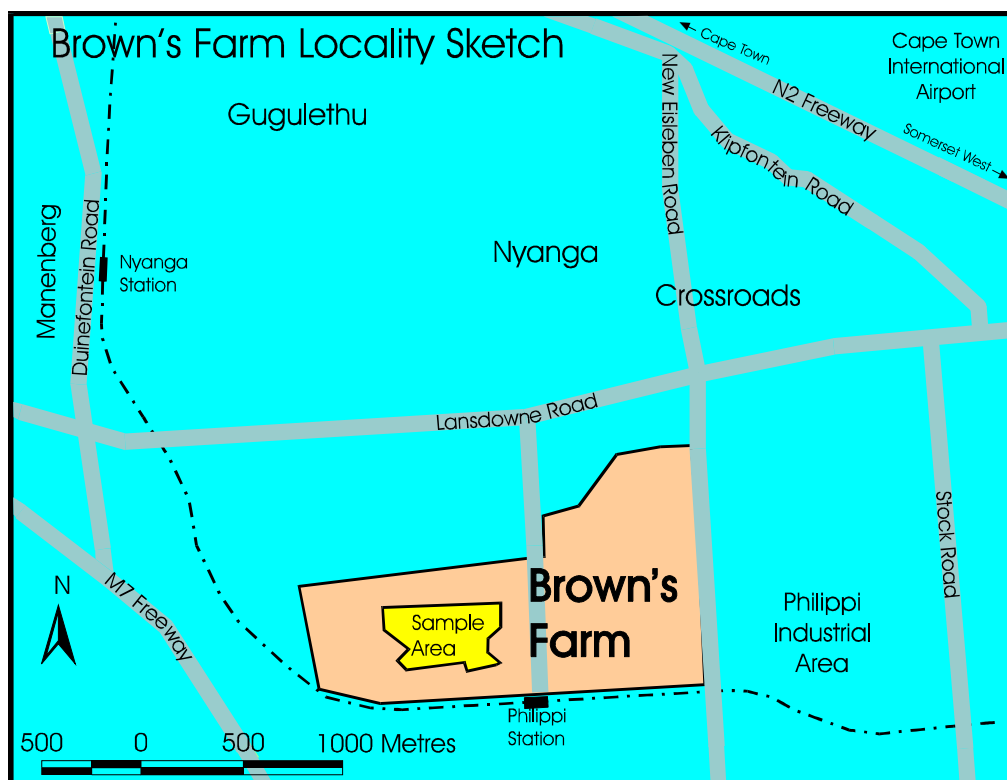


Figure 6.1 Brown's Farm Locality Plan

Source of Base Map: Cape Town Metropolitan Council GIS section

Brown's Farm is situated approximately 20 km from the centre of the City of Cape Town in the eastern metropole as depicted in figure 1.3. Administration of Brown's Farm changed during the course of the research after the local government elections in 1996. The Brown's Farm project was first jointly managed and administered by the Cape Provincial Administration through the Goodwood Regional Services Council, and the Ikapa Town Council. After the May 1996 local government elections the Ikapa Town Council which administered areas such as Langa, Gugulethu, Nyanga and Crossroads, was absorbed into the City of Cape Town (see figures 1.3 and 4.1), which then became the authority responsible for administering Brown's Farm. The Provincial Government and the Cape Metropolitan Council had no direct administrative responsibility in the tenure system after the local government elections.

In 1991, in the first phase of development in Brown's Farm a total of 2011 vacant serviced sitesⁱⁱⁱ, including the sample of 350 parcels which were surveyed

photogrammetrically as part of this research, were allocated to residents of three nearby informal settlements aligned to three warlords. These settlements were Lusaka settlement under the leadership of Melford Yamile, Miller's Camp under the leadership of Alfred Siphika, and Nyoka settlement under the leadership of Christopher Toise (Julies pers. com. 1996, Mayekiso pers. com. 1996)^{iv}. The first phase development of 2011 sites had been expanded to 3253 formal parcels by October 1998.

As discussed later in this section, there were frequent violent conflicts between different factions aligned to these warlords in Brown's Farm. Yamile, Siphika and Toise had been prominent in the conflicts on the periphery of Crossroads in the 1980's (see section 1.3.2.3 and figure 1.3). Furthermore, they may have been on opposing sides during some of these conflicts. Cole (1987:112) notes that Yamile, Siphika and Toise had refused to move to Khayelitsha in 1985 when the government attempted to relocate their informal settlement communities there. Cole (pers. com. 1998) indicated that all three of the Brown's Farm leaders were involved in the 1985-1986 conflict between the 'witdoeke' ('white head bands) and anti-government forces mentioned in section 1.3.2.3, and possibly in a number of other inter-informal settlement conflicts in the area in the 1980's.

Given that communities drawn from three different informal settlements, where Yamile, Siphika and Toise were the leaders, occupied Brown's Farm, it was difficult to reach agreement on land allocation and adjudication in 1991. The negotiations to occupy the sites in 1991 were protracted. When the author surveyed a portion of Brown's Farm in January 1991, the site-and-service infrastructure had been in place for three months while negotiations were underway. At the time, the author observed that much of the visible infrastructure, such as toilets, had been vandalised.

As was common practice in Cape Town during the late nineteen-eighties and the early nineteen-nineties, parcels in Brown's Farm were surveyed for registration as 99-year leasehold tenure in terms of the Black Communities Development Act 4 of 1984^v. None of the sites were registered in terms of this act though. The 1984 act was repealed by the Abolition of Racially Based Land Measures Act 108 of 1991 and it was possible to own property in *allodium* thereafter. Approximately ninety percent of the sites were registered in allodial ownership in 1997 and 1998 (Mayekiso pers. com. 1998). Prior to registration, residents rented their sites, having to pay a nominal monthly fee for services such as water and sewerage (Julies pers. com. 1996).

A typical parcel covered an area of between 150m² (10m x 15m) and 200m² (10m x 20m). Sites were serviced by tarred roads, piped water and water-borne sewerage. A flush-toilet was provided prior to occupation. The infrastructure for electricity and telephones was established but not supplied upon initial occupation. Structures in Brown's Farm during the study period consisted mainly of corrugated galvanised iron shacks, but brick and mortar houses were being built at the end of the data collection period in October 1998. Owners who qualified for a national housing fund (NHF) subsidy generally built the latter (Smith pers. com. 1998)^{vi}.

Following South Africa's national and provincial government elections in 1994, local government elections were held in May 1996. Brown's Farm currently falls in the

municipality of the City of Cape Town (see figure 4.1), and the area was represented by five ANC City Councillors from May 1996 who were still in office at the end of the data collection period in 1998. Prior to the local government elections, the local government office in Brown's Farm worked in conjunction with the warlords in administering the settlement. Officially, the influence of the original warlords was not recognised after these local government elections, and in terms of South Africa's constitution (see Appendix F), local groups should have had no control over individuals in the community. However, a communal bias in the tenure system still prevailed. For example, the author was compelled to negotiate with a local African National Congress (ANC) committee for permission to conduct interviews in Brown's Farm in February and March 1997. This permission was ultimately refused.

Violent conflict occurred sporadically in Brown's Farm. Fission and integration of groupings within Brown's Farm also occurred. In the early 1990's Memani split off a faction from Toise's group within Brown's Farm which then became aligned with the factions of Yamile and Siphika (Julies pers. com. 1996, Mayekiso pers. com. 1998)^{vii}. These conflicts appeared to have been influenced by the 1980's squatter wars discussed in section 1.3.2.3. Cole recalled that she was aware of allegations in the 1980's that Toise had aligned himself to the pro-government factions at that time (Cole pers. com. 1998). Mayekiso (pers. com. 1998) indicated that there were seldom factional conflicts between residents aligned to Yamile and those aligned to Siphika. However, there had been internal factional problems between residents aligned to Toise, and conflicts between Toise aligned residents and other factions (Mayekiso pers. com. 1998).

Further evidence of a bias toward integration was that in spite of having democratically elected councillors, the influence of the original warlords re-emerged periodically as local political power struggles were played out in the community in 1997 and 1998, often violently (e.g. Cape Times 10 July 1998)^{viii}. For example, in 1995, Toise and ±40 of his followers were violently evicted from Brown's Farm in a faction fight, in which two people died (Mayekiso pers. com. 1998, Julies pers. com. 1996). In 1997, Toise attempted to return to Brown's Farm, sparking further violence (Mayekiso pers. com. 1998). Violence between different politically aligned groups flared up in nearby Crossroads (see figure 1.3). Three months later, in July 1998, this violence spread to Brown's Farm. According to the Cape Times, South African National Civics Organisation (SANCO) supporters burned several shacks of people connected to the Western Cape United Squatters Association (WECUSA), or of people suspected of being aligned to Toise (who was also connected to WECUSA), and evicted suspected WECUSA aligned landholders from Brown's Farm (Cape Times 10 July 1998).

In conclusion, based on descriptions of actual behaviour, the above suggests that parts of Fourie's (1993) social change model accurately describe the tenure system in Brown's Farm up to 1998. An analysis of the discussion in this section and its relevance to the hypothesis and the research questions is included in section 6.4.

6.2 SPATIAL DATA ACCURACY AND INTERPRETATION

A complete set of spatial data was collected in Brown's Farm. As discussed in section 6.0, the non-spatial data were limited to interviews and discussions with key-informants.

Spatial data consisted of the coordinates of the original cadastral survey layout calculated in digital form and aerial stereo-photogrammetric surveys. Cadastral boundary beacons were surveyed by the author to an absolute planimetric precision of less than 50 mm in 1991. The Cape Town City Council supplied two sets of stereo-photography flown in 1995. These were 1:10000 colour and 1:3000 black and white photographs. Maps were created from stereo-models of the diapositives by research assistants^x on the Zeiss-Topocarte analytical stereo-plotter^x in 1996. The first objective of this exercise was to assess the object recognition and planimetric surveying accuracy of different scales of photography under Cape Town's topographic, atmospheric and illumination conditions (see section 5.5.1). In the author's experience, most of Cape Town's topographic mapping for urban administration has been done using 1:10000 photography^{xi}. Comparison of the two data sets provided an indication of what can be interpreted as a real encroachment, and what is a zone of uncertainty where an object on a map appears to be encroaching (or not encroaching) over a legal boundary. This latter encroachment may be false if the magnitude of the uncertainty in the position of the object on the map (planimetric accuracy^{xii}) is greater than the magnitude of the (apparent) encroachment (see Simpson and Sweeney 1973).

The primary objective, however, was to analyse land occupation patterns by quantifying the number of encroachments over surveyed cadastral boundaries that existed in Brown's Farm at the time that the photography was flown. The aerial surveys were used to provide a measure of actual behaviour concerning the spatial component of the proprietary unit defined in section 2.2.6. That is land occupation patterns in relation to cadastral boundaries.

Photo-control and ground-truthing of objects identified in the stereo-plotter was done using phase-differenced GPS based on the same geodetic control network used for the original cadastral survey.

The spatial data collected for map overlays will be discussed first. Thereafter the non-spatial data, relating to the cadastral processes, the abstract run of property rights, are described in section 6.3.

6.2.1 Global Positioning System (GPS)

GPS surveys were used to establish ground control and to ground-truth the photogrammetric surveys. The surveys in this research were based on the Lo19^o system, gauss conform transverse mercator projection, Cape Datum on the Clarke 1880 modified ellipsoid. As described in section 4.2.2.1, cadastral surveys in Cape Town were based on the Lo19^o system Cape Datum at the time this research was conducted. The national geodetic and cadastral survey datum was changed to Hartebeeshoek94 and the reference ellipsoid was changed to the World Geodetic System 1984 (WGS84) on 1 January 1999 (*Hartebeeshoek94* 1998). However, the cadastral and aerial surveys that were conducted as part of this research were

completed prior to this change of geodetic reference system and the data have not been transformed to the Hartebeeshoek94 system as this would make no contribution to this research.

Transformation parameters between geodetic control surveyed on the Lo19° system and GPS observations had to be established, which took into account the different reference ellipsoids and geodetic origins of these two systems. Local transformation parameters from the GPS based WGS84 ellipsoid and origin, and the published Lo19° system coordinates for the Brown's Farm area were determined using a set of nine cadastral general plan reference marks and three town survey marks using XFORM software by du Plessis (1996)^{xiii}. Table 6.1 depicts the mean square error of residuals in the transformation parameters used in this study^{xiv}. As can be seen, the static mode differential GPS measurements are precise to within 2cm. It should be noted that part of this error resides in the coordinates of the control points, the original surveys of which the author estimates to be precise to between 1cm and 2cm^{xv}.

Table 6.1 GPS Survey: WGS84 - Lo19° Conversion Parameter Precision

σ_x (m)	σ_y (m)	σ_z (m)	Resultant (m)
0.013	0.013	0.013	0.023

6.2.2 Photogrammetric Survey

A photogrammetric survey of a large area of Cape Town was flown at a scale of 1:10000 in 1995. This photographic scale was used to update a 1:1000 topographic mapping series^{xvi}. Empirical evidence^{xvii} and photogrammetric theory suggests that it should be possible to extract well-defined point features such as house and fence corners from this scale of photography with a planimetric accuracy in the order of 10-20cm (Kraus 1993:233-236, Barry and Mason 1997). In addition to the 1:10000 photography, Brown's Farm was also flown at a larger scale of 1:3000, which in theory should provide a planimetric accuracy of ± 10 cm (Kraus 1994:226-227). This 1:3000 photography based aerial survey provided a control set to establish the precision of results that could be expected from an actual field test in Cape Town conditions for other sites.

Two stereo models were set up in the stereo-plotter for the 1:3000 photography and one for the 1:10000 photography. The stereo-plotter work was performed by an experienced operator (Binedell) and then re-observed and processed by a final year undergraduate student (du Plessis).

Differences in object identification between the two observers are not insignificant. The author reprocessed du Plessis' (1996:D1-D4) data comparing du Plessis' observations with those of Binedell. A root mean square (RMS) error of 0.327 metres was obtained between the coordinates of fifty common points observed by both operators using the same 1:3000 model in the Zeiss-Topocarte stereoplotter. Consequently in the generation of overlay maps, only observations by the experienced operator (Binedell) have been used.

The errors in modelling the ground control established using GPS are reported in table 6.2 (after du Plessis 1996). Seven ground control points were used in each model.

Table 6.2 Stereo-Model Precision

Model	RMS (m)			Resultant
	ΔX	ΔY	ΔZ	
1:3000 No 1	0.040	0.063	0.039	0.084
1:3000 No 2	0.068	0.093	0.060	0.130
1:10000	0.184	0.183	0.199	0.327

The precision of the two surveys, 1:3000 and 1:10000 are below Kraus's expectation of well-defined objects (Kraus 1993:233-236, Kraus 1994:226-227). However, these results provide an empirically based indication of what can be expected when conducting photogrammetric surveys of site-and-service settlements and informal settlements under Cape Town's illumination, atmospheric and topographic conditions using the photographic diapositives supplied by local photogrammetric companies.

The 1:10000 and 1:3000 photogrammetric surveys were then compared, with the 1:3000 survey defined as a control set due to the improved ease of object identification on the larger scale photography^{xviii}. This was to establish an estimate of how accurately shack roofs and fences could be expected to be identified and surveyed in the other case study areas (e.g. Imizamo Yethu, Marconi Beam, Khulani Park) using 1:10000 photography. By inspection it appeared that fences were more difficult to identify on 1:10000 photographs than roof corners. Two sets of coordinates for common points that were observed by an experienced operator were compared; one for fifty-two common points on fences and the other for one hundred and forty shack roof-corners (du Plessis 1996:H1-H2, J1-J4). The author, in reprocessing du Plessis' (1996) data, calculated root mean square (RMS) errors of 0.452 metres and 0.509 metres respectively for these data sets.

Analysing these results, it is concluded that for Cape Town's informal settlements and site-and-service schemes, when using 1:10000 photography a tolerance of 0.5 metres is the minimum that should be used to investigate a situation where an object appears to encroach or not (see section 5.5.1). If an object appears to encroach by less than this magnitude, then this has not been counted as an encroachment. To ensure consistency in analysis, this tolerance of 0.5 metres that has been adopted for all the sample areas in this research, irrespective of the scale of photography. The counts for the number of encroachments are conservative as an object that falls within this 0.5 m zone of uncertainty might well be encroaching, perhaps even by more than 0.5 m, and it will not have been counted as an encroachment. However, assuming a normal distribution and 1:10000 scale photography, there is a probability of approximately 85% that an object that has been counted is encroaching.

In the final analysis, objects encroaching by close to the 0.5 m tolerance were few. Moreover, as will be shown in sections 6.2.3 and 6.3, counting the number of encroachments requires a considerable amount of intuitive analysis.

Barry and Mason (1997) conclude from these results that a survey based on 1:10000 photography is suitable for identifying general occupation patterns in conforming to legal boundaries. This is the requirement for this research. The 1:10000 mapping provides a means of estimating the proportion of the number of encroachments to the number of parcels in a sample, but there can be expected to be some error in the encroachment count if the magnitude of a number of apparent encroachments is close to the 0.5 metre tolerance. Photography at 1:10000 scale should not be used as a tool to realign physical objects to conform to legal cadastral boundaries. Furthermore, larger scale photography should be favoured, if economically feasible, to overcome interpretation limitations with 1:10000 scale photography. Consequently, due to the higher planimetric precision, the 1:3000 photogrammetric survey was used to analyse occupation patterns in Brown's Farm.

6.2.3 Discussion: Spatial Data Capture and Interpretation

As expected, the GPS surveys showed the geodetic control in Cape Town to be accurate. Errors between neighbouring town survey marks and general plan reference marks were of the order of one or two centimetres as expected.

On the basis of the RMS errors between ground control and the stereo-model coordinates, the 1:3000 scale photography proved to be suitable for mapping objects in a site-and-service scheme. Thus the 1:3000 aerial survey was used for the interpretation of land occupation patterns in Brown's Farm. Ground-truthing of the 1:3000 aerial survey by du Plessis (1996) was unsuccessful, but the RMS error between the positions of points observed by experienced versus inexperienced stereo-plotter operator suggests that an estimate of 0.30 m in planimetric accuracy for the positions of well defined objects is a reasonable assumption, and this is well within the 0.5 m tolerance adopted.

The 1:10000 scale photography proved not to be ideal, but useable for the purposes of this research. The 1:10000 photography can provide an indication of general patterns, but there may be errors in the counts of the number of objects that are encroaching or the number of parcels that are being encroached upon. In the author's analysis, 1:10000 photography can provide an indication that an encroachment problem exists in a settlement. More precise counts require larger scale photography or terrestrial survey methods. Concluding, 1:10000 is considered as adequate for this research, but larger scale photography should be used if possible.

It was found that interpretation of encroachment patterns required an examination of a large area on an overlay map. Consequently, the overlay maps of the cadastral layout and the aerial survey were plotted at a scale of 1:500 (0.5 metre = 1mm) and an initial count of encroachments performed on the paper map. In practice, it was found that even when larger scale photography such as 1:3000 was used, experience and intuitive interpretation of the overlay maps of structures and the cadastral layout was required to establish if a structure was genuinely encroaching. A general pattern of

shacks in an area, or the direction of the general trend of a fence line needed to be examined before making a decision on encroachment (see figures 6.4, 6.5 and 6.6). Where there was some doubt whether an object was encroaching or not, the situation was examined in finer detail using ArcView 3 software by zooming in on the affected area.

In conclusion, the above exercise has shown that the aerial surveys used in Brown's Farm and in the other settlements are of sufficient planimetric accuracy for the purposes of this research. The interpretation of these maps requires a substantial amount of qualitative analysis and improving the planimetric accuracy of the aerial surveys will not contribute substantially to the reliability of the data used in this research.

The use of existing geodetic control, GPS and stereo-aerial photography of a scale of 1:10000 or larger to map objects and overlay these on legal cadastral maps, such as general plans, connected to Lo co-ordinated reference marks provide appropriate data of a suitable accuracy for the analysis required. For this reason, in chapter 9 Imizamo Yethu and chapter 10 Khulani Park, where the above techniques have also been applied and 1:10000 and 1:5 000 photography was used respectively, the control survey results have not been reported. These surveys were all within acceptable tolerances. In chapter 8, Marconi Beam, some discussion is dedicated to applying large scale, digital photography using monoscopic rectification techniques to creating maps for time-series overlay analysis as this is different to the stereo-photogrammetric surveys used in Brown's Farm, Imizamo Yethu and Khulani Park.

6.3 NON-SPATIAL DATA AND ENCROACHMENT DATA

Section 6.2 described the technical qualities of the spatial data and the suitability of these data to this research. This section describes the non-spatial data integrated with the spatial data using the structure devised in section 3.4.1.

6.3.1 Adjudication and Tenure Type

This sub-section describes the original adjudication, land allocation and land delivery processes carried out in 1991 and the system of records implemented to support this process. It draws on and builds upon the historical description of Brown's Farm in section 6.1. Further related discussion on the maintenance and transfer of rights in land is included in section 6.3.2, which deals with registration.

In Brown's Farm the power to decide who should live in the settlement and who should not was designated to community structures in the three feeder informal settlements, Miller's Camp, Lusaka and Nyoka. The power to decide on which parcel a particular household should live in Brown's Farm was retained by the land administration authorities. The informal settlement warlords assisted by a community committee adjudicated and allocated rights to occupy parcels in Brown's Farm in 1991. Each leader supplied a list of people to be allocated land in Brown's Farm to the authorities. The Ikapa Town Council allocated a single parcel on a layout plan to each qualifying household according to these lists (Mayekiso pers. com. 1996)^{xix}.

The general practice by the Cape Provincial Administration authorities in allocating land in greenfields site-and-service schemes to informal settlement dwellers at that time (1991) was to settle people close to their particular warlord (Julies pers. com. 1996)^{xx}. In accordance with this policy, the Ikapa Council originally intended to settle residents from each feeder informal settlement in clusters in Brown's Farm (du Plessis 1996:7). However, in the end this practice was not followed in Brown' Farm except for a small area occupied by a cluster of some of Toise's followers (Mayekiso pers. com 1998).

The authorities resolved to fragment the different informal settlement groups spatially by dispersing people from the three settlements throughout Brown's Farm. This was meant to prevent tension between factions manifesting itself in conflict where residents of particular areas were ranged against residents of another area (Mayekiso pers. com. 1996). This strategy was probably influenced by the history of violent conflict in the area. With a few exceptions, the authorities allocated parcels in an alternating sequence, according to residents' original informal settlement. For example in figure 6.2, each household from the Lusaka informal settlement should have had neighbours on either side who hailed from Miller's Camp and Nyoka respectively. A similar situation prevailed for residents of Miller's Camp and Nyoka (Mayekiso. pers. com. 1996, 1998)^{xxi}.

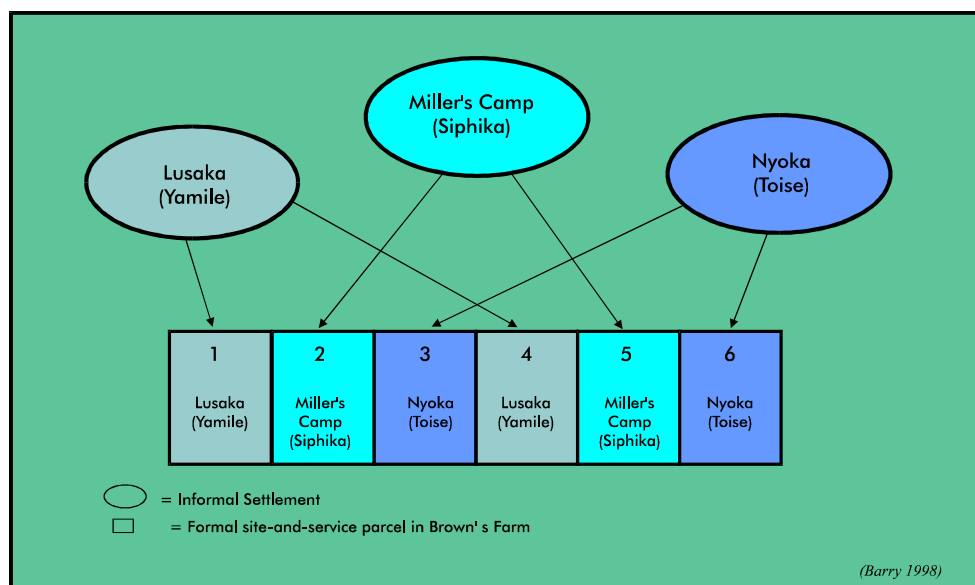


Figure 6.2 Brown's Farm Parcel Allocation Arrangements

The general adjudication or titling information system worked on the household head being placed on an allocation list and the Ikapa Council allocated parcels accordingly. The listed person's shack in the respective informal settlement would have a number painted on it and a registration card would be issued against the shack number in the name of that particular person. On a particular date, shack number X in an informal settlement was dismantled and physically trucked with its occupants and all its contents to parcel number Y in the Brown's Farm site-and-service scheme where the household reassembled the shack (Mayekiso pers.com. 1996)^{xxii}.

In 1991, the occupants of Miller's Camp occupied their parcels first. After all the Miller's Camp people who qualified for a parcel had been moved onto site, then the Lusaka camp was relocated to Brown's Farm followed by the Nyoka settlement. The parcels in between Miller's camp residents (e.g. parcels 1, 3 and 4 in figure 6.2) remained vacant until all eligible Miller's camp residents had been allocated their parcels (Mayekiso pers.com 1996).

The Ikapa Council pointed out the corner monuments of the fixed boundaries, these monuments being 12 mm iron pegs. People were given a parcel allocation card (commonly referred to as a rent card), a copy of which was kept in the office^{xxiii} where a file was kept for each parcel^{xxiv}. The Site Allocation Card was the record kept in the Brown's Farm office, and the Allocation Card was kept by the resident (see figure 6.3). The Allocation Card had to be signed by a representative from the Cape Provincial Administration (C.P.A) and a committee member from the original informal settlement.

The image shows two forms from Brown's Farm. The top form is titled "BROWN'S FARM ALLOCATION CARD" and contains the following fields: SURNAME:, NAME:, I.D. NO:, SITE NO:, OFFICIAL (AGENT C.P.A.), COMMITTEE MEMBER, DATE:, DATE:, and a small "Tiger Pak & Print" logo at the bottom right. The bottom form is titled "BROWN'S FARM SITE ALLOCATION" and contains the following fields: SURNAME, NAME, I.D. NO:, SITE NO:, DATE OF ARRIVAL:, HOUSING OFFICER:, DATE:, PROJECT MANAGER:, DATE:, OCCUPIER:, DATE:, and a small "Tiger Pak & Print" logo at the bottom right.

Figure 6.3 Brown's Farm Rent Card

The rights conferred by this contract were essentially occupation rights with an entitlement to registered 99-year leasehold tenure. By the time the parcels were occupied in 1991 this entitlement had probably changed to allodial ownership^{xxv}. Lessees expected to obtain registered ownership of their parcel. In the interim, they had to pay a nominal fee for services such as water, refuse collection, road

maintenance and water-born sewerage^{xxvi}. Therefore the rent card served a dual purpose. It was a certificate that officially affirmed the right to occupy a particular parcel in Brown's Farm in exchange for payment of a service fee. The rent card also served as an official certificate of entitlement to ownership of the parcel in Brown's Farm at some future date.

It should be noted that very few service fees were paid in site-and-service schemes in the CTMA^{xxvii}. This non-compliant behaviour may have been a carry over from rent and service boycotts in the 1990's that formed part of the revolutionary tactics used against the government in the 1980's and early 1990's. Non-payment may also have been due to residents not being able to afford these fees (see section 1.3.2.3, Liebenberg 1993:498-509).

6.3.1.1 Summary: adjudication and tenure type

In summary, the original adjudication of a right of occupation with an expectation of permanent land rights (99-year leasehold and then ownership) of a parcel in Brown's Farm vested in the warlords and a management committee in each of the three informal settlements. The local authorities incorporated this adjudication process into the land delivery process and allocated land accordingly. In an attempt to dissipate the power of the warlords that pertained in the three informal settlements, the authorities allocated land in Brown's Farm in a pattern such that residents from the three feeder informal settlements were not clustered together with landholders from their original informal settlement, barring a few exceptions. An information system based on a rent card held by the landholder and an office file copy of this card was used to record these rights. This card also served as a certificate of entitlement to ownership of the parcel at some time in the future. Sites were delivered to the landholders for occupation by physically moving the shack materials from the pertinent informal settlement onto site and pointing out the boundary monuments to the landholder(s) at the same time. Delivery of the parcel for occupation was the first step in phased delivery of ownership.

6.3.2 Boundaries

This sub-section first describes the results of the aerial surveys of the as-built situation overlaid on the surveyed cadastral layout that were used to quantitatively and qualitatively analyse the patterns of encroachment. Explanations for certain behaviours have been posited based on patterns identified in these overlay maps. Verbal evidence drawn from key-informant interviews is then integrated with this analysis in an attempt to establish causal links underlying the encroachment patterns identified.

6.3.2.1 Aerial surveys overlaid on legal cadastral layout

The 1:3000 survey, flown in 1995, and the surveyed legal cadastral map, monumented and surveyed in 1991, were overlaid using ArcView3 GIS software as shown in figure 6.4. Figures 6.5 and 6.6 are large-scale extracts from figure 6.4. The author initially attempted, but soon abandoned, semi-automated methods of identifying and interpreting encroachment patterns using polygon and line intersection algorithms.

The reason being that it was found that a valid interpretation of the overlay maps involved substantial intuitive input. Consequently, as discussed in section 6.2.3, for analytical purposes the maps were plotted at a scale of 1:500 (1mm = 0.5 m) and the analysis performed on these maps. Larger scale analysis to investigate specific details was done by zooming into specific areas of detail using ArcView 3 software.

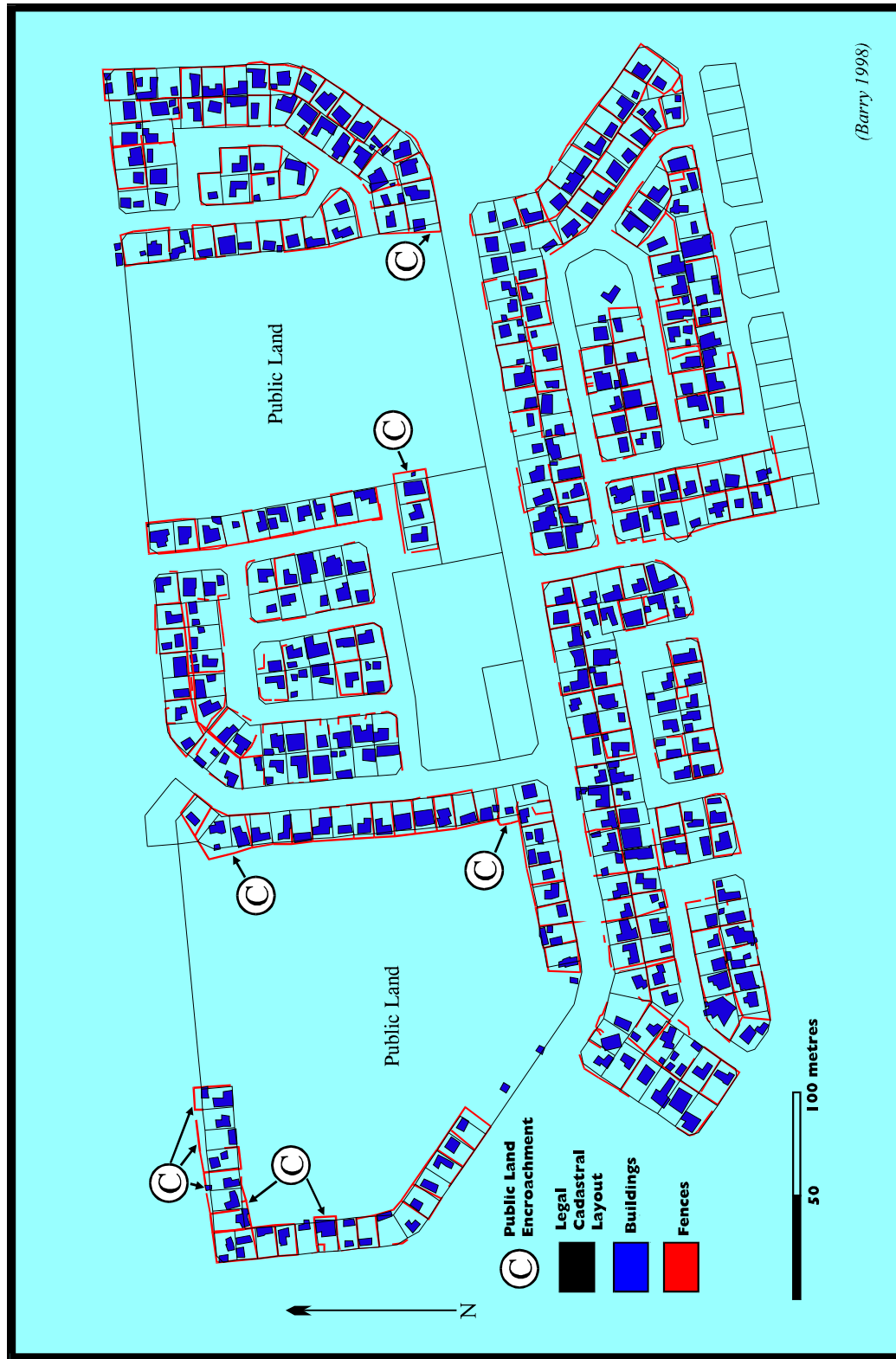


Figure 6.4 Brown's Farm Sample of 350 Parcels: Cadastral Layout and Occupation Patterns Overlaid

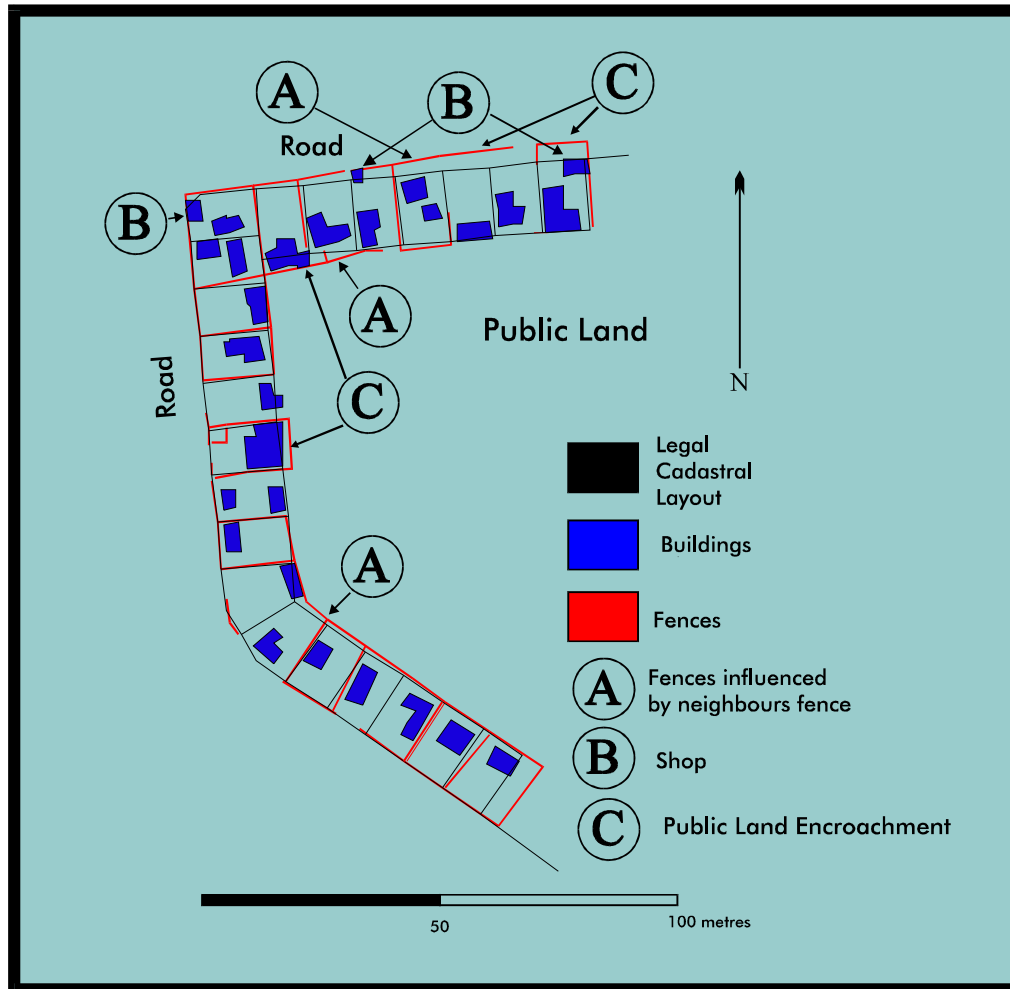


Figure 6.5 Occupation Patterns Detailed View A

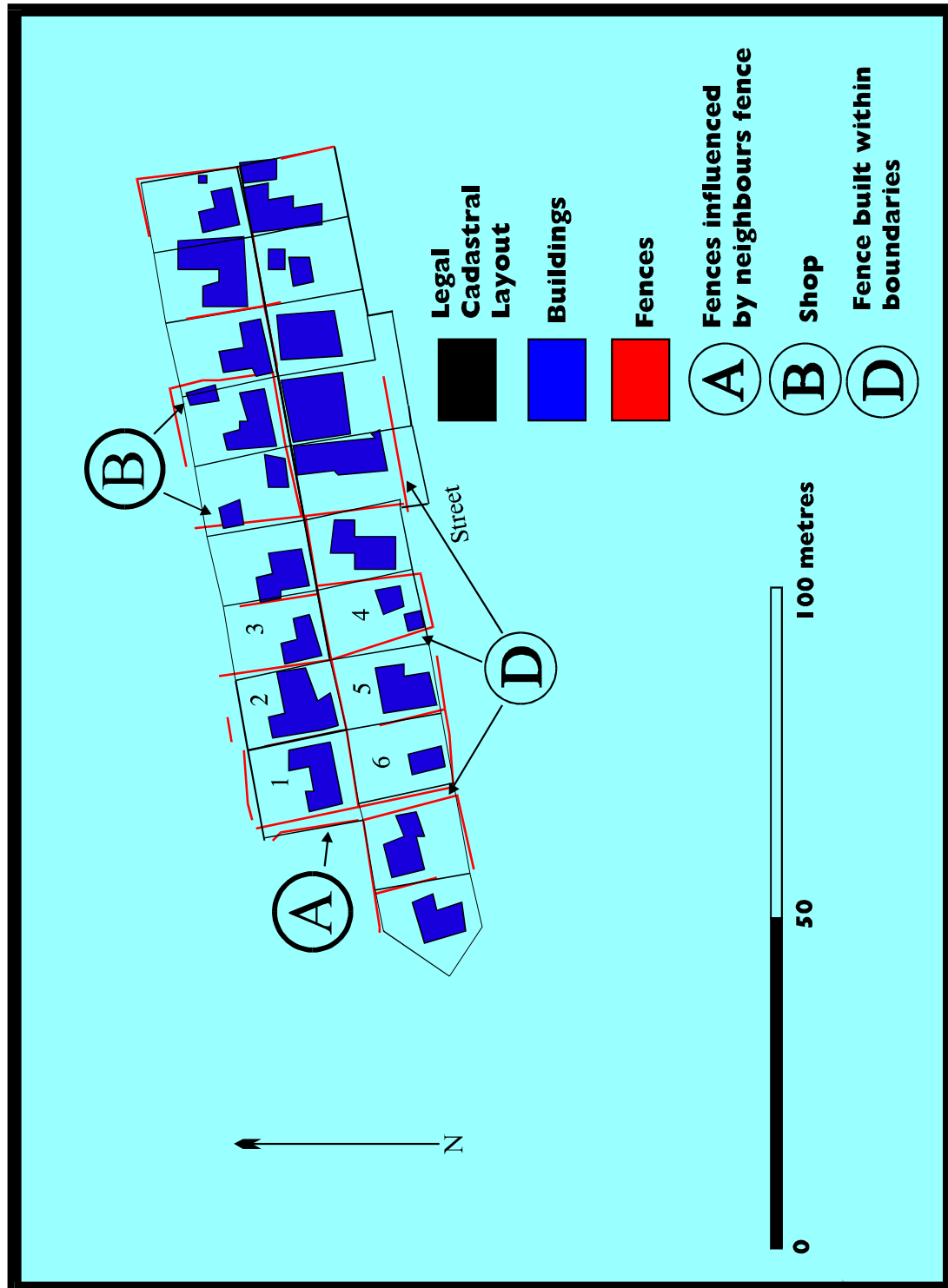


Figure 6.6 Occupation Patterns Detailed View B

Table 6.3 Encroachment Results

Fences Encroaching		
	N^o	%
Total sample	350	
Total encroaching (out of position) by 0.5 metres or more	147	42
Total encroaching onto public land	91	26
Total encroaching (out of position) by 1.5 metres or more	90	26
Buildings Encroaching		
	N^o	%
Total sample	350	
N ^o of parcels where households encroach onto neighbouring land	34	10
N ^o parcels encroaching onto public land (and perhaps neighbours)	20	6
N ^o of parcels encroaching on public land where encroachment interpreted to be spaza shops	9	3
N ^o on public land that might be shebeens (cause of encroachment may be need for extra space to run business)	2	0.6
N ^o not on public land with two or more shacks (cause of encroachment may be need to house more than one family)	13	4

Table 6.3 details the results of the overlay maps. As figures 6.4, 6.5 and 6.6 illustrate, there is some difficulty in interpreting buildings and fence line encroachments. The counts in table 6.3 for buildings and fences that encroach is based on the number of parcels that are inhabited by households that have been interpreted to have built structures that encroach onto neighbouring parcels. For the purposes of this research, these have been labelled the dominant parcels, based on the notions of dominant and servient tenement in servitudes^{xxviii}. A servient parcel is the parcel encroached upon. The household that holds the occupation rights to the dominant parcel has been labelled the dominant party and the household on the parcel encroached upon the servient party.

Counting the number of dominant parcels provides an idea of the number of households that might be faced with some form of action over encroachment. The method of counting does not indicate the number of disputes that may arise however, as a household on one parcel might build structures that encroach on more than one other parcel and it is not always possible to interpret from the map which is the “guilty” party when a structure straddles a surveyed cadastral boundary. However, given the land occupation patterns in Brown’s Farm, in the author’s opinion the method of counting encroachments is the most appropriate.

An alternative strategy, which was rejected, was to count the number of servient parcels. If encroachments had occurred only on privately occupied land, this count would have provided an accurate estimate of the number of potential disputes that could be expected to arise. It is reasonable to assume that the landholder(s) of each parcel encroached upon (the servient parcel) would initiate action to remedy the situation. However, a substantial proportion of the encroachments is on public land

such as the road reserve^{xxix}, detention pond sites^{xxx} and school sites. Road reserves on a South African township general plan tends to fall on one or two parcels as a remainder of the underlying parcel(s) that have been subdivided to create the township^{xxxii}. This means that in Brown's Farm there are far more dominant parcels than servient parcels. Consequently, as figures 6.4, 6.5 and 6.6 show, in the case of Brown's Farm, it makes more sense to count the number of dominant parcels where households practice encroachment. This practice was also applied in Imizamo Yethu and Khulani Park.

A third alternative counting method is to count all parcels that are encumbered by structures straddling their boundaries or encroaching over their boundaries. For example, if a shack encroached over a boundary between two parcels, then both parcels would be counted as being affected by encroachment giving a count of two using this third counting method. This third alternative was rejected on the premise that it gives an inflated picture of the magnitude of the number of cases that institutions handling dispute resolution might have to address. For example, a shack built by one household may encroach onto the parcel of another household. This will result in one dispute involving two parties.

Instead a better way is to estimate the number of disputes that may arise out of land occupation patterns. This indicates the number of relationships that arise out of a pattern of land occupation, not the number of affected parcels. This method of counting is in harmony with the definition of land tenure as a matrix of social and legal relationships that support and negate the holding and use of land by individuals or groups of people. To recap, this social-legal matrix is viewed as the system of rights, responsibilities and restraints people have with respect to land (see section 2.2.6). Counting the number of so-called problem parcels provides little information that is of use for the management and administration of land. A measure of the number of potential disputes gives an indication of the localised social, legal and administrative implications that may arise from a particular situation. This measure is based on social relationships and gives an indication of the implications of encroachment on social relationships.

The error in counts of fence line encroachments due to incorrect interpretation of the overlay maps is probably higher than the error in counts of shack encroachments. Fence line encroachments were far more difficult to interpret than shack encroachments. It is easier to interpret which parcel a shack should belong to than a fence. Fences are linear geometric structures on a map, whereas shacks are represented by polygons. In identifying the dominant parcel, it has been assumed that the greater proportion of the area of a shack that encroaches over a boundary lies on the parcel of the landholder(s) who built the shack. Moreover in most cases an error in identifying which parcel is the dominant parcel will not influence the count of dominant parcels. Even if the dominant parcel is incorrectly identified, the Brown's Farm data show that in most instances there will still be one dominant parcel counted which may lead to one boundary dispute. Errors in the count will occur if the dominant household has built shacks that encroach on more than one neighbouring parcel. In contrast, a fence that does not lie close to the boundary between neighbouring parcels may be an encroaching fence, or it may be a fence that has been built well within the parcel boundary by the landholder. If it is built within the

boundary, it may be incorrectly counted as an encroachment. An examination of the pattern of fences in the area may assist the analyst in reducing the error in these counts (see figure 6.6). However, as can be seen from figures 6.5 and 6.6, identifying if a fence encroaches onto public land such as a road reserve presents no problems.

Building on section 6.2, the original idea was to automate the detection of encroachments by programming an application in GIS software. However, as the discussion above shows, the problem is too complex and a less mechanistic, more intuitive interpretation of the overlay maps was done in conjunction with quantitative analysis. The 0.5 metre filter was used as a guideline, and not rigidly adhered to in interpreting the overlay maps. The author subjectively interpreted if a particular structure fell close to the 0.5 metre figure and examined particular situations at a larger scale using ArcView if necessary. Moreover, in Brown's Farm a larger filter was used to quantify if the general pattern of encroachment by fences was substantial or if it was perhaps an unintentional, minor misalignment of fences and surveyed boundaries.

Two filters of 0.5 metres and 1.5 metres were used to quantitatively assess the fence line encroachments in Brown's Farm in 1995. Using the 0.5 metre filter established in section 6.2, a total of 147 parcels (42% of the sample of 350) were interpreted as having fence lines that were out of position. Moreover, many encroachments were substantial and the encroachment was clearly not an error relating to a slight misalignment of a particular fence in relation to the cadastral monuments. To quantify this situation, a larger filter of 1.5 metres was then applied to establish if the general encroachment pattern is a minor misalignment of fences or a significant deviation from the surveyed cadastral layout. Given that the typical Brown's Farm surveyed parcel dimensions are at most 10 metres x 20 metres, 1.5 metres is significant in that it signifies a substantial difference from the surveyed parcel boundaries that were delivered. In such cases fences are out of position by more than 7.5 –15% of the length of the side of a typical surveyed parcel. A total of 90 parcels were interpreted as having fences out of position using this larger filter. This is more than 25% of the sample of 350 parcels that were surveyed photogrammetrically. In summary, the majority of fence line encroachments are substantial and not a result of minor misalignments with surveyed boundaries.

It was also found that encroachment patterns are not randomly distributed between private and public land parcels. Of the 147 dominant parcels that had constructed encroaching fences, 91 of these had fences that encroached onto public land such as the road reserve, detention pond sites and designated school sites. Some of these 91 parcels had fences that encroached onto neighbours' land as well as public land. A qualitative examination of the pattern of encroachments in figures 6.4, 6.5 and 6.6 shows the bias towards encroaching on public land because in general fences are aligned with the surveyed mid-block boundaries and in most cases with the boundaries perpendicular to the street between privately held parcels. This indicates that landholders were aware of the positions of the surveyed boundaries between themselves and their neighbours and in general they constructed their fences in accordance with these boundaries.

There is some inaccuracy concerning the count of encroachment by fences onto private land. It was often not possible to interpret if a fence was encroaching, or if it had been built inside a boundary, or neighbours had tacked their fences onto an existing fence. In figure 6.6, most of the mid-block fences adhere to the boundaries so closely that it appears that they have been built in accordance with the boundary monuments. However, at the area indicated "A", the tenants on parcels labelled 1, 3 and 5 in the figure appear to have constructed their fences according to the surveyed cadastral layout. The tenants on parcels 2 and 6 appear to have extended the north-south fences constructed by their southern and northern neighbours respectively. Consequently these fences, although apparently not encroaching, do not lie close to the legal boundary. In figure 6.5, the areas denoted "A" indicate fences where each fence segment corresponding to a particular parcel appears to have been influenced by the position of the neighbouring fence(s).

The author counted 34 dominant parcels (10% of the sample of 350 parcels in figure 6.4) to have buildings (shacks) encroaching beyond their cadastral boundaries. That is, households on 34 parcels actively encroached on neighbouring land. Twenty of these dominant parcels had structures that encroached on public land. A site inspection indicated that many buildings encroaching on the road reserve turned out to be spaza shops^{xxxii}. In a qualitative interpretation of the overlay maps, nine of those dominant parcels that encroached on public land were interpreted to be spaza shops. Two large shacks in the sample were interpreted to be shebeens ("informal bars").

In the case of shacks built onto neighbouring land without encroaching onto public land, 13 of these appeared to have two or more shacks built on the dominant household's parcel. There may be a social or economic motivation for this behaviour such as the need to house extended family or lodgers. The legal cadastral parcel itself is too small to accommodate these people. It was not possible to follow up on these cases with interviews and this reasoning is speculative. However, there is support for this hypothesis in the findings in the eastern metropole and Imizamo Yethu.

Verification of the 1995 overlay maps was done by site inspections in 1997 and 1998. However, the site had changed since 1995 and it appeared that the number of structures had densified and more spaza shops had been constructed. Moreover, after permission to conduct interviews was refused at the beginning of 1997, the author considered it unwise to continue to work in Brown's Farm itself.

In summary, in a sample of 350 parcels in Brown's Farm aerial surveys showed that there is the potential that a significant number of disputes over boundary encroachments may arise. The number of disputes involving shacks constitutes 10% of the sample size. The number of disputes involving fences constitutes 42% of the sample size, but this figure is not as precise as the one for shacks. The majority of these encroachments are on public land and consequently the majority of disputes are likely to arise between the dominant households and the local authority. There are a number of hypotheses that may explain these encroachments. These are posited and analysed in section 6.4.2.3 and the issue is addressed further in chapters 7, 8, 9 and 10.

6.3.2.2 Verbal data

This sub-section discusses information obtained from officials who had worked in Brown's Farm. These interviews verified the findings in section 6.3.2.1 above and explored the behaviour underlying these patterns of land occupation.

Mayekiso (pers. com. 1996) noted that he believed the system of monumented boundaries and rent cards was used in the Transkei and Ciskei areas of the Eastern Cape. Given that these are the areas of origin of most Xhosa-speakers in Cape Town, the residents of Brown's Farm might have been familiar with them. There is thus some evidence of residents in Brown's Farm having prior experience of tenure based on individual parcels that is supported by a cadastral system (see section 3.3.3), but this issue could not be followed up through interviews. This issue of prior experience of a cadastral system was explored further with a sample of residents in Marconi Beam and in a life history of a Xhosa-speaker who lived in Khayelitsha (see chapters 7 and 8).

In 1996, Mayekiso noted that there were a number of problems with encroachments in Brown's Farm, as the Brown's Farm office adjudicated two to three disputes per month (Mayekiso pers. com. 1996). If accurate, this equates to a total of between 120-180 disputes over the five-year period from 1991 to 1996. However, attempts by du Plessis to establish the nature and location of these disputes and delve deeper into these disputes was unsuccessful (du Plessis 1996). According to Mayekiso, by 1998 the monthly volume of encroachment disputes that were brought to the notice of the Brown's Farm office had increased. Mayekiso noted that in September 1998, there had been 10 disputes and by 6 October 1998 there were a further 5 boundary disputes on his desk. He estimated that there were on average 10 boundary disputes per month. On further enquiry, these "disputes" turned out to be inaccuracies in the rental register due to issues such as recording the incorrect name of the occupant on the rental register of landholders (lessees) as well as boundary disputes.

A senior official (building inspector), Smith, who had worked sporadically in Brown's Farm, provided a lower estimate than Mayekiso (1996, 1998). He indicated that he had dealt with ± 20 encroachment cases between 1996 and 1998. This figure is closer to Mayekiso's estimate in 1996 of two encroachment cases per month. Most often Smith was called onto site when people had started to build brick and mortar houses as a result of being granted a National Housing Fund (NHF) subsidy. Smith believed that encroachments were caused by monuments being destroyed, or people being unsure of their boundaries. In his observation spoliation, or land grabbing, was also a major problem and he had encountered cases where the dominant party had moved the boundary monuments (Smith pers. com. 1998).

Smith (1998) indicated that he was aware of the large number of encroachments in Brown's Farm. He was not surprised by the results of the aerial surveys. However, he believed that since most of the structures in Brown's Farm were movable shacks and fences, it was only worth intervening when the building of permanent structures commenced (Smith pers. com. 1998). In 1996, Mayekiso indicated that he did not consider encroachments to be a major issue. In his experience, often encroachment disputes arose from conflict between neighbours that had little to do with boundaries. Once conflict developed, then the servient party would insist upon adherence to the

surveyed boundaries when previously an encroachment had been allowed. It appears then, that in some cases the servient party was aware of an encroachment. The encroachment was permitted, or at least tolerated, until some other dispute prompted the servient party to assert their right that neighbours desist from encroaching over the surveyed boundaries (Mayekiso pers. com. 1996). This hypothesis could not be confirmed by other data in Brown's Farm, but there is evidence to support it in chapters 7 and 9.

Although there is disparity in the number of encroachment cases cited, both Mayekiso and Smith suggested that in their experience, Brown's Farm residents' attitudes to stationary, monumented boundaries were positive. To recap on the discussion in section 3.3, in terms of the theory of planned behaviour, attitude constitutes one of three independent determinants of intention to perform a specific behaviour (Ajzen 1991:188). Smith and Mayekiso indicated that in general people respect the 12 mm iron pegs that monument parcel apices and they believed the system of tenure based on individual parcels to be appropriate. In addition during the negotiations with local political structures to interview landholders, the author visited a number of prominent community members. One City of Cape Town councillor and a street committee member indicated that boundary pegs were an important issue, which they (the community) needed to address.

Smith believed it was only a minority of "gluttons" who grab land. He believed that one reason for moving beacons was jealousy. For example when a neighbour started to build a house, an encroacher might move the boundary pegs in jealousy. Smith also cited cases where people had enlarged their shacks and surreptitiously encroached on a neighbour's land (Smith pers. com. 1998). Mayekiso indicated that "clever guys" surreptitiously grabbed land. In his opinion, it was possible that residents from Miller's Camp may have moved pegs upon the original land allocation in 1991, before their neighbours arrived from Lusaka and Nyoka, but this had not been investigated (Mayekiso pers. com. 1998).

Smith believed that the type of boundary monuments are inappropriate. He believed that 12 mm pegs serving as boundary apex monuments were inadequate, they should be concreted into the ground. When the author surveyed a portion of Brown's Farm in 1991, a substantial number of the monuments were embedded in concrete. Notwithstanding this practice, it appears from Smith's evidence that many of these concreted monuments were destroyed or removed. Furthermore, although people accepted the system of boundary monuments, Smith indicated that there was a need to continually educate, train, monitor and control to ensure that structures were erected within these boundaries (Smith pers. com. 1998).

6.3.2.3 *Summary: boundaries*

In summary, in Brown's Farm both the aerial surveys and the verbal evidence indicate conclusively that encroachment is a major problem in terms of the definition of effective usage of a system of cadastral boundaries. *De facto* occupation patterns are not aligned with the *de jure* surveyed parcel boundaries that were delivered to landholders, and the system is not being used in the manner intended, particularly where public land adjoins privately occupied parcels. Behaviour concerning encroachment onto public land is different from that where neighbouring private land

is concerned, and there are significantly more encroachments onto public land than privately occupied land.

Reasons put forward for these encroachments are land grabbing, lack of awareness of the boundary positions (monuments have been removed) and a tolerance of encroachment by neighbours until a dispute between neighbours arose whereupon the servient party would reassert their rights.

6.3.3 Registration and Tenure Security

This sub-section describes the local level registration system used to administer the rental scheme and other processes and instruments in place to support tenure security and maintain rights in land. As discussed in section 6.1, a registered tenant could expect to have the land registered in ownership in his or her name. The situation in October 1998 concerning implications for the effectiveness of the deeds registration system is also described.

6.3.3.1 Rental scheme: registration of transfers

The rental scheme register was administered by the Brown's Farm office, which originally fell under the jurisdiction of the Ikapa Town Council and then later under the City of Cape Town after the 1996 local government elections. During the first five years of occupation from 1991-1996, warlords controlled the transfer and allocation of rights in Brown's Farm and the Ikapa council recognised this situation. Officially, residents were not authorised to sell their land rights if they wished to leave Brown's Farm, but they were entitled to sell their shack building materials as movable property. The principle underlying this policy was that they had not paid for the land, it belonged to the Council (Mayekiso pers. com. 1996, 1998).

Mayekiso (pers. com. 1996) was of the view that the community would not accept strangers as holders of site allocation cards. People would have to be approved by the community before they would be permitted to live in Brown's Farm permanently. However, he believed that residents might be able to legitimately take in lodgers without the latter having to be screened by community structures or warlords. In terms of the discussion on inaccuracies in the rental scheme register later in this sub-section, it was possible for a lodger to informally purchase the rental agreement from the registered lessee if the lessee chose to leave Brown's Farm.

Prior to the 1996 local government elections, the three warlords, two of whom worked in the Brown's Farm office as foremen during this study, allocated rights to new people. In the event that a person intended to leave Brown's Farm, the relevant warlord would write a letter to the Ikapa Brown's Farm office indicating that person A was leaving and that the rental agreement should be transferred to person B.

The transfer of the right of occupation would be performed in the Brown's Farm office. The warlord, person A and person B had to be present in the Brown's Farm office along with the official who administered Brown's Farm and a new rent card would be issued (Mayekiso pers. com. 1996). The local authority did not charge a fee for administering a transfer of a lease.

In the event that a registered tenant died, the parcel would be allocated to the deceased's household's remaining head of house. The death certificate would be taken to the Brown's Farm office where the death and inheritance would be recorded, the file updated and a new rent card issued (Mayekiso: pers. com. 1996).

In essence, in terms of the discussion in section 2.4.4, the rent card system of records was a form of deeds registration of personal rights in land. This registration system incorporates social processes through witnessing of the execution of the transfer of rights and written documentation in the form of the letter indicating community approval of person B living in the settlement.

After the local government elections in 1996, the warlords were removed from this process of transferring rights. The registered tenant had to apply in writing to the Brown's Farm office to transfer the rental agreement and the ownership entitlement. As the landowner, the City of Cape Town would consider the merits of the application and either approve or reject the application on behalf of the new tenant. Mayekiso (pers. com. 1998) indicated that no applications had been turned down, but he believed that rejecting an application might spark violence in the community. This indicates that a communal as well as an individual bias in the land tenure system (see section 1.3.7) still prevailed in 1998.

In 1997 and 1998, the majority of landholders had their parcels transferred to them as owners and deeds of transfer registered in the Deeds Office. There were about 300 problem cases (as Mayekiso described them), or approximately 10% of the number of parcels in Brown's Farm, where the registered tenant no longer lived in the house. Consequently, in these cases re-adjudication was necessary before registration could take place. The re-adjudication process consisted of the current occupant applying to the council for ownership of the parcel. In general the occupant would have to try to obtain evidence from the registered tenant, or produce the chain of evidence to show that he or she was legitimately entitled to be granted ownership of a particular parcel. However, Mayekiso noted that gathering this evidence was not always possible (Mayekiso pers. com. 1998).

Mayekiso put forward the following reasons to explain the inaccuracy in the rental scheme register: 1) informal sale to a stranger; 2) informal transfer or sale to a family member; and 3) incorrect adjudication and registration of original lessee. Mayekiso believed that informal sales to non-family members accounted for the majority of these cases where the *de facto* occupant, and holder of the expectative right of ownership (de Soto 1989: 23-24)^{xxxiii}, was not the person reflected in the Brown's Farm records. However, he gave no explanation as to how this could have occurred. Informal transfers also took place where a member of the extended family took occupation of the parcel. At the time of the interview with Mayekiso in October 1998, the author inspected one file where the registered tenant had moved away and had applied to have ownership of the parcel transferred to his niece, who had replaced him as the occupant. In the case of incorrect adjudication, the author examined one case file where the claim was made that the legitimate tenant had been away during the registration of Brown's Farm entitlements in the informal settlements in 1991. The claimant's brother had been living in his shack and the brother had been registered as

a lessee in Brown's Farm instead. This inaccuracy in original adjudication only emerged when registration of ownership was scheduled to take place.

6.3.3.2 *Registration of ownership*

Registration of ownership changed the administration of land rights from the local Brown's Farm office to the nationally administered deeds registration system. Mayekiso indicated that the municipality of the City of Cape Town did not become involved in matters relating to ownership or boundary disputes between neighbours once a property had been registered. For example, sales of land rights were no longer the local municipal office's concern. Moreover, he believed that once registration took place, residents' attitudes changed. Firstly he was of the opinion that owners believed the registered deed to be their primary evidence of ownership. Furthermore, he believed that owners attempted to distance themselves from the warlords to whom they were originally aligned, but extricating themselves from their previous alignment with a particular warlord was not a simple matter (Mayekiso pers. com. 1998)^{xxxiv}.

6.3.3.3 *Summary: registration*

Brown's Farm progressed from a rental system with an expectation of ownership/99-year leasehold rights to registered ownership during the course of this research. For the residents who occupied the first 2011 sites in Brown's Farm, the process of delivery from initial occupation of the parcel to delivery of ownership took more than six years.

The processes that affirmed the right of continuous, unchallenged use of land changed due to forces in both the internal and external dialectic during this period. In the internal dialectic, allegiance to a particular group was important, even after individual ownership was delivered by the execution of a registered deed of transfer in terms of the Deeds Registries Act 47 of 1937. Initially *de jure* tenure was affirmed by a rent card issued to each tenant and the approval of a particular faction in the community. Prior to local government elections, the relevant warlord approved a transaction in land rights between two parties. Transfer of such a right had to take place in front of an official with both parties and the warlord present. This process involved both legal instruments in the form of written documentation and social processes in the form of symbolic delivery of the documents from one party to the other witnessed by officials and community leaders. After the local government elections in May 1996, actors in the external dialectic excluded actors in the internal dialectic from certain processes. The *de jure* tenure system did not officially incorporate existing overriding group rights. The role of the warlord was removed from the transfer process and administration of transactions was handled solely by the land administration authority, the City of Cape Town.

The rental registration system was administered at the local level. Up to the 1996 local government elections, this system relied strongly on social processes in that it recognised the power of the warlords. After the elections, the new local authority, the City of Cape Town, removed this recognition. Transactions in land rights involved the landowner, the City of Cape Town, the existing tenant and the prospective tenant. *De jure*, the power of the warlords in this process were extinguished. However, as the factional conflicts in 1998 described in section 6.1 and Mayekiso's belief that people

tried to extricate themselves from allegiance to particular factions indicate, it appeared that the warlords continued to wield substantial power.

The record of rental agreements appeared to have been maintained and supported by the community in Brown's Farm. There was an approximate 10% error in the record of occupants of parcels who expected to be granted ownership of their parcels. A key-informant speculated that this error was the result of a combination of informal sales to strangers, informal transfers between family members and the incorrect identification of the legitimate tenant when the original adjudication took place.

In terms of the theory of planned behaviour (see section 3.3), no evidence emerged to suggest that attitudes towards the land registration and the cadastral boundary system were negative or that Brown's Farm residents had stated that they did not intend to use the cadastral system.

6.3.4 Dispute Resolution

There were two types of disputes that arose in Brown's Farm that are relevant to this research, boundary disputes concerning encroachment and disputes revolving around the allocation and definition of rights.

Brown's Farm had a conflict resolution and policing system similar to one that prevailed in Cape Town's informal settlements such as Crossroads in the 1970's. Cole (1987) notes that in Crossroads in 1976, there were two informal bodies – the wardsmen and the homeguards. The wardsmen acted as a type of community police, concerning themselves with resolving petty crime in the area. One of the functions of the homeguards was settling local disputes (Cole 1987:18). Prior to the municipal elections in 1996, Brown's Farm had community police. The warlords were also involved in dispute resolution. With the rise to prominence of the Civics (SANCO) and after the local government elections, street committees fulfilled the role of dispute resolution (Mayekiso pers. com. 1996, 1998, Smith pers. com. 1998).

Prior to 1996 when all of Brown's Farm *de jure* tenure fell under the rental scheme, the Brown's Farm office used to resolve boundary disputes by measuring off plan dimensions from existing pegs and if necessary ordering people to remove an encroaching structure. This *in situ* adjudication did involve the relevant warlord(s) who could be called upon to put pressure on a recalcitrant party to the dispute, if necessary (Mayekiso pers. com. 1996). In 1996, Mayekiso believed there were two explanations for encroachment. Firstly the encroaching party might not consider the pegs to be the boundary or secondly the pegs may have been removed. He had never experienced a person challenging the validity of the original boundary beacons as monuments to a legal and legitimate boundary, nor in his experience had anyone ever refused to remove an offending structure (Mayekiso pers. com. 1996).

In a follow up interview in 1998, Mayekiso was still under the impression that people had not refused to move offending structures when ordered to do so. Moreover, he counted a total of 100 cases on his files where he indicated that landholders had moved boundary monuments to grab land. However, after the local government elections in 1996 he had called in a building inspector from outside the Brown's Farm

local office to resolve boundary disputes (Mayekiso pers. com. 1998). The claim of 100 cases of land grabbing is tempered by du Plessis' (1996) account of the office record not reflecting these disputes.

In contrast to Mayekiso, Smith (1998) indicated that at times landholders guilty of encroaching had resisted his findings in the field. When he encountered cases where people had moved boundary monuments or a dominant party had built a structure that encroached, he would call in the head of the street committee. The street committee had always enforced the findings of his adjudication, in both rented properties and properties in registered ownership. In some instances where the dominant party had refused to move an offending structure, groups in the community with the support of the street committee had burned the offending shacks down. Smith estimated that he had experienced violent enforcement of his decision by community structures twelve times since 1996 (Smith pers. com. 1998).

There was no evidence of disputes concerning the legitimacy of ownership reflected in the registered deeds of transfer in the short period after registration of transfers had been effected and the end of this study. However, as discussed in section 6.3.3 above, there were a number of cases where the rights of ownership to a parcel had to be re-adjudicated. These cases of uncertainty of entitlement to ownership were adjudicated by the local authority, the City of Cape Town. Community structures such as street committees did not play a role in the final decision.

However, actors in the internal dialectic still played a prominent role in the land tenure system. As the discussion in section 6.1 and the evidence of Smith (pers. com. 1998) relating to street committees violently enforcing his adjudication of boundary disputes shows, overriding group rights still prevailed in the *de facto* tenure system. Given that people had been evicted from Brown's Farm as a result of inter-factional conflicts, the fact that a person held land in registered ownership did not necessarily protect them from eviction by factions in the community. Specific cases where actors in the internal dialectic have overridden the rights of the *de jure* owner in Xhosa-speaking areas of Cape Town's eastern metropole are reported in chapter 7.

6.3.4.1 Summary: dispute resolution

Evidence of disputes between community members concerning the abstract run of property rights was not reported to the author. However, as discussed in section 6.3.3 above, there were inaccuracies in the rental register of lessees who were entitled to registered ownership and this did require re-adjudication and verification by the original lessee that the claimant was a legitimate occupier of the site where possible. These were in effect disputes between community members and the land administration authorities.

The local land administration authority adjudicated boundary disputes in unregistered land and enforced building regulations when permanent structures were erected on privately registered land. This mandate was initially carried out by the Brown's Farm office (which was within walking distance of the settlement). After the local government elections in 1996, boundary disputes were adjudicated by the Brown's Farm office in conjunction with building inspectors from other offices in the

municipality of the City of Cape Town. The dispute resolution process used a combination of the administration's knowledge and skills and community structures and processes to resolve disputes. Judgements made in the field concerning boundary disputes were made in the presence of community structures such as a street committee and the community structure then took on the role of enforcing the judgement to ensure that structures were built within the confines of the surveyed cadastral boundaries.

6.4 CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS

Using the analytical framework and the theory underlying it established in section 3.4, the land tenure system in Brown's Farm is analysed first and linked to the hypotheses and research questions in section 1.4. The usage of the cadastral processes and instruments in supporting land tenure are then analysed. The effectiveness of the cadastral system in addressing relevant issues in land administration and land policy is discussed thereafter.

To recap on section 3.4.1.2, the analysis is structured so that the first issue analysed is whether the current *de facto* tenure system and the processes, instruments and structures that uphold it, and the land tenure system wanted by communities support the main hypothesis. The second issue analysed the effectiveness of cadastral instruments and processes in upholding the current *de facto* tenure system(s) and the systems wanted in future. The research questions in section 1.4 are addressed in this part of the analysis. The strategy has been to posit and test hypotheses relating to behaviour with respect to land registration system usage and cadastral boundary system usage and other processes that support land tenure security that are relevant to the evidence presented in each case. The third issue is the effectiveness of the cadastral system in addressing the requirements of the systems of land policy development and land administration

6.4.1 Land Tenure and the Hypothesis

In this sub-section it is argued that the data show that Fourie's (1993) social change model of land tenure in informal settlements accurately describes the tenure system in Brown's Farm up to 1998. The evidence in section 6.1 concerning violent struggles between groups supports the notion of an internal dialectic where there is internal competition and inter-dependence between various power levels and sub-groups within a community. Competition was manifest in struggles for land, resources and power. The processes of fission and integration, the competition between individual and group land tenure rights, also prevailed. In principle the authorities allocated a secure land right for an individual's exclusive use of a particular parcel of land in 1991 (fission), yet access to these rights and the continued use and enjoyment of these rights depended on allegiance to particular factions in the community (integration).

Furthermore, the actions of the individuals and institutions external to the community, the external dialectic, also influenced the patterns of behaviour. These activities included the national and local government elections, local government restructuring, changes in land policy, changes in legislation and changes in type of legal tenure

granted from leasehold to allodial ownership. Moreover, when the local authority responsible for administering Brown's Farm changed, the recognition given to community structures to decide who could and who could not live in the settlement was removed.

Based on descriptions of actual behaviour, the evidence from Brown's Farm supports the hypothesis in section 1.4 that:

The land tenure system in Cape Town's Xhosa-speaking communities comprises elements of both individualised tenure and group tenure rights. In these communities, some of the existing cadastral system's processes, and the instruments generated as part of these processes, are used to support claims to rights in land. Others are substituted by extra-legal mechanisms more suited to de facto tenure in a particular situation. Consequently, due to non-usage of parts of the cadastral system, the system does not effectively support land tenure security in the manner that government intends thus often rendering the cadastral system ineffective.

To recap on the discussion in section 3.4, ownership in Cape Town's Xhosa-speaking communities was delivered in phases. The *de jure* surveyed cadastral boundaries were delivered in 1991 and registration of ownership in the Deeds Registry took place in 1997 and 1998. In the interim the system of rentals was recorded in the Brown's Farm office. The system whereby rental contracts, which incorporated an expectation of ownership, were registered and documents issued to landholders is similar to the deeds registration system. Usage or non-usage of this system should provide an indication of the effectiveness of the deeds registration system. It has been assumed that usage of the official system that documented individualised rights to rent land in Brown's Farm infers that the deeds registration system will also be used in future.

Households originally held occupation rights to a particular individual parcel with an expectation of receiving registered ownership at some later stage, but there were overriding group rights that prevailed. Original access to those rights in immovable property and a household's right of continuous, unchallenged use of land on a parcel depended upon allegiance to a particular individual or grouping. This situation prevailed even when the identity of these dominant groups changed and the group leadership changed. Moreover, the evidence of Smith suggests that even when the final formal, official process on the path to acquiring ownership of an individual parcel had been completed, that process being land registration, evidence of group rights still remained. In the instance described by Smith, the evidence suggesting remnants of group interests prevailed were served by the street committee forcing individuals to comply with the requirements of the legal cadastral boundary system.

Initially the authorities used the *de facto* tenure system in conjunction with the formal *de jure* system underpinning land tenure. When the local authority that administered Brown's Farm changed in 1996 the authority's recognition of *de facto* group tenure interests in controlling land transactions diminished. The warlords or representatives of organisations that had replaced them in the community's power hierarchy no longer adjudicated to whom land rights might be transferred. This was done on the basis of application to the land administration authority in the case of land that was not held in

private ownership. However, the role of group structures' in dispute resolution was retained albeit that this appeared to be an *ad hoc* informal arrangement between officials and street committees. Official written recognition was not granted to group structures, but the officials in the field recognised that the involvement of community groups structures was critical to the success of their operations.

In the rental scheme, some processes that are similar to those of the existing cadastral system's processes, and in the case of surveyed boundaries part of the existing cadastral processes and instruments, were used. Occupation rights were formally recorded and officially affirmed by means of a rent card. This system of documents to affirm occupation rights and the expectative rights of ownership was recognised and largely used by the community. However, the right to transfer this right and access to this right by the transferee vested in the group structures which approved the transaction. Prior to the 1996 elections, the land administration authorities included these group structures in the process of transactions in land and in this way granted recognition to the power of these structures. As the discussion by Cobbett and other informants in section 7.2 will show, the legality and legitimacy of this practice was questionable in terms of local government's mandate to provide access to land and secure tenure.

In terms of research question (a) in section 1.4 relating to *de facto* ownership of land, even after the final process in the delivery of ownership, land registration, had been completed in 1998 the residuary right of ownership as defined in section 2.2.6.1 was not clear. The legal documentary instrument in the form of a title deed bestowed the *de jure* use and enjoyment of ownership on the registered owner. However, the violent conflicts where Toise and ±40 of his followers were violently evicted^{xxxv}, violent conflicts between SANCO and WECUSA described in section 6.1 and the evidence of Smith regarding enforcement of his field judgements, suggests land tenure security depended on more than a legal document. *De facto* ownership and the right to the use and enjoyment of a parcel depended on power relations and a variety of social processes as well as documentary evidence. The legal owner did not enjoy freedom from the threat of eviction.

Inheritance is an indicator of in whom *de facto* ownership resides. However, no intra-family conflicts concerning inheritance in Brown's Farm were reported.

The evidence from Brown's Farm suggests that in general the *de facto* tenure system was one based on individual parcels with overriding group biases. No evidence was adduced from interviews indicating that residents desired a form of tenure that is based on a pattern of land occupation that is substantially different to the surveyed parcels delivered to residents, such as group ownership of land with fluid, continually changeable boundaries in a topological system. However, there was a significant level of non-usage of the surveyed cadastral boundaries. This phenomenon is analysed in section 6.4.2 below.

6.4.2 Cadastral System and Land Tenure

This sub-section analyses usage and potential usage of the cadastral processes and instruments in supporting land tenure. Specifically, usage of the *de jure* system of

surveyed, fixed boundaries demarcating individual parcels and usage of the *de jure* registration system and the similar system of registration of rights to occupy a parcel in Brown's Farm is analysed. The usage of cadastral instruments and processes in conjunction with other social processes is in accordance with Doebele's (1994:48) hypothesis of a complex mixture of informal and informal systems described in section 1.3.6. In Brown's Farm, the formal system had been adapted so that group rights remained strong. This sub-section is constructed such that a number of hypotheses are posited in terms of the evaluative framework in section 3.4 in an attempt to explain the usage and non-usage of the *de jure* system. The system of registration is addressed first, followed by analysis of the system of boundaries.

6.4.2.1 Registration

As discussed in sections 3.4.1 and 6.4.1, usage of the rental registration system is assumed to be an indicator of potential usage of the deeds registration system. The evidence suggests that the rental registration system was perceived as legitimate and the community leadership structures supported the usage of this system in recording the rights of occupancy and of entitlement to ownership. The fact that there was an approximate error of 10% in the register supports this notion that in general the rental registration system was legitimate. No evidence emerged to suggest that another system should be implemented to supplant it.

After a period of 7 years, non-usage of the rental registration system was reflected in a mismatch of approximately 10% between the names on the official rental register and the *de facto* occupants of the parcels. The following three hypotheses were put forward by officials for this non-usage of the local registration system:

- 1) *Informal sales or transfers to strangers;*
- 2) *Informal transfers or sales to family members; and*
- 3) *Incorrect adjudication and registration of original lessees.*

The following hypothesis, derived from the discussion in sections 1.3.4 and 1.3.9, and the data collected in this research may explain why informal transfers take place:

- 4) *High costs or impedances in using the local registration system discouraged residents from using it.*

Further hypotheses that may explain this non-usage of the local rental system is:

- 5) *A culture of non-compliance with local or national government systems, rules and regulations that carried over from boycotts and revolutionary activities in the 1980's.*
- 6) *Attitudes to land registration systems are positive, but landholders believe that it is not necessary to register every transaction in land and the implications of using or not using land registration are not fully understood;*
- 7) *Residents may not have used the system as they saw no benefit in using it;*
- 8) *Residents may have avoided using the system to hide the transaction from factions within the community such as street committees and warlords for a variety of reasons.*

The evidence suggests that all of these hypotheses partially explain the inaccuracy in the rental register, but given the paucity of data they remain speculative. Hypotheses 1, 2 and 3 describe activities relating to non-usage of the rental registration system. Hypotheses 4, 5, 6, 7 and 8 attempt to explain the causes of the system not being used.

It was not possible to find out why community leadership structures had enforced usage of the rental register in some instances but not in others. Up to 1996 the warlords' participation in registration and symbolic delivery of a transfer of rental rights was an essential part of the *de jure* transaction process. The non-usage figure of 10% does indicate the potential for the cadastral system to be ineffective in areas such as Brown's Farm in future. However, the fact that 90% of the rental register was accurate and that people then went on to register their land in ownership in the Deeds Office suggests that the deeds registration system is generally legitimate.

Hypothesis 4 above is based on the arguments relating to transaction costs raised in the White Paper on Land Policy (Rep. of S. Africa 1997a:9) described in section 1.3.4, those by Manona (1997) and Ralawe (1993) in section 1.3.9 and those raised in section 4.2.1.3. The argument raised in these sections is that high transaction costs or other impedances are an underlying cause of extra-legal transactions in land taking place and that costs act as a disincentive to people using the registration system. Impedances take the form of high monetary costs, potentially long periods of time to effect registration, the difficulty of access to the cadastral system and the numerous actors and institutions involved in the registration process. In the case of the Brown's Farm rental scheme there were no official monetary costs involved in transferring land rights. Moreover, the local office was within walking distance of the settlement. If non-usage of the official system is due to some difficulty in using the system that acts as a disincentive, it was not identified. In the author's analysis, there is no evidence to suggest that the 10% non-usage of the rental registration system was due to costs or other impedances.

What the data in Brown's Farm do indicate though is that attributing non-usage of the cadastral system or sub-systems of it (e.g. registration) to costs or impedances alone is too simplistic. Costs may discourage landholders from using the cadastral system, but in Brown's Farm the data show that although there were no monetary costs and minimal impedances involved in using the rental registration system, the system was still not fully utilised. This finding is supported in the study of other parts of the eastern metropole, in Imizamo Yethu and Marconi Beam as described in chapters 7, 8 and 9.

The Brown's Farm study did not provide data to explore hypotheses 5, 6, 7 and 8 above. The rationale for positing these hypotheses is based on the contextual description of the research in chapter 1 and on discussions that the author held with a number of land management experts and practitioners. These hypotheses may validly explain some of the non-usage of the rental registration system, but there is insufficient data in the Brown's Farm study to persuasively support or negate them. At this stage they remain speculative explanations. These are explored further in chapters 7, 8, 9 and 10.

6.4.2.2 *Family tenure*

No evidence was gathered in Brown's Farm relating to family ownership issues or conflicts over inheritance. Evidence relating to this issue was collected in the eastern metropole, Marconi Beam, Imizamo Yethu and Khulani Park.

6.4.2.3 Boundaries

Conclusions concerning the causes of the pattern of encroachment were speculative at this stage of the research, as evidence could not be acquired from residents themselves. However, when added to the rest of the case study material, they provide part of a bundle of evidence which conclusively explains the reasons underlying encroachment patterns in Xhosa-speaking communities. Assuming that a system of tenure based on individual parcels is appropriate, the following are posited as hypotheses to explain the behaviour relating to boundaries that was observed in Brown's Farm. These hypotheses are each discussed individually.

1. *A system of monumented fixed boundaries or stationary general boundaries as opposed to a topological boundary system is appropriate to the tenure system wanted by residents of Cape Town's Xhosa speaking communities;*
2. *Encroachment, particularly onto public land, is due to opportunistic land grabbing;*
3. *Encroachment is due to lack of awareness of the position of surveyed cadastral monuments;*
4. *Encroachments are motivated by a need for more space to house lodgers or extended family members or to build a spaza shop or a shebeen;*
5. *Individuals may not be able to define or defend the parcel boundaries that were originally allocated to them because the group over-right (integration) is stronger than the individual bias (fission) (Davies 1998:38);*
6. *Fence encroachments are a result of one fence being out of position and then neighbours subsequently attach their fences to this fence, thus continuing the pattern of encroachment;*
7. *Residents believe that structures such as fences and shacks are temporary and moveable. When a permanent structure is constructed, they intend to align their structures with the surveyed cadastral boundaries.*

The findings from Brown's Farm support hypothesis 1 above, in that a system of fixed boundaries appears to be appropriate. It was not possible to test if stationary general boundaries are appropriate and therefore such a system cannot be excluded as inappropriate. Although a large number of fences were found to be out of position, no evidence emerged to indicate that a system of topological boundaries is more appropriate than stationary (fixed or general) boundaries. General behaviour relating to fences constructed along mid-block boundaries and to a lesser extent boundaries that are perpendicular to the streets indicates that the system of fixed boundaries is appropriate to the wants of Brown's Farm residents. It is reasonable to conclude that the norm is to build a fence between neighbours in accordance with the surveyed cadastral monuments. The system of boundaries is being used in the manner intended along the majority of these boundaries. The key-informants' evidence indicates that individual parcels demarcated by stationary boundaries are appropriate and the landholders believe that the monuments demarcate the boundaries of a parcel. No alternative system of definition of land units or boundary types was mentioned in any

of the discussions, although one respondent considered the monument type (12 mm iron pegs) to be inappropriate. Neither the legitimacy of the system of boundaries nor the legitimacy of the monuments themselves was challenged.

In terms of hypothesis 2 above, the evidence suggests that much of the encroachment appears to be attributable to land grabbing, particularly of public land. Of the parcels where households had constructed encroaching fences or shacks, approximately 60% of each type of encroachment, fences and shacks, were on public land. The areas marked C on figure 6.4 denote areas where from the overlay maps the primary motivation for encroachment appears to be spoliation. Two key-informants, Mayekiso and Smith, ventured this hypothesis as an explanation for the behaviour. The behaviour is viewed as opportunistic and performed with the knowledge that it is contrary to the *de jure* cadastral layout. As a land surveyor the author had frequently handled cases of grabbing of public land across the spectrum of income levels and the geographical extent of the City in the five years that he worked for the Cape Town City Council.

Hypothesis 3 above posits that encroachment is due to lack of awareness of boundary positions. Mayekiso (pers. com. 1996) indicated that residents were shown their boundary monuments when the parcels were handed over (delivered) to the households. However, Smith (pers. com. 1998) indicated that the 12 mm iron pegs that serve as monuments were often removed and that these are not suitable for conditions in Brown's Farm. The author has experienced this as a land surveyor where 12mm iron peg monuments or iron fencing standard monuments are often removed and sold as scrap metal. The author experienced one instance in a part of the CTMA where all the monuments demarcating a township of approximately 150 parcels were stolen overnight.

Using the overlay maps to support this hypothesis, the one area on the street boundary indicated D in figure 6.6 indicates that the residents were unaware of the positions of their street boundary beacons. The surveyed parcel boundaries jut out further into the street than the other parcels on the south side of the block. There is also evidence from the overlay maps does not support this hypothesis of lack of awareness of boundary positions. In figures 6.4 and 6.6, the mid-block fences generally adhere to the surveyed cadastral layout. This indicates that landholders are generally aware of the boundary positions. The overlay maps indicate that lack of awareness of boundary positions may partially explain the high number of encroachments, but it does not appear to be the major cause underlying the encroachments.

There is evidence to support hypothesis 4 above that causes of behaviour leading to encroachment are socio-economically motivated wants for more space. The figures relating to buildings in table 6.3 where 25 of the 34 dominant parcels can be classified as falling in this category provide persuasive evidence to support this hypothesis. A social factor that may influence such behaviour is the need to accommodate extended family members who had recently moved to Cape Town from the Xhosa-speaking regions of the Eastern Cape Province. This may partially explain encroachments where there are two or more shacks on the dominant parcel. Thirteen dominant parcels were counted in table 6.3 as falling in this category. There is also evidence to suggest that behaviour may also be economically motivated by the need to take in

lodgers or to run a spaza shop or shebeen. Eleven dominant parcels were counted in these two categories in table 6.3.

It was not possible to investigate hypothesis 5 that individuals may not be able to define or defend the parcel boundaries that were originally allocated to them because the group over-right (integration) is stronger than the individual bias (fission). There is evidence described in section 6.3.4 on dispute resolution by Smith (pers. com. 1998) indicating that there was resistance to the local authority enforcing the surveyed cadastral boundary prior to permission being granted for formal buildings to be constructed. Mayekiso however indicated that he had never encountered resistance to an order to move a structure. However, this could not be tested and the evidence to support this hypothesis from Brown's Farm remains speculative.

The evidence from the overlay maps in the areas labelled "A" in figure 6.5 does support hypothesis 6 that fences that are built out of position are often influenced by the first one in a particular area being built out of position. However, it was not possible to follow up on this hypothesis in this case study. However, a building inspector provided evidence of similar patterns of behaviour in Khayelitsha, which is described in chapter 7.

Hypothesis 7 was derived from the discussion with Smith (pers. com. 1998) that fences and shacks are temporary structures and therefore easy to move. It was not possible to test this hypothesis with residents. Mayekiso (pers. com. 1996) did indicate that he believed encroachments were not a problem as it is easy to move a structure. In Mayekiso's experience, disputes over encroachments arose as a result of disputes of another nature between two neighbours.

In summary of the Brown's Farm boundary data analysis, there is persuasive evidence to suggest that encroachment is motivated by one or more of hypotheses 1-4 above. The other three hypotheses, 5, 6 and 7, remain speculative.

The implication of this non-usage of the *de jure* surveyed cadastral boundaries on the effectiveness of the cadastral system is not legally significant with respect to public land. In terms of Prescription (Local Authorities) Ordinance (former Cape Province) 16 of 1964, it is not possible for residents in Brown's Farm to claim ownership of land vested in a local authority by prescription. This means that although landholders have encroached on public land, they will not be able to take ownership of it by adverse possession in terms of the current legal environment. However based on aerial surveys flown in 1995, approximately 16% (56) of the parcel owners of the total sample of 350 parcels may face disputes with their neighbours over encroachment by fences and 4% (14) may face disputes over encroachment by shacks. The current strategy of the local authority of forcing households to move structures to comply with surveyed boundaries in order to comply with building regulations should reduce the number of disputes.

Overall the pattern of encroachments over surveyed cadastral boundaries is substantial. However, under current circumstances the implications of these encroachments are unlikely to significantly impact on the effectiveness of the cadastral system as most of them are on public land. They do have implications for

the local authority in that the supply of utilities is impeded by this behaviour. Underground services such as electricity, telephone and water cannot be installed or maintained if these encroachments are permitted to continue. However, as discussed in section 4.3.2, prescription in Brown's Farm may not run against the State, which by definition includes the local authority, and the local authority may order the removal of these encroachments at any time.

6.4.3 Land Policy

In terms of the analytical framework portrayed in figure 3.4, land administration and land policy are at the level above land tenure in the land management systems' hierarchy constructed for analysing the cadastral system. This sub-section analyses the Brown's Farm case in terms of pertinent South African land tenure policy objectives.

As discussed in section 2.2.4, policy should express what government envisages within the canons of its social, political and economic philosophy. To recap on section 1.3.4, the following objectives for land administration and the cadastral system are encapsulated in the most recent White Paper on South African Land Policy (Rep. of S. Africa 1997a). In broad concept, the land administration and cadastral systems should support strategies to:

1. Provide security of tenure for all;
2. Facilitate social change in providing more equitable distribution of land ownership and deal with the injustices of racially based land dispossession of the past; and
3. Encourage sustainable land use.

The focus of these strategies related to land administration and the cadastral system were analysed as addressing:

4. The need for accessible means of recording and registering rights in property;
5. The need for affordable, accessible and effective administrative structures and processes that provide for rapid, efficient cycles of the property development processes discussed in chapter 4;
6. The need for land information to support effective decision making and day to day land related administration;
7. The need to sustain land as low risk collateral; and
8. Support of the operation of a land market.

The White Paper on Land Policy (Rep. of South Africa 1997a) is a recent document. The commencement of the land delivery processes in Brown's Farm preceded it by several years under the previous regime. In terms of the discussion relating to serviced sites in section 1.1, which was derived from the housing policy of the previous government (Republic of South Africa 1994:9), it is the author's belief that situations such as that in Brown's Farm influenced the contents of the White Paper of 1997. This sub-section analyses the land policy's philosophical aims encapsulated in objectives 1 to 3 above. These articulate the government's vision of the social system surrounding land issues and the relationship between the people and the land. Objectives 4 – 8 above are discussed under land administration in section 6.4.4 below.

Prior to registration, security of tenure in Brown's Farm was more dependent on allegiance and affiliation to a particular group than on documentary affirmation of land rights provided by government and the land professionals. In terms of the notions of social equity espoused in the Constitution of the Republic of South Africa Act 108 of 1996 (see appendix F for relevant sections) the *de facto* tenure system in Brown's Farm is inappropriate and the actions of certain groups and individuals illegal. This issue is discussed in more detail in section 7.3.3 where land policy is analysed in terms of the tenure practices and the actions of the land administration authorities in the broader eastern metropole of the Cape Town Metropolitan area.

The findings from Brown's Farm support the theory discussed in sections 1.3.6 and 1.3.7 concerning urban land tenure in sub-Saharan Africa that local residents may adapt elements of customary practices and mesh these with a selection of the cadastral system instruments and processes to suit their specific circumstances. It is apparent that the authorities responsible for allocating and maintaining rights in land in Brown's Farm recognised this relationship where the social processes are stronger than the legally documented man-land relationship. However, in the case of Brown's Farm, tenure security during the time of the research had little to do with the actions of government, but rather with allegiance and affiliation to a particular group.

In the author's observation, the authorities recognised the weakness of the local government's legitimacy, power and control in managing a rapidly changing situation. Social and political stability, as opposed to equity in land tenure, appear to have been the prime motivator behind the land administration authorities' behaviour in allocating land and administering the tenure system in Brown's Farm prior to 1996. As described in sections 1.3.2.3 and 8.0, due to the sensitivity and volatility of the socio-political environment, the land administration authorities had little power to enforce unpopular decisions relating to land issues in Xhosa-speaking settlements in the early 1990's. Land issues were sensitive and evictions by state functionaries would have had racial and political implications. Consequently the officials in the field co-opted community power structures as part of the land administration process and used these structures to enforce land administration processes that had been agreed upon with community representatives.

The weakness of such a strategy is that usage of the cadastral system or similar systems of land administration records is dependent on the community structures carrying out the will of the land administrators. There is no evidence to suggest that community structures did not act in accordance with formal land administration processes in Brown's Farm, but the relevant government institution does place itself at risk in such a situation.

However, in a period of substantial social-political change where the legitimacy of the State is challenged the government has little choice but to recognise community structures until the situation stabilises. In a rapidly changing environment such as that observed in Brown's Farm in the 1990's, equity is perhaps a long-term ideal that should be addressed once stability is achieved.

The notion of equity is mentioned in the White Paper on Land Policy in terms of the objective of “equitable distribution of ownership”. A definition of equitable ownership is not provided in the White Paper. However, the supreme law of the country, the Constitution of the Republic of South Africa Act 108 of 1996 provides the legal environment for interpreting this concept. This issue is dealt with in chapter 7, which deals with issues encompassing the wider eastern metropole of the City.

In terms of facilitating social change in providing more equitable distribution of land ownership listed under item 2 above, this ideal was arguably ensconced in the original objectives for creating a site-and-service scheme at Brown’s Farm. The Brown’s Farm project delivered formal permanent land rights to people who previously did not enjoy such rights. These aims were inherent in the behaviour of local government and preceded the published land policy document.

The data collected in this case study and in this research in general are not suitable for evaluating land administration and the cadastral system on the criterion of encouraging sustainable land use (item 3 above). In the author’s analysis, the issue of tenure security, social justice and equitable land tenure practices have a bearing on sustainable land use and key factors in achieving it. These are important, especially given the rapid influx of people into the City and high organic population growth in the City. In the author’s analysis, sustainable land use is addressed in initiatives such as the Metropolitan Spatial Development Framework programme, which strives to maintain an edge to the city and locate housing developments close to transportation networks linking nodes of economic opportunity (see MSDF 1995, 1996, Kedzieja pers. com. 1995). Effective cadastral systems and land administration systems are key factors in addressing this policy objective of sustainable land use in the CTMA.

6.4.4 Land Administration

This sub-section analyses the manner in which the land administration system and the cadastral system together address land policy and land administration objectives and how these two systems are dependent upon the other being effective. In summary of discussion in chapters 1 to 4, the land administration and cadastral system should be affordable and accessible. Land information derived from the cadastral system and other land administration processes should ensure efficient fiscal management and the supply of utilities and engineering services, and the land administration system should sustain the collateral value of land in a land market.

The Brown’s Farm case shows that in reality, the cadastral system and the land administration system are not easily separable. In section 2.1.5 it was noted that in terms of systems theory, systems are difficult to identify in reality and the situation in Brown’s Farm confirms this. In Brown’s Farm the land administration system, as defined in chapter 2 and described in chapter 4, has a symbiotic relationship with the cadastral system. In the South African context, effective land administration is crucial to a sustainable, effective cadastral system and visa versa. Moreover distinguishing between these two systems in terms of the definitions and descriptions in chapters 2 and 4 is not possible in certain areas. Up to the execution of registration, the local authority administered the planning, adjudication and dispute resolution functions based on the requirements of the cadastral system. It also maintained a rental register

that was similar in nature to the deeds registration system, except that this system did not confer legal ownership or rights of long-term occupancy on the landholders. Once the land had been registered in the Deeds Office, the local land administration authority's mandate in administering the tenure system was greatly diminished. This function was now the role of national institutions such as the Registrar of Deeds and the Surveyor-General. Local government's role was restricted to managing public land and ensuring that structures complied with the building regulations.

The Brown's Farm rental registration system used similar processes and instruments to the deeds registration system, but it was administered by the local land administration authority and it conferred a less secure form of *de jure* tenure. Moreover, ensuring that land occupation behaviour was in accordance with the surveyed cadastral boundaries also formed part of the land administration function. Prior to local government restructuring in 1996, officials from the Brown's Farm office adjudicated boundary disputes between neighbours. Thereafter, City of Cape Town building inspectors enforced the condition that permanent structures comply with the position of the cadastral boundaries and the position of building lines in accordance with building regulations. This process was applied to rented and privately registered land. In this way boundary disputes were resolved and the effectiveness of the cadastral system maintained in that usage of the surveyed cadastral boundaries was enforced. Moreover, the security of ownership of buildings was maintained and disputes resolved in the same set of processes.

Referring to specific land policy objectives for the land administration system, which are listed as items 5 - 8 in section 6.4.3 above, in terms of item 5 Brown's Farm provided an affordable means of recording and registering rights in property that was also accessible. The process of registering the transfer of rights using the rental system in Brown's Farm involved no monetary payments to the authorities and it was easily accessible.

However the Brown's Farm case material shows that there are factors underlying non-usage of the cadastral system that have little to do with the cost or difficulty of access of the cadastral system and land administration system. The system was accessible and affordable and it should have enjoyed legitimacy in the community as it made use of local power structures and social processes in the *de facto* tenure system in that the community leadership was actively involved in the process of adjudicating and formally transferring rights. However, as discussed in section 6.4.2.1 above, there was still an inaccuracy in the record due to non-usage of the rental registration system.

Referring to item 6, what the Brown's Farm case shows is that a sustained effort was required by the local authority to maintain aspects of an effective cadastral system in the settlement. This was in the authority's interest to ensure that there was social stability and that it had the correct information for fiscal management and the supply of engineering services and utilities.

In terms the objective of sustaining land as low risk loan collateral (item 7), Brown's Farm is likely to be rated a high-risk area for mortgage finance by financial institutions if current behaviour patterns continue. If non-adherence to boundaries prevails and informal sales of land that is registered in ownership continue in the

manner that they did when the land was administered as a rental scheme, it is unlikely that financial institutions will invest in loan finance in the area. Investors in loan finance secured by a land parcel demand proof of certainty of ownership. The *de jure* registered owner should be the *de facto* owner. Moreover, financial institutions want to be certain a particular parcel attracting mortgage finance is correctly identified and that the structures that are purported to fall on it actually do fall within the boundaries of that parcel so that the value of the collateral assets is correct. This uncertainty of ownership may also result in a number of boundary disputes in the short term and ultimately in prescriptive claims in the long term.

A further factor that needs to be taken into account with respect to sustaining land as low risk collateral is that the mandate for administering the land tenure system is removed from the local authority once land is registered in private ownership. Matters relating to land tenure then become more difficult and costly to access to members of the community as land registration and cadastral survey are mandated to national government institutions, the Deeds Registry and the Surveyor General's office located in the city centre. Once the land is privately owned, the local authority is concerned with administering building regulations, fiscal administration and the supply of municipal services. Disputes between neighbours over boundaries and disputes over the abstract run of property rights are civil matters. Civil cases involving land related disputes are addressed by land professionals, such as land surveyors or attorneys, and the courts.

In terms of item 8, there are negative implications for the formal land market of Brown's Farm being rated a high-risk area for mortgage finance. It is evident that formal and informal transfers of occupation rights existed in the rental scheme. In terms of the objective that the cadastral system and land administration system should sustain land as low risk collateral and support the operation of a land market, these objectives can only be achieved if the cadastral system is used in the manner intended. Non-usage of the cadastral system renders the official record inaccurate and there is uncertainty regarding ownership. The ability of a financial institution to repossess a parcel in lieu of debt is then also uncertain. This suggests that registering land in individual ownership should only occur if there is reasonable certainty that such a system matches the system of tenure wanted and that the cadastral system will be used in the manner intended. Overall the data from Brown's Farm suggest that this will not happen.

6.5 SUMMARY AND CONCLUSIONS

Brown's Farm was monitored from the time it was surveyed through occupation as a rental scheme to registration over a seven-year period from 1991-1998 during South Africa's transformation. In the research of Brown's Farm, the suitability of the aerial photography used in this research was tested as both the large scale 1:3000 and the more commonly used 1:10000 aerial photography were available. Using stereo-photogrammetry and digital maps of the surveyed cadastral layout, the methods for measuring, analysing and quantifying the potential number of disputes arising out of boundary encroachments were developed and tested. However, it was not possible to obtain qualitative data from interviews with Brown's Farm residents themselves, but one key-informant had worked in the day to day administration of the settlement since

it had first been created and he provided valuable data throughout the period from 1996 to 1998 when data were collected. Brown's Farm had also enjoyed a local level registration system to administer the rental scheme and the day to day administration of the settlement. This system was both accessible and affordable and proved to be a rich source of data concerning local level registration systems. However, there was non-usage of the cadastral system, mainly in the form of non-adherence to the surveyed cadastral boundaries and to a lesser extent informal transfers of rights in land.

Land occupation based on the individual parcels delivered by the land administration authorities was found to be appropriate. However, the allocation of land rights and the continued enjoyment of those land rights without fear of eviction depended on allegiance to a particular group. The identity and nature of the various groups changed over time due to forces in the internal and external dialectic.

The Brown's Farm data support the hypotheses that land tenure consists of a combination of individualised and group tenure embodied in what Doebele (1994:48) refers to as a complex mixture of formal and informal systems. The evidence also supports Davies' and Fourie's (1998:240) thesis that tenure practices in informal settlements exist not in terms of legal, illegal, spontaneous, planned, formal and informal concepts, but on a continuum of these concepts. The cadastral processes and instruments (e.g. boundary monuments, rent cards, title deeds) enjoy legitimacy, but they were not universally used in the manner that the land administration authorities intended.

From 1991, the land administration authorities recognised these processes and used the community power structures in a semi-official role in maintaining the cadastral boundary system and a system of registration of leasehold rights. Community leaders and structures played a role in approving and witnessing transactions in land and in enforcing rulings made by the land administration authorities when disputes were resolved. In this manner the land administration authorities, perhaps unknowingly, recognised that situations such as that in Brown's Farm are not hard problems with clear goals and a known end. In terms of the discussion in section 1.3.7, the "problem" is soft in that it comprises a plurality of individuals, groups and sub-groups who have conflicting interests and goals. The Brown's Farm case material also indicates that conflict was inherent and natural in the relationships between different individuals, groups and sub-groups within a settlement and between these entities and external forces such as the local authority. By recognising the community structures and processes in the cadastral system up to the process of registration, the authorities recognised that they lacked the legitimate power to control the land tenure system. As a result the authorities used the power vested in community structures in an attempt to achieve their objectives. This was probably done in the expectation that community structures had the legitimate power and the will to implement processes that would normally be the mandate of the local authority. Furthermore, this was done in the hope that the community structures would not manipulate the situation to an extent where the general behaviour in the settlement was in conflict with the primary land administration objectives.

It is clear from the above that during the period of substantial change the authorities adopted a form of Checkland's (1981) soft system's practice (see section 2.1.3) in administering Brown's Farm where priority was placed on alleviation of current conditions rather than solving an immediate hard problem. History changed the agenda between 1991 and 1998 and the Brown's Farm case fits Checkland's thesis that: "The contents of such systems are so multi-various and the influences to which they are subject so numerous that the passage of time always modifies the perception of the problem. Such perceptions of the problems are always subjective and they change with time." (Checkland 1981:155).

The evaluative framework developed in chapter 3 provided a useful theoretical basis for describing and analysing Brown's Farm. The theory of planned behaviour was not applied to a great extent because most of the data were records of actual behaviour. It was not possible to explore beliefs, attitudes and behavioural intentions. These are explored in the studies of Marconi Beam, Imizamo Yethu and Khulani Park.

In summary the Brown's Farm research supports the main hypothesis in section 1.4 that the land tenure system comprises elements of both individualised tenure and group tenure rights. Most of the existing cadastral system's processes, and instruments were used to support claims to rights in land while extra-legal processes were also used.

In addressing the research questions posed in section 1.4, in terms of the usage of land registration, the Brown's Farm data persuasively show that the following hypothesis does not singularly account for non-usage of a cadastral system. Non-usage of land registration is multi-variate and not dependent on a single factor.

- *High costs or impedances in using the local registration system discouraged residents from using it.*

Due to the author not being able to interviews with Brown's Farm resident themselves, the following hypotheses remain speculative as there was insufficient data to support or negate them.

- *Attitudes to land registration systems are positive, but landholders believe that it is not necessary to register every transaction in land and the implications of using or not using land registration are not fully understood;*
- *Residents may not have used the system as they saw no benefit in using it;*
- *Residents may have avoided using the system to hide the transaction from factions within the community such as street committees and warlords for a variety of reasons;*
- *A culture of non-compliance with local or national government systems, rules and regulations that carried over from boycotts and revolutionary activities in the 1980's.*

With respect to usage or non-usage of the system of cadastral boundaries, the research in Brown's Farm persuasively supports the following hypotheses:

- *A system of monumented fixed boundaries or stationary general boundaries as opposed to a topological boundary system is appropriate to the tenure system wanted by residents of Cape Town's Xhosa speaking communities;*
- *Encroachment, particularly onto public land, is due to opportunistic land grabbing;*
- *Encroachment is due to lack of awareness of the position of surveyed cadastral monuments;*
- *Encroachments are motivated by a need for more space to house lodgers or extended family members or to build a spaza shop or a shebeen;*

The following hypotheses remain speculative as there is insufficient evidence to support or negate them.

- *Individuals may not be able to define or defend the parcel boundaries that were originally allocated to them because the group over-right (integration) is stronger than the individual bias (fission);*
- *Fence encroachments are a result of one fence being out of position and then neighbours subsequently attach their fences to this fence, thus continuing the pattern of encroachment;*
- *Residents believe that structures such as fences and shacks are temporary and moveable. When a permanent structure is constructed, they intend to align their structures with the surveyed cadastral boundaries.*

The research in Brown's Farm also showed that actions of actors external to the community influenced the land tenure system in the settlement to the extent that there was a trend toward individualisation as land ownership was delivered.

This chapter has tested the main hypothesis and contributed to addressing the research questions posed in section 1.4 in a site-and-service scheme by positing and testing the above sub-hypotheses within the descriptive and evaluative framework developed in section 3.4. In accordance with the data collection and analysis strategy in section 5.6.1, in chapters 7, 8, 9 and 10, the above sub-hypotheses and further sub-hypotheses that the data in each case study show to be worthy of investigation have been tested, where possible. In addition, the implications of observed phenomena for land policy formulation and land administration in a particular settlement are analysed.

ENDNOTES

ⁱ There were conflicting beliefs about this phenomenon. Discussions with a number of land surveyors, local and provincial authority officials and planners indicated that some of these people believed that residents adhered to the legal cadastral boundaries whereas others believed that legal boundaries were seldom adhered to. A formal study had not been performed.

ⁱⁱ A South African Foundation for Research and Development funded research project on which the author was a member and project leader on land tenure issues.

ⁱⁱⁱ Services in 1991 comprised tarred roads, water borne sewerage, a toilet and communal stand pipes for potable water. Landholders constructed their own shelters.

^{iv} Julies, Goodwood Regional Services Council, 16 August 1996. Interview with Mayekiso, City of Cape Town, 23 August 1996.

^v Author's observation as a land surveyor in Cape Town during this period.

^{vi} Smith, 7 October 1998. Building Inspector, City of Cape Town.

^{vii} Julies 16 August 1996.

-
- viii Cape Times 10 July 1998, "Squatter Power Struggle: Homes Destroyed as Warlords Return".
- ix Ian du Plessis, fourth year BSc (Sur) student, and Susan Binedell, photogrammetry technician.
- x Adams analytical conversion.
- xi Author's experience at former Cape Town City Council and discussions with Peter Guise and Doug Milne, Cape Metropolitan Council GIS section. Both were formerly employed by Cape Town City Council Department of Surveying and Land Information where Doug Milne was branch head.
- xii The terms planimetric accuracy and planimetric precision are defined to mean the same thing- the precision of the surveyed position of an object in a plane coordinate system where the errors are random.
- xiii A Town Survey Mark is a permanent mark that has been surveyed and its coordinate published by the Department of Land Affairs' Chief Directorate of Surveys and Mapping, in Mowbray, Cape Town. Reference marks, which in the case of Brown's Farm were physically identical to a Town Survey Mark, are surveyed in the control survey for a township, and their coordinates noted on the general plan of the township. Surveys of reference marks tend to be based on Town Survey marks in Cape Town..
- xiv These were calculated by the author from "pseudo-observations" extracted from the aerial survey by du Plessis (1996:A10).
- xv The author did the original survey of some of the reference marks in 1991.
- xvi Milne, 1996, (then) Director of Surveys and Land Information, Cape Town City Council.
- xvii Discussions with Scott Mason 1997, senior lecturer, Department of Geomatics, University of Cape Town.
- xviii Du Plessis had unsuccessfully attempted to ground truth a number of points using GPS in 1996. Consequently the difference between 1:3000 and 1:10000 photography has been used for comparison.
- xix Mayekiso 23 August 1996.
- xx Julies 16 August 1996 of the Goodwood Regional Services Council (now part of Tygerberg Municipality), who was involved in the process but perhaps not the land allocation, described that as a general rule in settling informal settlement dwellers on site and service scheme land. Julies indicated that in general the warlord would tend to keep his people around him.
- xxi Mayekiso 23 August 1996, 6 October 1998. According to Mayekiso, he and a Mr Potgieter (now retired) allocated sites in this manner.
- xxii Mayekiso 23 August 1996.
- xxiii Brown's Farm Office was renamed Philippi Office in 1996 after the local government elections. The term "Brown's Farm Office" has been used throughout this discussion for simplicity.
- xxiv Site inspection, Mayekiso 23 August 1996, Julies 16 August 1996.
- xxv Abolition of Racially Based Land Measures Act 108 of 1991 made it possible for black Africans to own property in *allodium* and repealed the Black Communities Development Act 4 of 1984 which stipulated that black Africans were limited to 99-year leasehold tenure in urban areas.
- xxvi Julies 16 August 1996. In 1996, this fee was R20 to R25 per month.
- xxvii Discussions with a number of land administration officials.
- xxviii A dominant tenement is the holder of a servitude over another parcel of land. A servient tenement is the parcel that has the restriction of a servitude over it.
- xxix A strip of land between the cadastral boundary and the paved area of road designated for pedestrians and buried engineering services such as water, electricity and telephone.
- xxx A man-made structure that serves as a temporary pond to hold storm water during heavy rainfall periods.
- xxxi This is commonly referred to as the "outside figure" parcel.
- xxxii Spaza shops are separate shacks built facing the street in addition to a residential shack
- xxxiii According to de Soto, the expectative property right has no specific equivalent in the legal world. In Peru this right is first based on the physical presence on the land. Next it comes based also on the censuses which people conduct to certify their possession of the land and thus reduced the need for their constant physical presence to protect challenges to their occupation. Later the expectative right is based on the authorities own activities (de Soto 1989:23-24).
- xxxiv Mayekiso 6 October 1998 believed the warlords still wielded substantial power, in spite of the democratic local government elections
- xxxv It is assumed that these followers of Toise were holders of occupation rights, not ownership rights. It was not possible to follow up on this information.

CHAPTER 7

CAPE TOWN'S EASTERN METROPOLE

7.0 INTRODUCTION

This chapter describes data relating to additional informal settlements and site-and-service schemes in areas in Cape Town's eastern metropole outside of Brown's Farm and Khulani Park (see chapter 10). The part of the eastern metropole that is predominantly Xhosa-speaking includes the suburbs of Langa, Guguletu, Nyanga, Crossroads and Brown's Farm in the former Ikapa Municipality's jurisdiction, Khayelitsha in the former Lingeletu West City Council's jurisdiction and Mfuleniⁱ (see figures 1.2 and 1.3). This chapter reports the results of a set of interviews and a life history that were conducted between 1995 and 1999 and data collected from official documents and newspaper reports. Most of the data in this chapter relate to Khayelitsha, but the discussion includes data from other Xhosa-speaking regions of the eastern metropole such as Langa, Nyanga, Guguletu and Mfuleni.

The study of the eastern metropole adds comparative strength to the findings in the four case studies, and so ensures that the research validly represents Cape Town's Xhosa-speaking communities. As discussed in section 5.6, this study of the eastern metropole was conducted in parallel with the research in the four case studies. Certain phenomena that were encountered in the case studies, and tentative hypotheses that the author formulated to explain them, were verified against the experience and knowledge of officials and land professionals working in the eastern metropole. The queries were also tested against the experience and knowledge of a Xhosa-speaker who lived in the area and had been granted ownership of a parcel of land in Khayelitsha. Assuming the systems influencing cadastral system effectiveness in other areas of the eastern metropole are similar to those in the case studies, exploring the wider eastern metropole reduced the effects of the biases in this research identified in section 5.7.

Initially, conducting research in the eastern metropole outside of Brown's Farm and Khulani Park (see chapter 10) was part of a strategy for the author to acquire a broad understanding of the situations to be explored in this research. This strategy was to tentatively explore the tenure system in the area to establish if there was some validity to the research questions and hypothesis posited in section 1.4 and if they were worthy of investigation. If this tentative investigation had shown that the fundamental assumptions underlying the research (e.g. the social change model) had no basis in Xhosa-speaking communities in the eastern metropole, then the hypothesis and research questions would have been framed differently. Moreover, after it became apparent that conducting interviews in the Brown's Farm site-and-service scheme might not be possible, data collection in the eastern metropole was continued throughout the research to improve the validity of the findings in Brown's Farm and the other case studies and to augment these data.

The Xhosa-speaking section of the eastern metropole is largely made up of the jurisdictions of the former Ikapa Municipality and the Lingeletu West City Council. Ikapa administered the suburbs of Langa, Guguletu, Nyanga, Crossroads and Brown's Farm. Lingeletu administered Khayelitsha, which is in close proximity to Brown's Farm (see figure 1.3). In May 1996, Ikapa Municipality was absorbed into the City of Cape Town and Lingeletu West City Council was absorbed into the City of Tygerberg (see figure 4.1). The former Lingeletu office is now known as the City of Tygerberg's Khayelitsha office.

Khayelitsha had a total of approximately 40 000 parcels in mid-1997, of which 12 000 were formal houses that had been developed and registered in ownership privately, mainly through the South African Housing Trust. A further 28 451 City of Tygerberg owned parcels that were rented were in the process of being registered (Koen pers. com. 1997, City of Tygerberg 1997)ⁱⁱ. A total of 26 000 of these registrations were project managed by a private company BKS. By June 1998, at the end of BKS's contract period, 85% of these 26000 parcels had been registered and the remainder had been referred back to the City of Tygerberg to process (Lambrechts pers. com 1999ⁱⁱⁱ, Nxuba pers. com. 1999^{iv}). As the discussion later in this chapter will show, the registration in the Deeds Office of a significant number of these parcels did not run smoothly. In November 1997, 4427 of the registrations that were in progress had been referred to a dispute resolution committee (City of Tygerberg 1997).

The chapter is structured so that it first describes a life history of a Xhosa-speaker who moved to Cape Town in the 1970's and was granted ownership of a parcel of land in Khayelitsha in 1997. The chapter then reports the results of interviews which explored the experiences and beliefs of land administration officials and land professionals who were administering informal settlements and site-and-service schemes in the eastern metropole and of Xhosa-speaking officials who lived in the area. The sub-hypotheses developed in the Brown's Farm case study in section 6.4 are then analysed and tested against the data collected in the eastern metropole and compared with the Brown's Farm results. Based on the eastern metropole results, additional sub-hypotheses have been added for further examination.

7.1 LIFE HISTORY

The author recorded a life history of a Xhosa-speaker living in Cape Town's eastern metropole. Two other life histories were recorded, but they did not provide meaningful data for this research and only parts of these two interviews have been reported.

Ntshidi arrived in Cape Town from the Eastern Cape in 1972 and initially lived in an informal settlement in Mbekweni near Paarl in the Western Cape. In 1984, she moved to the middle class suburb of Pinelands where she lived on an employer's property with her family until 1991, when she was retrenched. Thereafter she moved to Guguletu as a lodger and then moved to a shack in an informal settlement in Site C Khayelitsha, after her husband died in that same year. Later in 1991, in the same year as Brown's Farm was

occupied, she was allocated a surveyed, serviced site in Macassar, Khayelitsha. The tenure on this surveyed parcel was the same as that in Brown's Farm prior to registration. Residents had a rent card and a register of tenants was maintained by the local authority, Lingeletu West City Council. The rental agreement carried with it an expectation of being granted ownership at some future date. Ownership of this parcel was transferred to her in 1997 (Ntshidi pers. com. 1996, 1998).

The local authority followed a similar procedure to that used in Brown's Farm in moving Ntshidi to Macassar. Ntshidi's shack in Site C was dismantled and transported to Macassar where she reassembled it when the site was delivered to her with occupation rights in a rental scheme in 1991 (Ntshidi pers. com. 1996, 1998).

The processes of adjudication, allocation and delivery of land in Khayelitsha were similar to those in Brown's Farm. The difference between Brown's Farm and Site C, Khayelitsha, was that SANCO, a political organisation, and the street committees adjudicated and allocated rights to surveyed parcels to residents of the Site C informal settlement. No evidence emerged to suggest that warlords involved in the unrest of the 1980's, the squatter wars between UDF aligned youths and the *witdoeke* ("white head bands") discussed in sections 1.3.2.3 and section 6.1, were involved in this process in Site C.

In Site C, Khayelitsha, the Lingeletu West Council allocated parcels for a serviced site in Macassar based on a list supplied by SANCO. Using the same strategy implemented by the Ikapa Council and the Provincial Administration in Brown's Farm (see section 6.3.1), when she lived in site C, the Lingeletu West Council issued Ntshidi with a rent card which conferred occupation rights and an entitlement to a serviced site in the Macassar sector of Khayelitsha. In harmony with the procedures that Ngeze described in Brown's Farm, when Ntshidi moved to Macassar she was issued with a new rent card. She indicated that pegs were pointed out to her by officials working for a "Mr Du Toit" when she occupied the site in 1991. The significance of the boundaries and the monuments ("the pins") was explained to her when the site was handed over. Ntshidi stated that she was informed that one should not build over the boundary lines, and that the person who had handed the site over to her had stressed that she should build her house well within the boundaries (± 1 metre building line).

Ntshidi (pers. com. 1996) indicated that prior to registration of ownership (in 1997), if she had wanted someone else to occupy and later own her surveyed parcel in Macassar, then both parties would have had to go to the Lingeletu Council office. At the office, delivery of the rent card from her to the buyer would have taken place in front of an official. Ntshidi did not mention officially recognised involvement by street committees or warlords in this process, as occurred in Brown's Farm. However, Ntshidi had not been personally involved in the transfer of a rented property from one person to another. As the testimony of officials reported later in this chapter indicates, third parties such as street committees were involved in such transactions.

In 1996 Ntshidi was not aware of evictions having taken place in her neighbourhood in Macassar. However, she had feared representatives of a certain political organisation prior to the national elections in 1994 who had requested people to tell them for whom they were going to vote (Ntshidi pers. com.1996).

Two years later in a follow up interview in 1998, Ntshidi indicated that prior to registration of ownership in Macassar, people had sold shacks in the rental schemes in the area. Such a sale would be vetted by a SANCO aligned street committee, which screened prospective new community members. Ntshidi indicated that in these instances the street committees had verified that the buyer was entitled to stay in South Africa and that the buyer had not been evicted from another settlement in Cape Town for a serious crime. She was not aware of people being screened and excluded on the basis of their political affiliations (Ntshidi pers. com. 1998). In a further interview in 1999, Ntshidi reported that a registered owner of a parcel in Macassar had been evicted from her house by a street committee as a result of an assault having taken place in her house. The house was vacant at the time of the interview and had not been occupied by another person (Ntshidi pers. com. 1999)^v.

When interviewed in 1996, Ntshidi was expecting registered ownership (“a title”) and a national housing fund (NHF) subsidy of R15 000 to build a house on her site. She believed the title deed would be proof of ownership and that once the land was registered in her name, if she wished to she would be able to sell her house for more than R15 000 without seeking prior approval of anyone else. In 1996, Ntshidi displayed confidence in the rent card system and the other records required to secure her ownership of her parcel. For example, she believed that it would be difficult for a lodger to steal her rent card and fraudulently obtain title with it. She believed that a person had to have an identity document to get the land registered in his or her name^{vi}. She had also had to show her marriage certificate and her spouse’s death certificate at the Lingeletu West office to obtain her title (Ntshidi pers. com. 1996). The house was subsequently registered in Ntshidi’s name in 1997 (Ntshidi pers. com. 1998).

In section 6.3.2.2, Ngeze has been reported as saying that residents of Brown’s Farm had prior experience of processes and instruments that are similar to those of the existing *de jure* cadastral system. In terms of the discussion in section 3.3.3, prior experience of a system should narrow the gap between perception and reality. In terms of this theory, it is assumed that evidence of prior experience of a cadastral system indicates that the responses relating to usage of the cadastral system are valid and reliable.

Prior to arriving in Cape Town, Ntshidi had experienced processes and instruments that were similar to those of South Africa’s *de jure* cadastral system. In addition to her house in Khayelitsha, Ntshidi also has a house in her father’s village in Tsomo in the Transkei region of the Eastern Cape province. The land was allocated to her by the chief and formalised by the local magistrate. She has a document from the magistrate to affirm her rights to her parcel, and she pays a monthly rental for this site. However, she indicated that even if she failed to pay her rent for this site, it would be difficult to evict her as she has a birth right to the land there.

Analysing this particular life history, Ntshidi's beliefs, attitudes and intentions, her descriptions of actual behaviour and her description of controls on behaviour (e.g. behaviour of street committees) matches the evidence of Ngeze and other key-informants in Brown's Farm. Firstly the adjudication process, the land delivery process and registration of rental agreements was a similar process to that used in Brown's Farm. There were group influences emanating from political groupings that partially controlled the land tenure system. However, Ntshidi believed that the *de jure* cadastral processes and instruments legally affirm rights of ownership and accepted these as legitimate. Ntshidi had indicated an intention to adhere to the surveyed cadastral boundaries and to use the land registration system if she chose to sell her house. In Brown's Farm, Ngeze and Smith had both indicated that there were few challenges to the surveyed cadastral monuments in the event of a boundary dispute. Furthermore, the documents and processes used to affirm rights in land were believed to be both legal and legitimate.

7.2 INTERVIEW DATA

This section describes the tenure issues related to the author in a number of key-informant interviews, experiences related to the author in a number of other discussions and data derived from newspaper articles about the eastern metropole.

7.2.1 Adjudication and Tenure Type

The structure used in this chapter differs slightly from that set out in section 3.4.1.1. The key-informant interviews did not delve into methods of adjudication and allocation of original rights in depth. Rather, these interviews explored the *de facto* tenure system(s), the disputes that arose over land issues and the effectiveness of land registration and fixed cadastral boundaries. The *modus operandi* of the land administration authorities in managing and administering the tenure system was derived from this data.

7.2.1.1 Individual parcels

The evidence from Brown's Farm suggests that the *de facto* tenure system in that area is based on individual parcels with overriding group biases. Ntshidi's description of land tenure in Khayelitsha in section 7.1 above matches this finding. This sub-section reports on a set of interviews that show that this form of *de facto* tenure prevailed in the Xhosa-speaking sections of Cape Town's eastern metropole.

At the planning level, initial exploratory interviews in 1995 and 1996 indicated that planners believed that a *de facto* tenure system based on individual parcels prevailed in the Xhosa-speaking communities and that residents adhered to the surveyed boundaries in site-and-service schemes. However, as the discussion in section 7.2.2 and the data from Brown's Farm show, the assumption that boundaries were being adhered to was inaccurate. This was due to the assumption being based on inadequate data and a lack of communication between officials who worked with administering settlements on the ground and planners.

Kedzieja, a provincial administration planner, was involved in metropolitan level planning of the location of settlements in Xhosa-speaking informal settlements. He believed the system of individual tenure based on surveyed parcels to be appropriate and that in general (Kedzieja pers. com. 1995)^{vii}. Using 1:10000 aerial photographs, enlarged to $\pm A2$ format, Kedzieja showed the author site-and-service schemes in Crossroads^{viii} where occupation patterns were similar to those of Brown's Farm. In general the planned layouts were adhered to in these settlements.

However, the data used by Kedzieja was not suitable for the type of analysis performed in Brown's Farm. The single unrectified analogue photographic images, without the surveyed cadastral layout overlaid on them, indicated that shacks tended to be built in the same pattern as the cadastral layout. However, using unrectified imagery to draw Kedzieja's conclusions is misleading. Figure 6.4 shows that such a general pattern of occupation also exists in Brown's Farm. Unlike the Brown's Farm data, it was not possible to measure the proportion of dominant encroaching parcels to the total number of parcels in a scheme, due to the spatial data not being suitable for this type of analysis. Because of his inadequate data, Kedzieja was not aware of encroachments over surveyed cadastral boundaries in site-and service schemes and believed that these did not exist in significant numbers (Kedzieja pers. com. 1995). Adlard (pers. com. 1996)^{ix}, of the Serviced Land Project, had worked on housing projects for a number of years. He too believed that residents of site-and-service settlements built in accordance with the surveyed cadastral boundaries. Adlard was unaware of boundary encroachments being an issue. Clearly at the planning level the issue of encroachment had not been explored and planners were not aware of situations on the ground such as the situation in Brown's Farm.

The belief that a system of land tenure based on individual parcels is appropriate was also expressed by Martin (pers. com. 1997)^x, Du Toit (pers. com. 1997)^{xi}, Camroodien (pers. com. 1996)^{xii} and Xolani (pers. com. 1998)^{xiii}. However, in section 7.2.2 the evidence of these key-informants will show that as with Brown's Farm there were a substantial number of encroachment cases which the local authority had to address in Khayelitsha.

7.2.1.2 Group biases

As was the case in Brown's Farm, although occupation of an individual parcel appeared to be an appropriate form of tenure, overriding group rights also existed. The evidence shows that the phenomenon of political groupings, local factions and gangs exercised an overriding power to coerce individuals to show allegiance to a local group or a political organisation was widespread in the Western Cape. Such coercive practices are widespread in Cape Town and are not endemic to Xhosa-speaking communities in Cape Town only. This sub-section will show that gangs controlled City of Cape Town and South Peninsula Municipality council housing allocations in the predominantly coloured areas too (see figures 1.2 and 4.1). However, the phenomenon of powerful individuals and local political groups exerting control over access to land and the continued use and

enjoyment of land prevailed in the predominantly Xhosa-speaking suburbs of Cape Town's eastern metropole. The data show that instances of group biases in tenure prevailed in informal settlements and site-and-service schemes and to a lesser extent in areas where land was registered in ownership.

In the Cape Times (6 November 1997: "If you want a Council House, ask Gangsters")^{xiv}, the City of Cape Town's Director of Housing and former national Director General of Housing, Billy Cobbett was reported as recounting to the City Council that the housing crisis is severe in the jurisdiction of the City of Cape Town. Cobbett was reported as saying that the City did not deliver administrative justice to its citizens but rather dispensed a series of decisions that were *ad hoc*, immoral, inconsistent and very likely illegal. Gangsters, civic organisations and street committees were reputed to perform council functions. In some parts of the city, gangsters and street committees allocated vacant houses. Councillors sometimes interfered with officials allocating houses (Cape Times 6 November 1997). Cobbett's report referred to the former Ikapa Town Council suburbs of Langa, Guguletu, Nyanga, Crossroads and Brown's Farm and the areas shown as Coloured in figure 1.2, and not Khayelitsha. Subsequent to this report, two City of Cape Town councillors were dismissed for interfering in housing allocations. However the attempt to challenge *de facto* power structures had serious consequences for Cobbett. As a result of challenging these power structures in the *de facto* tenure systems, Cobbett and his family received death threats and he subsequently resigned and left South Africa.

The City of Cape Town did attempt to exercise its power and authority more and more after Cobbett's resignation. For example, in October 1998 people living in an informal settlement adjacent to the Browns Farm site-and-service scheme invaded land in the neighbouring Samora Machel settlement (officially known as Weltevreden Valley) where formal houses were being built. According to a press report, the invaders were "sold" these land rights by community leaders^{xv}. In this instance the shacks and their constituent materials were physically removed and the invaders evicted by the City of Cape Town (Cape Times 13-14 October 1998). Earlier in July 1998, according to The Argus the Provincial Minister of Housing, Cecil Herandien suspended two large housing projects in Weltevreden Valley and southern Delft. Herandien was quoted as saying: "There has been one death already and that is one death too many." According to the Argus, officials had been taken hostage, people with legal rights to houses had been driven out at gunpoint and "gun wielding gangsters and warlords were collecting money from desperate people and allocating newly completed houses". At the time of the report, the authorities had applied to the Cape High Court for an order to evict people from 150 houses that had been occupied illegally (The Argus 23 July 1998, "Gangster rule halts homes for poor").

Key-informants reported similar experiences in Khayelitsha. Du Toit the former Director of Community Services for Lingeletu West City Council (now City of Tygerberg) had approximately 30 years experience in administering informal settlements and site-and-service schemes in the CTMA. Du Toit recounted his experiences relating to rented land in site-and-service schemes and informal settlements. The Lingeletu office did not deal with privately owned registered property issues other than administering building

regulations and protecting public land from encroachment. Encroachment problems between neighbours on privately owned land were the domain of the owner, and once a parcel was registered in the Deeds Office, the file at the Lingeletu office was closed. Du Toit was unaware of disputes arising in areas where land was registered (Du Toit pers. com. 1997). This issue is addressed in chapter 10 in the Khulani Park case study.

Du Toit stated that SANCO and street committees were always involved in negotiations involving the allocation of land rights and dispute resolution. However in Du Toit's experience street committee members and SANCO members were often personally enriched by disputes. A standard payment of ±R10 in the mid-1980's was required for a landholder to get a street committee member or SANCO member to see Du Toit. In Du Toit's opinion, people would not talk about this situation, as there was severe intimidation. Reporting this situation to the authorities could have severe consequences for the individual involved. In his experience, there were a number of unresolved police cases involving violence where people would not provide evidence for fear of reprisals. Press reports of shacks burning down because of stoves or candles falling over were not always true. In Du Toit's observation, these events were often a result of activities related to intimidation or factional conflicts (Du Toit pers. com. 1997).

Du Toit's evidence correlates with the incident of people being evicted and shacks being burned in Brown's Farm, which is described in sections 6.1 and 6.3.4, and also ties in with the description of a violent history in this area in section 1.3.2. Similar misgivings were raised by a key-informant about shack fires that frequently occurred in Marconi Beam. This is discussed in chapter 8.

Du Toit indicated that as an administrator a major problem in dealing with SANCO was that SANCO used to play gatekeeper. In Du Toit's experience, agreements by Lingeletu Council would be struck with SANCO as community representatives, but the decisions and agreements would often not be communicated to the community which SANCO represented. General feedback from meetings between the Council and SANCO was often not communicated to the community either. The result was that the council was often blamed for imposing decisions on the community that had been negotiated with the community leadership (Du Toit pers. com. 1997).

In 1998, Xolani, a City of Tygerberg official, indicated that in Khayelitsha, SANCO was still very much involved in the adjudication and allocation of land, particularly in the site-and-service rental schemes. If a person vacated a house, SANCO tended to dictate to the council who should take over the lease. There was political screening of who should live in a house in that people should be of an acceptable political persuasion. Xolani went on to say that the council may have wished to put another person in a house, "perhaps someone on a waiting list", but that person would not be able to live there because of intimidation with the threat of violence from SANCO (Xolani pers. com. 1998).

Xolani (pers. com. 1998) also indicated that there were numerous cases of factional fights and evictions in Khayelitsha. Sometimes, these were not politically motivated as the taxi factions were also involved in land related power struggles^{xvi}. The effects of this situation

and street committees' involvement in adjudication and land allocation are discussed in section 7.2.4 in the section discussing dispute resolution.

Data relating to overriding group biases in tenure in land registered in ownership also emerged. In general, the above information relating to Khayelitsha describes the situation in informal settlements or land that is rented from the local authority as the officials did not concern themselves with issues in land registered in private ownership. Roux (1999)^{xvii}, a land lawyer, related an inheritance case which he had dealt with in Cape Town's eastern metropole. The legal heir to a house, in terms of the will, could not gain access as two stepchildren who had lived with the testator occupied the house and refused access to the legal heir. When the stepchildren were legally evicted, local community structures prevented the legal heir from taking occupation on threat of violence or death. The problem was resolved by getting the stepchildren to purchase the house from the legal heir.

A further case involving overriding group rights relating to inheritance in Langa was reported in *The Argus* of 2 August 1999 ("Woman set alight in home ownership dispute"). According to *The Argus*, after a house owner, Thandiswa Mayekiso, died, there was a dispute between the deceased's sister-in-law, Winnifred Mayekiso, and the street committee headed by Nobantu Mtuza. Mtuza was quoted as saying: "We and the residents viewed Nomfundo Matava as the rightful owner of the house because she stayed with the deceased and took care of her when she was sick." The result was that Winnifred Mayekiso allegedly doused Mtuza with a chemical substance and set her alight. Mayekiso was remanded in custody at the time of the report (*The Argus* 2 August 1999).

The Legal Resources Centre had encountered cases where people had been evicted for holding different political affiliations from the controlling group in a particular area. This evidence was obtained from two attorneys, James and Botha. James related that in Langa, a PAC aligned street committee had evicted a registered owner and allocated the house to a person that the committee deemed to be more deserving (James pers com 1997)^{xviii}.

People were also evicted for supposed misconduct. Botha indicated that in Guguletu a legally registered home owner was evicted and his house allocated to someone else after a murder was committed in the house whilst it was being used as a shebeen^{xix} (Botha pers com 1997)^{xx}. This is similar to the case in Macassar described by Ntshidi in section 7.1.

Analysing the above and the life history of Ntshidi, the evidence is conclusive that individual tenure with the enjoyment of the rights of allodial ownership is desired by individuals such as Ntshidi. There was no indication of a want for an alternative system that is not based on individual parcels. Individuals such as Ntshidi tend to use the cadastral system to affirm their rights in land. However, there are elements in Cape Town's Xhosa-speaking settlements that hold an overriding power that limits the tenets of ownership. Moreover, the data in this sub-section show conclusively that group biases in tenure extend beyond situations where there are *de jure* rights of occupation to the situation where *de jure* ownership has been bestowed on a person.

In summary, in rental schemes in many areas and to an extent in the case of registered land, people are often screened to establish their political affiliations and there is also evidence of people being evicted for holding political views that are contrary to those of street committees. The evidence of violent evictions for not showing allegiance or affiliation to gangs or political groups and evictions resulting from factional violence is also conclusive. Therefore *de facto*, the powers of full ownership in *allodium* as defined in section 2.2.6.1 do not always exist. In most rental schemes, street committees hold the power of reversion and reallocation of land rights that is superior to that of the local authority as the landowner. In more extreme cases the situation has been taken over by criminal elements.

The investigation into the eastern metropole also revealed conflict between individual registered ownership rights and overriding group biases. Groups such as street committees attempted to assert what they perceived as legitimate rights over those of the individual. The data show that such assertions were manifested in factions who threatened violent acts and at times actually committed them. Similarly individuals also committed violent acts in order to assert or defend their legal rights of individual tenure. This demonstrates what Fourie (1993) and Davies (1998) describe as the ongoing forces of fission and integration described in section 1.3.7.

This findings on tenure type and adjudication are generally in agreement with the findings in the Brown's Farm case study where it was concluded that in general the *de facto* tenure system was one based on individual parcels with overriding group biases. This is discussed further in section 7.3.1.

7.2.1.3 Family tenure

Family tenure issues were reported in both the rental schemes and in areas where land was held in ownership.

Du Toit indicated that he had experienced numerous family tenure cases in Khayelitsha's rental sites. The cases that he had dealt with resulted from the actions of a spouse after separation or divorce. In Du Toit's experience the majority of cases occurred when a husband and wife occupied a site and then separated. For example a typical case was where the rental agreement was in the husband's name. The husband left the wife and moved out of the house. The husband then informally sold the land for approximately R1000 to another person. When the new buyer attempted to evict the wife (and possibly the family) to move in, the wife would refuse to move (Du Toit pers. com. 1997).

The Lingeletu Council had adjudicated such cases on the principle that the land was rented to a household unit and the rental agreement was not tradable. The informal buyer had no rights to the land in these cases, as the seller did not have the contractual capacity to enter into such an agreement. The legal position was that as far as the Lingeletu Council was concerned, the rental agreement (short-term lease) was not a tradable agreement. As with Brown's Farm, a lessee owned the removable improvements, not the

land. Therefore the wife and the family could not be evicted from the land. The Lingeletu Council's position was that the parcel had been allocated according to the needs of a family unit, not those of an individual, and the Council had a waiting list of families. If the wife had to leave, then another family on the Council's list would be allocated the site. The Council's view of the rental contract was that the site was allocated to a family unit according to the needs of the family, but it was held in the name of the head of house (Du Toit pers. com. 1997).

If land was registered in private ownership in the Deeds Office, the Lingeletu Council would direct people to the Black Sash or the Legal Resources Centre. Du Toit believed that a number of cases of family disputes over legitimate ownership may exist in registered settlements (Du Toit pers. com. 1997). However, investigations at the Legal Resources Centre and the Black Sash revealed that none of these cases had come to court in Cape Town^{xxi}. However, it is apparent that certain cases were dealt with by private firms of attorneys, such as the case reported by Roux in section 7.2.1.2.

Family tenure issues also delayed registrations of parcels in the name of tenants in Khayelitsha. A senior official, Xolani indicated that divorce cases were a major problem in the rental scheme registers. These problems had delayed registration as the tenant whose name was on the council's register as the holder of a rental agreement was often no longer the occupant. The family remained in the house, but the registered tenant entitled to receive registered ownership had probably separated from his or her spouse. This phenomenon may also be due to family members periodically moving backwards and forwards between Cape Town and the Transkei or Ciskei (Xolani pers. com. 1998).

Evidence of informal transfers of registered land, including sales for money, between family members outside of the cadastral system did emerge, indicating that perhaps there is a belief that land is owned by the extended family. Smith had experienced informal sales of registered parcels in the former Ikapa areas of Guguletu and Nyanga. In some cases parents had sold the house to a child without registering the sale (Smith pers. com. 1998)^{xxii}. However, when this issue was followed up with two senior officials responsible for housing in the area, they noted that it was possible that such transactions could have occurred, but there was no official record of them.

As is discussed in sections 7.2.3 and 7.2.4, family tenure issues arose out of disputes over divorces and inheritance when City of Tygerberg (Lingeletu) owned parcels in Khayelitsha were transferred to the lessees over a period from 1997 to 1999 (Koen pers. com. 1998, 1999, Nxuba pers. com. 1999).

In conclusion, family tenure issues were a cause of conflicts that led to the register of rental agreements not reflecting the *de facto* occupants of a particular parcel who were also the *de facto* claimants to ownership of that parcel in the City of Tygerberg. Evidence of similar cases of divorce and separation did not emerge in the Brown's Farm case study, but informal transfers of the land between family members was reported. There were unconfirmed experiences of informal intra-family transfers of land registered in ownership in the former Ikapa areas.

7.2.2 Boundaries

Encroachment patterns experienced in site-and-service schemes in Khayelitsha were similar to those identified in Brown's Farm. The Lingeletu Council adjudicated an estimated 2000 to 3000 ("3 to 5 cases per day") boundary disputes on site-and-service land in Khayelitsha over a period of three years up to 1996, prior to land being registered (Du Toit pers. com. 1997, Martin pers. com. 1997)^{xxiii}. As discussed in section 7.0, Khayelitsha had a total of approximately 40 000 parcels in mid-1997, of which 12 000 were registered and 28 000 were in the process of being registered during the course of this research. The figures given by Martin and Du Toit imply that there were queries or disputes relating to boundaries on between 7% and 11% of site-and-service parcels in Khayelitsha. The problem was sufficiently significant that re-establishing boundaries became too burdensome for the Council. After three years of the Council adjudicating such disputes, residents were instructed to approach a land surveyor to replace beacons and adjudicate boundary disputes as Council staff were being deployed full time to address this issue in 1996 (Martin pers. com. 1997)^{xxiv}.

The Council did not adjudicate boundary disputes on land registered in ownership in Khayelitsha. Du Toit (pers. com. 1997) was not aware of encroachment problems or other tenure problems in estates where houses had been built by developers (\pm 12 000 parcels), only in site-and-service schemes. This evidence was supported by Martin (pers. com. 1997) and Xolani (pers. com. 1998). The issue of boundaries in a registered settlement in Cape Town's eastern metropole is explored in more depth in the study of Khulani Park, Khayelitsha in chapter 10.

Du Toit stated that from his experience that there were two explanations for most of the encroachments in rented site-and-service parcels: 1) land grabbing; and 2) personal contractual agreements between neighbours to allow encroachment. In Du Toit's experience the number of land grabbing cases far exceeded the cases where disputes arose when an attempt was made to revoke a personal contract (Du Toit pers. com. 1997).

Du Toit believed that land grabbing was primarily motivated by insufficient space. He cited a typical example of an informal settlement consisting of 300 shacks that might contain 700 families. This was largely a result of the extended family sharing a shack in the informal settlement. Similar to Brown's Farm, all these people had to move when the informal settlement site was cleared of shacks in order for the land to be developed. A shack in the informal settlement might be larger than the formal site-and-service parcel to which the family was moved. Consequently, when these extended families occupied their site-and-service parcel, they would pull out the surveyed 12 mm iron pegs and build to suit their needs. As an example, a typical case involved fitting a 12m x 12m shack in an informal settlement onto a 8m x 8m surveyed parcel (Du Toit pers. com. 1997).

The second issue related to a verbal contract, what Du Toit called "a gentleman's agreement", which permitted a neighbour to encroach. In Du Toit's experience, often the servient party would have agreed to the encroachment for years. Then, after a dispute between neighbours unrelated to land occupation, the servient party would attempt to

reassert his or her rights and if this was unsuccessful they would approach the Lingeletu office to adjudicate and resolve a boundary dispute (Du Toit pers. com. 1997). This ties in with Ngeze's testimony in Brown's Farm that the issue of encroachment was not a problem until some other dispute arose between neighbours. The issue is also addressed in chapter 9 in the case study of Imizamo Yethu.

Du Toit stated that in some cases the dominant party would agree to move. However, in the process of encroaching, the offender would often have removed the boundary peg, or moved the peg to enlarge their parcel. The council officials then replaced the peg by taping measurements off existing pegs. After this process the pegs tended to be accepted as the boundary by the parties to the dispute (Du Toit pers. com. 1997). In the author's interpretation of the Land Survey Act 8 of 1997 and the former Land Survey Act 9 of 1927 these pegs have no legal standing as boundary monuments, and the actions of the council in replacing these monuments were probably illegal.

Du Toit indicated that, in his experience, dispute resolution is a slow process. Land grabbing takes place because of the scarcity of land. It is also critical to have alternative land for people if there is not enough land for them in a single parcel (Du Toit pers. com. 1997). This implies that any workable strategy to prevent encroachments that are motivated by overcrowding has to deal with the overcrowding issue at the same time as the boundary issue.

Martin had worked with Du Toit in resolving boundary disputes and was still a building inspector for the whole of Khayelitsha at the time of the interview. At the time of the interview, the City of Tygerberg's Khayelitsha office referred landholders to a land surveyor to resolve their boundary disputes. According to Martin, encroachment problems had only emerged in the early 1990's when landholders wished to spend their government subsidy and the building inspectors checked the boundaries prior to permanent structures being constructed (Martin pers. com. 1997). This ties in with Smith's (pers. com. 1998) description of the situation in Brown's Farm and Ikapa.

In addition to the reasons put forward by Du Toit, Martin added reasons that tie in with the interpretation of the overlay maps of Brown's Farm. In Martin's experience, if one person built a fence out of position, then the whole street might follow suit. Land grabbing appeared to be the main problem though. Martin also cited cases of land grabbing of public land of people extending their fences to enclose public land such as part of the railway reserve. Other problems arose when there was more than one shack on a particular site. Martin had experienced cases of a registered owner obtaining a house subsidy and then being unable to build a house on his legally registered parcel as the site had been swallowed up by shacks encroaching from all the neighbouring parcels (Martin pers. com. 1997). Martin had experienced one other case where an encroacher, the dominant party, had refused to move the offending structure. As with Brown's Farm, Martin noted that fences tended to encroach more often than buildings, and where buildings were found to encroach, these tended to be shacks as opposed to permanent structures (Martin pers. com. 1997).

In harmony with the experiences related by Du Toit, Martin indicated that part of the problem of encroachment in overcrowded areas is that there was no alternative land available to deal with lodgers. It is very difficult to get people to move after the fact once they have grabbed land from a neighbour and occupied it (Martin pers. com. 1997)..

Molloy^{xxv}, an employee of a consulting engineering firm, worked with the Mfulene informal settlement. He indicated that he had experienced land grabbing and substantial problems with road reserve encroachments. Molloy had experienced land grabbing when the first occupants in a settlement moved pegs before their neighbours arrived. To address this, each time land was allocated and pegs were pointed out, Molloy measured up dimensions between pegs and checked these against the general plan dimensions in the presence of the new occupant(s). The objective being, firstly to check that the existing pegs had not been moved and secondly to make the new landholder aware that it was possible to re-establish the positions of the boundary monuments from measurements should the monuments be moved. Molloy believed that this process effectively stopped the majority of landholders from moving their beacons. (It should be noted however that Molloy did not deal with boundary maintenance issues after land was delivered and this belief is not substantiated by experience). Molloy believed people knew what boundary monuments (pegs) symbolised. He had not experienced negative attitudes to them as symbols demarcating the apices of a land parcel. Molloy also believed that 12 mm round iron pegs were unsuitable as monuments as they tend to be stolen and sold to scrap metal merchants (Molloy pers. com. 1997).

Tshemese was a street committee member in Khayelitsha in an area that had not yet been registered in 1997. He was not aware of encroachment problems in monumented areas, but of collective invasions on open land and factories close to where he lived. In his area there was a major problem with people stealing copper wire from the telephone utility, plumbing from houses and steel pegs that served as boundary monuments (Tshemese pers. com. 1997)^{xxvi}.

In terms of boundary disputes on rented land, Du Toit (pers. com. 1997) indicated that critical to adjudication and mediation of the dispute was the involvement of street committees. The street committee would be called in and the site visited by both officials from Lingeletu (Tygerberg's Khayelitsha office) and the street committee. The disputing parties and the street committee would then be called in to the office and the nature of the layout, the importance of beacons and site dimensions would be explained. At the end of these meetings, invariably the offending party would agree to remove the encroachment unless there was nowhere for him or her to move a shack (Du Toit pers. com. 1997). Martin (pers. com. 1997) conferred on this. Smith provided similar evidence for areas outside of Brown's Farm in the former Ikapa jurisdiction of the City of Cape Town.

The evidence from the eastern metropole on boundaries is in general agreement to the evidence obtained in Brown's Farm. Comparative analysis is included in section 7.3.2.3 where the hypotheses relating to boundaries are analysed and tested.

7.2.3 Registration and Tenure Security

This sub-section describes experiences relating to usage of the record system in the rental scheme in Khayelitsha and experiences relating to registered land in the eastern metropole.

7.2.3.1 Rental scheme

In Lingeletu West (Tygerberg's Khayelitsha office) land was held under a similar system to that in Brown's Farm where a rent card was issued to the tenant and a copy kept on file in the Lingeletu office. Xolani indicated that a new rental agreement would be executed in the case of a person vacating a site. However, as discussed in section 7.2.1.2, SANCO often dictated to council who should take over the lease (Xolani pers. com. 1998, Du Toit pers. com. 1997). The *de facto* power of the local authority in allocating these rights was still limited up in 1998.

Xolani (pers. com. 1998) indicated that there were inaccuracies in the local authority's rental scheme register in Khayelitsha, but he had no knowledge of extra-legal transfers of privately owned registered land in Khayelitsha. Disputes over ownership or occupation of privately owned land registered in the Deeds Office were not the domain of the local authority. Xolani was aware of many unrecorded informal sales or transfers of occupation rights, but he could not provide figures for these. As with Brown's Farm, the issue was sufficiently significant to take up a substantial amount of the local authority's time and resources though. Xolani gave the following reasons for inaccuracies in the rental register:

- Informal sales and transfers between strangers and family members being the primary cause;
- Registered tenants had been evicted by gangsters or street committees or chased out during taxi wars and their houses occupied by other people;
- In one site there was a major problem due to occupation of the incorrect sites originally. It would appear that the local street committee was largely responsible for this situation. This problem came to light when the time came to transfer ownership, as people who were supposed to be transferred a particular parcel were occupying a different parcel in the immediate neighbourhood. The underlying reason was there was little control when sites were allocated and occupied. An explanation given by Xolani was that the first occupants on site discovered that there might be infrastructure problems with their site, "such as a broken toilet", and instead of fixing it they would grab the site next door that had decent infrastructure. When the tenant who had been allocated that particular parcel by the Lingeletu Council arrived to take occupation, the street committee would reallocate them another site.
- Divorce or separation cases when the husband, the registered lessee, had moved out and the wife or girlfriend continued to occupy the parcel.

To resolve such situations, the City of Tygerberg insisted on an affidavit from both the local city councillor and the street committee relating to the legitimacy of the *de facto*

occupant's right to ownership of a particular parcel before it would consider transferring ownership to the occupant (Xolani pers. com. 1998). These particular cases and the magnitude of the case load are discussed in more detail in section 7.2.4.

7.2.3.2 *Ownership: deeds registration*

As discussed in section 7.0, 28451 parcels in Khayelitsha were in the process of being transferred to the occupants during the course of this research. By June 1998, approximately 85% of 22 000 of these had been transferred under a project management contract with BKS (Lambrechts pers. com. 1999)^{xxvii}. The remaining registrations were being administered by the City of Tygerberg and these were still in process in October 1999 (Koen pers. com. 1999, Nxuba pers. com. 1999)^{xxviii}. In November 1997, queries had been raised against 4427 registrations, referred to by Xolani in section 7.2.3.1 above, and these had been referred for dispute resolution. These cases are discussed in section 7.2.3 (City of Tygerberg 1997). Evidence of the *de jure* registration system not meeting the wants of landholders did not emerge in any of interviews with people involved in managing this process nor in the official documents examined by the author.

The evidence is conclusive that a title deed is believed to be the primary evidence of ownership. Ntshidi showed confidence in both title deeds and rent cards as the primary evidence to affirm her rights in land. In Xolani's experience people in Khayelitsha viewed a title deed as the most important evidence of ownership of rights in land. The only problem he could remember was resistance to 99-year leasehold titles under the Black Communities Act 4 of 1984, which was repealed in 1991^{xxix}. Leasehold tenure was viewed as an inferior form of tenure to freehold at that time by sectors in the community. In his experience there was no resistance to the legitimacy of the title deed itself as evidence of rights in land (Xolani pers. com. 1998). Lawrence stated that much of the resistance to 99-year leasehold was politically motivated. In his experience there was a large contingent of Khayelitsha residents who held positive attitudes to this form of tenure. He indicated that a number of transactions involving the transfer of land to Khayelitsha residents using 99-year leasehold tenure had been conducted clandestinely in the 1980's where officials had conducted meetings with residents outside of Khayelitsha (Lawrence pers. com. 1999)^{xxx}.

Analysing resistance to 99-year leasehold tenure falls outside the scope of this research. What the above data do show is that the two respondents' experience led them to believe that a permanent form of individual tenure, such as ownership, based on individual parcels that is affirmed by some form of official document is what was wanted by Khayelitsha's residents.

Molloy had encountered no problems in the 200 cases he had dealt with concerning the validity of a title deed as an instrument to affirm ownership. He believed that social processes would have little influence in affirming land ownership once land was registered (Molloy pers. com. 1997).

Data was collected indicating inaccuracies in the deeds registration system in the jurisdiction of the City of Cape Town. As mentioned in section 7.2.1.3, Smith indicated that he had either personally experienced or had been made aware of approximately 50 cases at housing committee meetings of problems where informal owners occupied houses of Langa, Guguletu, Nyanga and New Crossroads in the in the former Ikapa jurisdiction which now falls in the City of Cape Town. In the cases that he had experienced, Smith noted that the occupants of a house believed that they owned it, but they were not recorded as the owner on the registered title deed. These cases came to light if a building inspector served notice on the owner that they were building illegal alterations to their house without building plans (Smith pers. com. 1998). It was not possible to confirm Smith's testimony from other sources. Two other senior housing officials from the City of Cape Town, working in the same predominantly Xhosa-speaking settlements as Smith, confirmed that they were aware that the problem of informal transfers may exist but were not aware of specific cases. One of these officials indicated that in the City of Cape Town's jurisdiction, in rental schemes people had sold their entitlements to a house informally, but not parcels registered in ownership. Furthermore this official was aware of people entering into an informal contract to sell their parcel^{xxxix}, accepting payment for the informal transfer, and refusing to formally transfer the parcel and not permitting the informal purchaser to occupy the house.

7.2.4 Dispute Resolution

This sub-section discusses the dispute resolution processes that took place in Khayelitsha during the process of registering the 28451 City of Tygerberg owned parcels. This particular situation was introduced in sections 7.2.1 and 7.2.3.

In November 1997, there were 16 784 parcels that were proceeding to registration without queries or disputes being raised against ownership being granted to the person in whose name the property was held in the council's rental agreement. At the same time there were queries and disputes relating to 4427 parcels that had been referred to dispute resolution committees within the council (City of Tygerberg 1997). This translates into 21% of 21 211 parcels having queries raised against them.

According to Koen and Nxuba, the dispute resolution process took the form of a tribunal, each of which was set up to adjudicate a particular dispute. The tribunals were made up of the parties to the dispute and a dispute resolution committee. The dispute resolution committee comprised the street committee representatives in the street where a particular dispute had arisen, the local ward councillor, a City of Tygerberg official and any other interested parties. At the end of the tribunal(s), the dispute resolution committee would draft a report making recommendations to the City of Tygerberg Housing directorate. If the case was sensitive or unresolved, it was referred to the Housing Committee (Nxuba pers. com. 1999, Koen pers. com. 1998, 1999)^{xxxii}.

According to Nxuba, queries and disputes were referred to dispute resolution committees when the occupants of a particular parcel were not the persons recorded in the City of Tygerberg's register of rental agreements. In other words, in November 1997 the register

of rental agreement was inaccurate by approximately 21%. The majority of cases underlying the mismatch between the official record and the *de facto* claimant to land ownership were primarily a result of informal transfers of rental agreements taking place. In some instances, the persons whose name was on the official record claimed that they were entitled to be granted ownership of the parcel. Most of these cases had been adjudicated on the evidence provided by street committees whose members had witnessed a particular informal transaction taking place. In most of these instances the City of Tygerberg granted ownership to the *de facto* occupant. Other disputes revolved around family tenure. In cases of divorce, the City adopted a policy of granting ownership to the spouse who had custody of the children. In conflicts over inheritance, the tribunals attempted to facilitate a negotiated settlement between family members (Nxuba pers. com. 1999)^{xxxiii}.

Of the total of more than 4000 queries that were referred to dispute resolution committees, between 300 and 500 had resulted in dispute resolution tribunals where conflicts between parties over who was entitled to be granted ownership had to be resolved. Of these, two cases could not be resolved by the tribunals and had proceeded to civil actions in court (Nxuba pers. com. 1999).

7.3 CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS

Using the same analytical structure as that in section 6.4, this section draws together and analyses the data presented in this chapter. Using the evaluative framework and the theory underlying it established in section 3.4, the land tenure system is analysed first and linked to the hypotheses and research questions in section 1.4. The usage of the cadastral processes and instruments in supporting land tenure are analysed thereafter. The effectiveness of the cadastral system in addressing relevant issues in land administration and land policy is discussed thereafter.

7.3.1 Land Tenure and the Hypothesis

The data show conclusively that a form of tenure based on individual occupation of parcels is desired and appropriate. However, the notion of individual ownership of a parcel as it was defined in section 2.2.6.1 does not exist universally in Cape Town's eastern metropole. As with Brown's Farm, the evidence in the eastern metropole shows that Fourie's (1993) social change model applied. Dialectics, where conflict or structural tension is inherent in a system, ongoing processes of fission and integration and transactional behaviour are evident in the descriptions of experiences in the eastern metropole. The area shows similar characteristics to Brown's Farm in that group biases in tenure were dominant, especially in certain informal settlements and site-and-service schemes. The situation had also been taken over by criminals and warlords in certain instances and there is evidence of these powerful individuals selling land rights that they do not legally own and are not entitled to sell. As with Brown's Farm, the data from the eastern metropole support that part of the hypothesis which states that:

The land tenure system in Cape Town's Xhosa-speaking communities comprises elements of both individualised tenure and group tenure rights. In these communities, some of the existing cadastral system's processes, and the instruments generated as part of these processes, are used to support claims to rights in land. Others are substituted by extra-legal mechanisms more suited to de facto tenure in a particular situation.

As with Brown's Farm, individual parcels where rights in land are supported by cadastral processes and instruments, such as documents and surveyed monumented boundaries, form the basis of the tenure system. The data indicate that these cadastral processes and instruments are considered legitimate by the community and attitudes to them are positive. The evidence of Ntshidi points to segments of the Xhosa-speaking community wanting a system of individual tenure that is affirmed by the cadastral system only. However, overriding group rights were shown to exist in registered land as well as in unregistered land. Street committees and other structures such as gangs and political organisations were involved in administering the land tenure system and allocating land rights, especially in cases of inheritance in registered land and in adjudicating and allocating land rights in the rental schemes. Moreover, the evidence relating to dispute resolution relating to conflicts over who should be granted ownership of a particular parcel in Khayelitsha shows that street committees played a major role in the tenure system.

The evidence from the eastern metropole also indicates that the situation is not static, and that there is conflict between the forces of fission and integration. There was evidence of individuals violently challenging the power of community structures to allocate land rights in which the individual held *de jure* ownership rights. E.g. this is evidenced by the woman who set the head of a street committee on fire. However, the experience of Cobbett also demonstrates the problems that may occur when the land administration authority attempts to assert its mandate to manage and administer the land tenure system. The evidence suggests that a range of factors have to be in place (e.g. effective law enforcement) before the local authority and an individual owner are empowered to assert their rights in such a situation.

Comparing the eastern metropole to Brown's Farm, the eastern metropole confirms and strengthens the finding in Brown's Farm that in general the *de facto* tenure system was one based on individual parcels with overriding group biases. In terms of the discussion in section 5.6.1, the conclusions about land tenure in Brown's Farm have not been shown to be false. No evidence was gathered in the eastern metropole to suggest that residents desired a form of tenure that is based on a pattern of land occupation that is substantially different to one based on the surveyed parcels delivered to residents. The fact that more than 4000 disputes over rights of expectation in allodial ownership had been resolved to proceed to registration in private ownership, and there were only two unresolved disputes that had culminated in civil cases, supports the notion of a want for a system of individual tenure. The dispute resolution data in the eastern metropole study also suggest that a system of tenure is wanted that is based on ownership as defined in section 2.2.6.1. The evidence of officials involved in land administration also supports this. This is further

supported by the evidence of Ntshidi relating to her beliefs about the status of “a title” and points to a want for formal official systems of upholding land tenure security. However, at this stage, this finding is speculative as there is insufficient data to conclude that tenure based on individual ownership is the norm wanted by the wider community. The issue of the power of community based structures in administering the tenure system has been further explored in interviews in Marconi Beam, Imizamo Yethu and Khulani Park.

7.3.2 Cadastral System and Land Tenure

7.3.2.1 Registration

As with Brown’s Farm, there was widespread non-usage of the rental system. The official register of rental agreements in Khayelitsha were inaccurate by more than 20% in November 1997. Unlike Brown’s Farm, in the evidence related to the author concerning land tenure in Khayelitsha, the involvement of a community leader such as a warlord in the symbolic delivery of the rent card from seller to buyer was not included in the process of transferring the occupation rights from one person to another. However, there was involvement of street committees and other agents in arranging transfers and the evidence suggests that it in most instances it was not possible to conduct a transaction in land without the involvement of these institutions. There is also a suggestion of the deeds system of land registration of ownership not being used in the manner intended in that there is unconfirmed evidence that informal transfers of land have taken place in the former Ikapa jurisdiction. However, this evidence was obtained from a single source and could not be corroborated. The effectiveness of the cadastral system in privately owned registered land in Khayelitsha is explored in greater depth in the study of Khulani Park in chapter 10.

In Brown’s Farm, the following three hypotheses were put forward by officials as reasons underlying the inaccuracy, or non-usage, of the register of occupation rights, the rental scheme:

- 1) *informal sales or transfers to strangers;*
- 2) *informal transfers or sales to family members; and*
- 3) *incorrect adjudication and registration of original lessees.*

The data show that hypothesis 1) and 2) above applied in the eastern metropole outside of Brown’s Farm. The third explanation was not given by any of the officials interviewed. It may well be a cause of inaccuracy in the register, but it is concluded that it was not a major factor underlying non-usage of the formal system to record transactions in land. If it were a major factor, it can be assumed that the officials would have mentioned it.

In chapter 6, the following hypothesis, derived from the discussion in sections 1.3.4 and 1.3.9, were put forward to explain why informal, unrecorded transfers of rental rights and registered ownership take place:

- 4) *High costs or impedances in using the local registration system discouraged residents from using it;*
- 5) *A culture of non-compliance with local or national government systems, rules and regulations that carried over from boycotts and revolutionary activities in the 1980's;*
- 6) *Attitudes to land registration systems are positive, but landholders believe that it is not necessary to register every transaction in land and the implications of using or not using land registration are not fully understood;*
- 7) *Residents may not have used the system as they saw no benefit in using it;*
- 8) *Residents may have avoided using the system to hide the transaction from factions within the community such as street committees and warlords for a variety of reasons.*

In addition, the evidence in Khayelitsha suggests that the following additional hypotheses are worthy of investigation:

- 9) *Street committees, political organisations or gangs control land and have evicted people and allocated the land to other people without ensuring that the land administration authority's records reflect the change in occupation or ownership.*
- 10) *Land is held de facto as family land or in joint tenancy or ownership. If the head of house separates from his or her spouse or common law partner and leaves, the household remains in residence without updating the records.*

With respect to the rental scheme, no evidence emerged to support hypotheses 4, 5, 7 and 8 above.

Referring to hypothesis 4, as with Brown's Farm, in the author's analysis the monetary costs and other impedances in using the rental registration system were minimal. The rental agreements were recorded in an office in Khayelitsha and physical access to this office was not difficult for residents of Khayelitsha. The eastern metropole study strengthens the finding in Brown's Farm that attributing non-usage of the cadastral system or sub-systems of it (e.g. registration) to costs or impedances alone is too simplistic. Costs may discourage landholders from using the cadastral system, but the data show that although there were no monetary costs and minimal impedances involved in using the rental registration system, the system was still not fully utilised.

Referring to hypothesis 5, no evidence emerged to support this hypothesis. None of the officials interviewed mentioned a culture of non-compliance, but this does not mean that this is not an underlying factor in non-usage of the rental registration system. However, data to persuasively support this hypothesis was not gathered in any of the case studies documented in chapters 8, 9 and 10 either and it has not been further investigated in this research.

Hypotheses 7 and 8 may also be valid explanations for non-usage of the rental registration system. However, as with Brown's Farm, no evidence emerged to persuasively support or negate them.

There is evidence to support hypothesis 6 that the cadastral system or processes similar to those of the cadastral system are both legal and regarded as legitimate by the general community, but the need to keep the record up to date and to use cadastral system processes is not fully understood. The evidence of Ntshidi and the officials interviewed supports the notion that cadastral processes are generally regarded as legal and legitimate. Lack of understanding of the need to keep the record up to date is implied in the evidence of Xolani. Xolani noted that street committees had reallocated rented parcels in one area where the first persons to occupy their parcel had been reallocated a more attractive parcel in the immediate vicinity. Consequently people who had been allocated parcels occupied a parcel, but not the parcel that was shown on the official rental register. It is speculated that in such instances the street committee members were unaware of the sequence of processes and the set of documents (e.g. those described by Ntshidi) that were required for a lessee to obtain registered ownership of the parcel that they occupied. However, there is evidence in chapters 8, 9 and 10 to suggest that this hypothesis does not explain a significant proportion of non-usage of the rental system. Certainly, these case studies show that the need to use cadastral instruments and processes was understood by the majority of Xhosa-speakers.

There is evidence to support hypothesis 9, especially in areas where taxi factions have evicted people and installed members of their faction in houses in a particular area. The evictions described by various lawyers and the newspaper reports in section 7.2.1.2 also support this hypothesis.

Hypothesis 10 is discussed under family ownership below.

7.3.2.2 Family tenure

The issues surrounding family rights described in section 1.3.8 exist, especially in the rental schemes in Khayelitsha. Intra-family disputes in land held in ownership were reported, such as the case where the stepchildren were recognised as the *de facto* owners by community structures and the legal heir could not take occupation of a particular house. However, the manner in which this particular case was resolved where the stepchildren purchased the parcel suggests that the community's attitude to the land registration system was not negative. The community structures believed that the stepchildren's claim to occupancy of the house was regarded as stronger than that of the legal heir. The rights of the owner to decide on to whom the land may be alienated or who may succeed him or her were challenged, not the registration system itself. This is a case of the *de jure* definition of the tenure type not matching the *de facto* tenure system.

Du Toit's (1997) description of problems of couples separating and then becoming involved in conflicts over the right of occupation and alienation of the land implied that rental sites, with an expectation of ownership, were allocated to a family unit according to the needs of the family, but the contract was recorded in the name of the head of house (Du Toit pers. com. 1997). This was born out by Nxuba who indicated that in cases of divorce, tribunals adopted a policy of granting ownership of a parcel to the spouse who had custody over the children. In this way the City of Tygerberg was providing land

rights for families, not individuals. This system of beliefs about the tenure bestowed on households by the Council as described by Du Toit is similar in principle to the systems of registration of family titles as joint ownership or joint tenancy described to the author by a number of land professionals. In Albania, the Kyrgyz Republic and a number of other eastern European countries, designated family land is registered in the name of the head of house, but children and in some cases other blood line relatives have rights with respect to the management, usage and alienation of the land. The registered owner or lessee has limited powers (Barry 1998b).

The conflicts surrounding this issue in Khayelitsha indicate that in some instances the lessee whose name was recorded in the rental agreement believed that they had individual rights of alienation and could evict their family members or other household members. When queried on this issue, Ntshidi indicated that she had never dealt with the council when adjudication of people entitled to a serviced, surveyed site in Macassar took place. The whole process of gaining access to Site C with her family and then being allocated a formally surveyed parcel in Macassar had been handled by a street committee and SANCO. The first time she had had direct contact with the Lingelethu Council was when she was transported to her parcel in Macassar. She could not recall any discussion on the rights of the individual or the family during this process (Ntshidi pers. com. 1999)^{xxxiv}. This suggests that the Lingelethu Council may have assumed that land was being allocated to a household, and may perhaps have negotiated along these lines with community based organisations. However, the testimony of Ntshidi indicates that the issue of family versus individual rights was not addressed when her serviced site rights were adjudicated and allocated.

The issue of individual versus family rights being dominant with respect to the rights to manage, use and alienate a parcel in the rental scheme was not clear. Du Toit's evidence indicates a conflict between individual versus family rights. The evidence of Xolani (pers. com. 1998), Koen (pers. com. 1999) and Nxuba (pers. com. 1999) in sections 7.0, 7.2.1.3, 7.2.3 and 7.2.4 supports hypothesis 8 above, which was posited in section 6.3.2.1, that in many cases the registered head of house had moved out of the house. The parcel could not be registered in the Deeds' Office, as the family living in the house was technically not entitled to ownership of the parcel.

In conclusion, family issues had been a major factor in delaying transfer of ownership of certain parcels in Khayelitsha. *De facto* land was held in joint tenancy in many cases, but this was not universal throughout the eastern metropole. The study of the eastern metropole has shown that family land issues were a significant factor in cases of non-usage of the rental registration system. Community members' beliefs and attitudes to family issues could not be explored in the eastern metropole. These were explored in Marconi Beam, Imizamo Yethu and Khulani Park where residents were interviewed.

7.3.2.3 Boundaries

The following hypotheses, with the exception of hypothesis 5, were developed in chapter 6. Hypothesis 5 has been added in this chapter.

1. *A system of monumented fixed boundaries or stationary general boundaries as opposed to a topological boundary system is appropriate to the tenure system wanted by residents of Cape Town's Xhosa-speaking communities;*
2. *Encroachment, particularly onto public land, is due to opportunistic land grabbing;*
3. *Encroachment is due to lack of awareness of the position of surveyed cadastral monuments;*
4. *Encroachments are motivated by a need for more space to house lodgers or extended family members or to build a spaza shop or a shebeen;*
5. *Encroachments are the result of contractual arrangements and disputes only arise when the servient party attempts to reassert his or her rights to usage of the full extent of the parcel allocated to them;*
6. *Individuals may not be able to define or defend the parcel boundaries that were originally allocated to them because the group over-right (integration) is stronger than the individual bias (fission) (Davies 1998:38);*
7. *Fence encroachments are a result of one fence being out of position and then neighbours subsequently attaching their fences to this fence, thus continuing the pattern of encroachment;*
8. *Residents believe that structures such as fences and shacks are temporary and moveable. When a permanent structure is constructed, they intend to align their structures with the surveyed cadastral boundaries.*

Referring to hypothesis 1, the evidence is conclusive that parcels defined by regular geometric polygons using a system of fixed boundaries monumented at the polygon apices adequately addresses the needs and wants of Cape Town's Xhosa-speaking communities. When disputes over encroachment were adjudicated, the evidence shows that the legitimacy of the boundaries was not questioned, albeit that in certain instances the dominant party refused to move an offending structure. The eastern metropole study strengthens the findings in Brown's Farm, where stationary boundaries were found to address the wants of that community. No evidence was presented in Brown's Farm or the eastern metropole to indicate that another system of boundaries or parcel definition is desired. The notion of stationary general boundaries is explored in chapter 10, Khulani Park.

The evidence is conclusive, that one of the main motivations for encroachment is land grabbing listed under hypothesis 2 above. This argument is supported by the fact that people move the boundary monuments, and the beliefs of officials and professionals who have dealt with the issue. This finding is in harmony with the findings in Brown's Farm where two key-informants, Ngeze and Smith, ventured this hypothesis as an explanation for the behaviour. The behaviour is viewed as opportunistic and performed with the knowledge that it is contrary to the *de jure* cadastral layout.

As with Brown's Farm, there is conclusive evidence to support hypothesis 3 in that Martin (pers. com. 1997) indicated that in his experience in the field, lack of awareness of the boundaries was a cause of encroachment. He indicated that boundary monuments are often stolen to be used as implements or sold as scrap metal.

The evidence of Du Toit, Martin and Smith conclusively supports the finding from the Brown's Farm overlay maps that encroachment in the rental schemes is motivated by a need for more space as posited in hypothesis 4 above. The evidence of Martin and Du Toit related to lodgers and extended family members building shacks over surveyed cadastral boundaries supports the hypothesis. Tied to this is hypothesis 5, which states that encroachments are a result of contractual arrangements. Du Toit noted that many encroachments were the result of a form of "gentleman's agreement" and the disputes arose when the servient party attempted to revoke the contract and assert his or her rights. He cited this as the second most important reason for the high incidence of encroachments. Du Toit's evidence ties in with Ngeze's statement in section 6.3.2.2 where he did not consider encroachments to be a major issue. In Ngeze's experience, often encroachment disputes in Brown's Farm arose from conflict between neighbours that had little to do with boundaries. Once conflict developed, then the servient party would insist upon adherence to the surveyed boundaries when previously an encroachment had been allowed. However, Ngeze did not mention that these encroachments were the result of contractual arrangements. The eastern metropole study has served to clarify this issue.

It should be noted that the notion of "a gentleman's agreement" to use a neighbour's land is not foreign to southern African tribal tenure. Letsoalo (1987) describes a situation where in a North Sotho (Bapedi) agrarian society, land belonging to one family may be borrowed by another family for agricultural usage for an indefinite period. However, interpreting Letsoala, the usage was contractual and the right of reversion vested in the family from whom the land was borrowed (Letsoalo 1987:23). A comparative study of the issue of borrowed land in traditional African tenure systems and contractual encroachments has not been explored in this research. This is an issue for further research. However, the fact that such practices exist in traditional tenure systems does strengthen the argument that permitting a neighbour to encroach on a contractual basis is a feasible explanation for a proportion of the large number of encroachments observed in Brown's Farm and the large number of encroachments experienced by officials working in Khayelitsha.

The experiences of Martin and Du Toit of people refusing to move an encroaching structure until alternative land had been found for them supports Davies' (1998) finding (hypothesis 6 above) that individuals cannot defend what was allocated to them if the overriding group rights are too strong. The primary evidence to support this is Martin experiences of a registered owner obtaining a household subsidy and then being unable to build a house on his or her legally registered parcel as the site had been engulfed by shacks encroaching from neighbouring parcels (Martin pers. com. 1997). It should be noted that this phenomenon occurred in parts of Khayelitsha and it was not universal. The overlay maps of Brown's Farm and Imizamo Yethu do not provide evidence to support this hypothesis.

There is persuasive evidence that a catalyst for major encroachment problems is if one household's fence encroaches, then the entire block may encroach as posited in

hypothesis 7 above. In the interview, Martin gave the impression that he believed that landholders were aware that they were encroaching in these instances. If so, then this is also a form of land grabbing. The finding in the eastern metropole ties in with the patterns observed on the overlay maps of Brown's Farm from which this hypothesis was derived.

No evidence emerged to support hypothesis 8 above that residents believe that structures such as fences and shacks are temporary and moveable. This belief may underlie encroachments where there is a "gentleman agreement", but officials did not recount experiences of this.

In summary the life history and the experiences of the officials and land professionals in Cape Town's eastern metropole indicate that fixed, surveyed boundaries are appropriate but that a significant number of encroachments in the rental schemes occur. The evidence is conclusive that these encroachments are due to land grabbing, lack of awareness of the boundary positions, lack of space and contractual arrangements. It would appear that in instances where encroachment has been permitted on a contractual basis, that over time the person who is the owner or expects to be the owner of a servient parcel may not be able to reassert his or her rights to the exclusive use of their parcel. It is also possible that the servient party may not be able to defend their right of exclusive use in the first instance.

The above conclusions are valid for site-and-service schemes and the evidence of officials and Ntshidi suggests that fixed, monumented boundaries are appropriate in areas where land is registered. The eastern metropole study has strengthened the findings in Brown's Farm and filled in gaps where there was insufficient data to draw valid conclusions in Brown's Farm. None of the findings relating to boundaries in Brown's Farm have been shown to be false. The set of beliefs, attitudes and intentions of Xhosa speakers with respect to boundaries in a situation where land is registered in private ownership is explored in the Marconi Beam, Imizamo Yethu and Khulani Park case studies.

7.3.3 Land Policy

To recap on sections 1.3.4, 2.2.4 and 6.4.3, current South African land policy (Rep. of S. Africa 1997a) has as its primary objectives for land administration and the cadastral system the provision of tenure security for all; equitable, just patterns of land ownership and sustainable land use. As stated in section 6.4.3, the focus of analysis of the cadastral system in the context of land policy is on tenure security and equitable, just patterns of land ownership. Analysing the policy objective of sustainable land use in the context of an effective cadastral system falls outside the scope of this dissertation.

To recap on section 7.3.1, as with Brown's Farm, the evidence shows that tenure security in the predominantly Xhosa-speaking suburbs of Cape Town's eastern metropole had more to do with the power of certain groups and individuals in particular areas than the actions and the power and authority of government. Group biases in land tenure ranged

from a strong to weak. In the strong form, access to land depended on allegiance and affiliation to a particular group such as a political group. In the weaker form new entrants to an area were screened on criteria such as rights of citizenship of South Africa and lack of a criminal record without the demand being made of allegiance and affiliation to a particular group. In extreme cases gangsters, taxi operators and warlords took over the situation and evicted people who were legally entitled to new homes and allocated these homes to people to whom they had illegally sold the houses.

The group influences in tenure were challenged periodically. The data also show that conflict between group and individual biases in land tenure occurred in disputes relating to both rented and privately owned land parcels. At times this conflict was violent and resulted in criminal cases for assault.

In the eastern metropole (including Brown's Farm), the data showed that the cadastral system is being used as one of a range of systems to administer the land tenure system. The validity of the cadastral processes and instruments as a legitimate, legal system underpinning the land tenure system is widely accepted. However, it is not the only system and at times the local social system is in conflict with the legal tenure system. In certain instances, social processes are superior to the legally defined rights in land and may override the *de jure* system. The individual versus group conflicts show that *de jure*, legal claims on ownership and occupation rights applied only if individuals complied with the generally held beliefs of a particular group. For example, the social processes and legal cadastral processes are in harmony if the dominant group in an area agrees that the *de jure* successor in title to a particular parcel has the strongest claim on those rights. The reported conflicts showed that group rights prevailed over those of the individual, even though the formal claim of the legal successor was recognised in one case when the community's chosen successors purchased the ownership rights from the legal successor.

As with Brown's Farm, the authorities in the former Lingeletu West City Council recognised the weakness of the local government's legitimacy, power and control in managing a rapidly changing situation. Building on the analysis of Brown's Farm, the evidence from the eastern metropole shows conclusively that social and political stability, as opposed to equity in land tenure, were the prime motivation underlying the land administration authorities' behaviour in allocating land and administering the tenure system. In the eastern metropole, officials in the field co-opted community power structures as part of the land administration process and used these structures to enforce land administration processes that had been agreed upon with community representatives.

The authorities' strategy of allocating the responsibilities of land allocation and dispute resolution to group structures does not ensure that the practices used by these group structures are neither ethical nor equitable. The data show that in some instances the behaviour of these structures in intervening in the formal tenure system was possibly illegal in terms of South Africa's Constitution (Act 108 of 1996). For example, the practice of street committees evicting people is illegal. The Constitution provides a legal basis for ethical behaviour, which are enshrined in the Bill of Rights (see Appendix F). Of particular relevance is section 33(1) which reads: "Everyone has the right to

administrative action that is lawful, reasonable and procedurally fair.” This is probably the clause that Cobbett (Cape Times 6 November 1998) was referring to in his report to council claiming that the council did not deliver administrative justice. However, as the case of Cobbett shows, challenging the status quo relating to group biases and power structures in the land tenure system can have serious consequences for an individual. In a follow up interview, Lawrence indicated that in his experience the Ikapa and Lingeletu councils had little power and control. He conferred with the author’s analysis that the primary objective in the land administration activities of the Lingeletu council was social stability in providing people with safe, secure tenure. He believed that in the situation of rapid urbanisation and other substantial change that one could not reach the ideal state in a single step. It should be noted that Lawrence too was threatened on a number of occasions during his tenure as Town Clerk of Lingeletu West (Lawrence pers. com. 1999).

As stated in section 1.3.7, issues such as the influence of powerful individuals or groupings in the tenure system have little to do with the design or management of the cadastral system and more to do with effective systems of law and order and the legitimacy of the Constitution. In terms of the discussion in sections 3.3 and 3.4, in such cases individual landholders do not have volitional control over their behaviour and the institutions of local government lacked the power to govern effectively.

7.3.4 Land Administration

In harmony with the findings in Brown’s Farm, the data from the eastern metropole show that in reality, the cadastral system and the land administration system are not easily separable. As was discussed in section 2.1.5, systems are imperfect conceptual models of reality. Systems hierarchies should be defined according to a particular analytical situation. The analyst may have to extract parts of a particular system or sub-system to fit it into a particular conceptual hierarchy and exclude other parts of it, which are then viewed as being part of an environment. As with Brown’s Farm, in the eastern metropole land tenure was officially administered by both cadastral system institutions (Deeds Office and Surveyor General) and local land administration institutions at different times.

As with Brown’s Farm, the rental system in Khayelitsha was an accessible, cheap system of recording rights in property. However, the system was not always used in the manner intended. There is persuasive evidence to suggest that the reasons for non-usage are not related to accessibility or affordability.

As was concluded in the study of Brown’s Farm, non-usage of the system will affect the quality of the land information required by other land administration sub-systems. Moreover, if the official record ownership is not reliable then affected land is unlikely to be valued as low risk collateral. However, as chapter 10 on Khulani Park will show, once land is used as loan collateral, then it is likely to retain its value because if loan repayments are not made then the financial institution will repossess the land. The evidence of non-usage of the cadastral system in Khayelitsha will also impact on the

operation of a formal land market, although it appears that an informal market in land does exist.

A general observation was that operational issues relating to cadastral processes were not being communicated to people at the planning and policy formulation levels of land administration in the province. Martin, Du Toit and Xolani were aware of a number of issues relating to encroachments over surveyed boundaries, as they had dealt with these in the field. Adlard and Kedzieja were unaware of these issues. This information was not being communicated to metropolitan level planners and project managers, or the implication of this issue was not fully understood by officials at the operational level.

A further general observation is that any workable strategy to address encroachments which are motivated by overcrowding has to deal with the overcrowding issue at the same time as the boundary issue. However, allocating land to recent arrivals in the City on an *ad hoc* basis to solve a particular problem raises ethical issues and long term land management issues. Ethically, if people have been on a waiting list for more than a decade, then they should be granted land before recent arrivals in the City. Moreover, if people are aware that they can pressure the local authority to grant them land on the basis of invasion, then this will serve as encouragement for others to do likewise. This might explain why gangsters and warlords attempted to sell land rights and evict legally entitled landowners on the assumption that once a person had possession of a house, they would not be evicted.

7.4 SUMMARY OF ANALYSIS AND CONCLUSIONS

As with Brown's Farm, the eastern metropole data support Davies' and Fourie's (1998:240) thesis that tenure practices in informal settlements exist not in terms of legal, illegal, spontaneous, planned, formal and informal concepts, but on a continuum of these concepts. The cadastral processes and instruments (e.g. boundary monuments, rent cards, title deeds) enjoy legitimacy, but they are not universally used in the manner that the land administration authorities intended. They form part of a range of instruments and processes that are used to affirm rights in land. In most instances title deeds and boundary monuments are believed to be superior to social processes but there are instances where social processes override the *de jure* tenure system, such as where community structures have not allowed legal heirs to take possession of a house.

The findings show conclusively that individualised tenure incorporating ownership of an individual parcel is appropriate. There is no evidence to suggest a want for system of group ownership, but group rights in tenure prevail. Group rights can be in a strong form where allegiance and affiliation to a particular group is demanded to a weak form where new entrants to a community are screened on the basis of their legal right to live their and a history of criminal behaviour. Extreme forms of overriding group rights have also occurred where gangsters and warlords evicted legal owners and replaced them with people to whom they had sold land rights.

Other than overriding group rights, there is a range of factors that motivate landholders not to use the cadastral system in the manner intended. In the case of rental scheme records and registered land, many informal transfers appear to be related to family versus individual tenure issues. Some informal sales of rental contracts may be based on lack of understanding of the implications of such behaviour.

Substantial boundary encroachment problems prevail in Cape Town's Xhosa-speaking communities. All the interviews show that the *de jure* system of boundaries and monuments is congruent with the prevailing tenure system. Most boundary encroachments are in the main due to spoliation or land grabbing or removal of the boundary monuments. Non-compliant attitudes and intentions rather than negative attitudes to the boundary systems and monuments motivate such behaviour. Contractual arrangements that permit encroachment underlie many of the remaining boundary encroachments.

The research has not shown that non-usage of the cadastral system is due to the cost and accessibility of the system. In Brown's Farm and Khayelitsha there was non-usage of the rental system of records even though costs were kept to a minimum and the offices where transactions were recorded were easily accessible to all landholders. This indicates that even if costs and impedances in using the system are minimal, this does not guarantee that the system will be used. There are other factors that motivate landholders not to use the cadastral system in the manner that the authorities intend.

Systems theory and the theory of planned behaviour constitute useful analytical tools. In terms of Checkland's (1981:155) soft systems theory, history always changes the agenda. This is especially evident in the behaviour of the land administration authorities. When land was allocated at the beginning of South Africa's period of transformation in the early 1990's, the authorities co-opted warlords and street committees into the adjudication, delivery and maintenance of land rights. This was arguably based on a realisation that the authorities lacked the power to enforce their decisions on their own. The power of the community structures was essential to this process. After the promulgation of the Constitution and, in the author observation, the legitimacy of the land administration authorities improved, so the authorities changed their agenda and attempted to diminish the role of groups within the communities. In this way the actions of the authorities should strengthen the role of the cadastral system in maintaining the land tenure system in accordance with the objectives of land policy. However, this action resulted in conflict with existing groups. There were still challenges to the local authorities' mandate to allocate land rights by street committees. The authorities also had to rely on the testimony of street committees in resolving the more than 4000 cases where there was conflict between the name of the person shown in the rental system register and the *de facto* occupant. Moreover there were factions which illegally controlled the adjudication and allocation of land rights.

This conflict between community based group rights and legally defined rights of individual ownership also emerged towards the end of the 1990's. Legal owners challenged the power of groups which resulted in violent conflict at times.

The evidence suggests that there was a general want for a system of individual parcels supported by cadastral instruments and processes. However, in terms of the theory of planned behaviour, individuals were limited in the amount of volitional control that they had over the way in which they managed their land. This issue of stated intentions versus the result of actual behaviour is investigated in chapters 8 - 10 where a number of residents of settlements were interviewed.

With the exception of aerial mapping, a life history and an interview of a street committee member, the data reported in chapters 6 and 7 was collected from officials and other people involved in land administration. Some of these officials lived in the eastern metropole, but a number were not landholders in the area. These people were interviewed in their capacity as users of the cadastral system as land administrators.

The findings from the study in the eastern metropole are consistent with those in Brown's Farm and the eastern metropole study has added to the strength of the validity of the findings in Brown's Farm. The findings in chapter 6 have not been shown to be false. Moreover, the eastern metropole study has filled in gaps where there was insufficient data to conclusively or persuasively support the hypotheses posited in chapter 6 to explain non-usage of the cadastral system. In terms of the evaluative framework in chapter 3, the beliefs attitudes and intentions of landholders as users of the cadastral system remain to be explored. Chapters 8 - 10 report data collected from residents in the case studies as well as external actors.

ENDNOTES

ⁱ Mfuleni was first administered by the Mfuleni Town Council set up under the Black Local Authorities Act 102 of 1982. It was then administered by the Mfuleni Transitional council under the Local Government Transition Act 209 of 1993 and in May 1996 it fell within the jurisdiction of the City of Tygerberg.

ⁱⁱ Koen, 7 April 1997. Senior official, City of Tygerberg.

ⁱⁱⁱ Andre Lambrechts 12 October 1999. BKS Consulting Engineers.

^{iv} Nxuba 13 October 1999. Senior housing official City of Tygerberg and former Lingeletu West City Council.

^v Ntshidi 7 September 1999.

^{vi} This condition applied to obtaining a government subsidy. The Deeds Registries Act 47 of 1937 does allow registration without the transferee having an identity document.

^{vii} Marek Kedzieja, Senior City and Regional Planner, Community Services Branch, Provincial Administration Western Cape. 22 June 1995.

^{viii} Boystown settlement.

^{ix} Gerry Adlard, Serviced Land Project, Holistic Settlements, interview 1996. Adlard had worked for the Urban Foundation on housing projects for a number of years in Durban and Cape Town.

^x Martin, 16 July 1997, building inspector, Tygerberg Municipality

^{xi} Du Toit. 27 June 1997, 12 August 1997. Du Toit had worked with squatter communities in the Cape Town Metropolitan Area for more than 30 years. Du Toit had retired as a senior official in the Lingeletu West Municipality in 1996, shortly before the author interviewed him.. He was involved in translocating squatters to site-and-service areas in a number of areas in the Khayelitsha / Lingeletu jurisdiction. For a number of years he personally adjudicated disputes concerning encroachment and ownership in Khayelitsha.

^{xiii} Latief Camroodien 7 November 1996. Estate agent responsible for marketing of land delivery in Weltevreden Valley, Philippi Area, Cape Town. He ran training workshops for people in informal

settlements who were due to be moved onto serviced sites. Workshops covered issues such as homeownership, registration and rights, obligations and duties of a homeowner.

^{xiii} Xolani, 12 October 1998. An official in the City of Tygerberg, Khayelitsha Office, Housing Section.

^{xiv} Cape Times 6 November 1997. "If you want a Council House, ask Gangsters", Billy Cobbett told the council that the housing crisis is severe. 31 000 families who have been on the waiting list for 15 years have little or no chance of ever having their own home. Cobbett " The city does not administer administrative justice to its citizens but rather dispenses a series of decisions that are ad hoc, immoral, inconsistent and very likely illegal". The Cape Times reported Cobbett as follows:

"Gangsters, civic organisations and street committees now perform council functions:

- Many people who have lived in council flats for years have no right to be there. Sub tenants illegally "inherit" a flat when the legal tenant dies or take the flat by force.
- Hundreds of tenants are in arrears with their rents but sub-let council properties for more than they are supposed to be paying
- R40 million is owed in rental arrears. 70% of coloured rental areas are in arrears and 90% in the old black areas. Council housing arrears shot up in 1994 after council stopped evicting defaulters.
- In Ikapa, houses are transferred to people who owe thousands in arrears:
- 31500 people are on waiting list. many will never get a home
- In some parts of the city, vacant houses are allocated by gangsters and street committees. Councillors sometimes interfere with officials allocating house
- People are paying 1987 rents with 1997 salaries"

^{xv} The Cape Times 13 October 1998, "Invaders to be Driven Off", quoted Gladstone Ntamo, a member of the City of Cape Town's Housing Committee as saying: "To me it's quite clear that some leaders in the community have sold some of the land in the area and surrounding areas and are faced with the problem of not being able to pay these people back. That is why they are causing this confusion."

^{xvi} Author's observation; violence between various factions in the taxi industry serving Cape Town's Xhosa-speaking communities were ongoing in the 1990's.

^{xvii} Theunis Roux, land lawyer. 28 July 1999. Statement Workshop on "Tenure security policies in South African, Brazilian, Indian and sub-Saharan African cities: a comparative analysis" University of Witwatersrand, Johannesburg, 27-28 July 1999.

^{xviii} James 25 July 1997. Attorney Legal Resources Centre.

^{xix} An informal bar. In most cases shebeens are in contravention of liquor laws and land use planning laws.

^{xx} Botha 17 July 1997, 25 July 1997. Attorney Legal Resources Centre.

^{xxi} It does appear that two such cases were scheduled for trial in the Pretoria Supreme Court during the period of data collection for this research.

^{xxii} Smith, 7 October 1998. Building Inspector, Ikapa Office. Smith emphasised that a monetary transaction had taken place in his experience.

^{xxiii} These two interviews were held independently and the evidence of the one respondent was not used to influence the other.

^{xxiv} The practice was also probably illegal in terms of the Land Survey Act 8 of 1997.

^{xxv} Shaun Molloy 8 September 1997. Employed by Gibb Africa Consulting Engineers, to move people from Mfulene informal settlement to registerable parcels in Khayelitsha.

^{xxvi} Eric Tshemese, 9 July 1997. Street committee member.

^{xxvii} Andre Lambrechts 12 October 1999

^{xxviii} Koen 12 October 1999, Nxuba 13 October 1999

^{xxix} Abolition of Racially based Land Measures Act 8 of 1991.

^{xxx} Graham Lawrence, 13 September 1999. Town Clerk of Lingeletu West City Council 1983 to 1993.

^{xxxi} As discussed in section 4.2, in terms of the Alienation of Land Act 68 of 1981 s2(1) a valid contract of sale and purchase in immovable property must be written.

^{xxxii} Koen 23 February 1998, 12 October 1999, Nxuba 13 October 1999.

^{xxxiii} Nxuba 13 October 1999.

^{xxxiv} Ntshidi, 9 September 1999.

CHAPTER 8

MARCONI BEAM

8.0 INTRODUCTION

Marconi Beam was an informal settlement when data were first collected in 1996. By the end of the data collection period in September 1998, nearly nine hundred households were in the completion phase of registering, or had already registered, land parcels allocated to them in a nearby greenfields site, Joe Slovo Park, in the Deeds Office. Other Marconi residents had been relocated to a settlement at du Noon, approximately 5 km north of the settlement. Marconi Beam was the only case study where the processes from the informal settlement stage through to registration of ownership were monitored. Marconi Beam was also the first case study where residents of the settlement were interviewed and so a complete set of social data was obtained in addition to spatial data relating to behaviour in the informal settlement. The subsequent social research in the Imizamo Yethu and Khulani Park case studies was based on data collection and analysis methods developed in the Marconi Beam case study. Unlike Brown's Farm, in Marconi Beam it was possible to interview a cross section of the community as well as hold ongoing discussions with a number of key-informants who lived in the settlement. Key-informants who were external to the settlement included land administration officials, NGO employees, academic researchers and land professionals, all of whom were directly involved with the settlement. Time series analysis of land occupation patterns in the informal settlement were performed over two epochs between 1994 and 1996 using stereoscopic and monoscopic aerial surveys.

This chapter will show that the nature of the existing cadastral system instruments and processes are appropriate to the wants of this community. Interviews and workshop sessions with residents in 1996 revealed a universal intention amongst respondents in the informal settlement to use the *de jure* system of cadastral boundaries and land registration when parcels in the greenfields developments were delivered to them. However, the case study will also show that cadastral instruments and processes may also be overridden by other processes. In a volatile, constantly changing situation where there was lack of clarity as to who was responsible for managing the local level registration system that was used to administer the movement of Marconi Beam residents to parcels in the two greenfields sites, the records ended up being inaccurate. In the cases of conflict, social processes overrode a system which used processes that were similar to the formal cadastral system.

It is suggested that the existence of informal settlements such as Marconi Beam and Imizamo Yethu are characteristic of a country undergoing a transition in that the legal power of government structures to prevent land invasion is effectively removed. Under stable social and political conditions the existence of such settlements within Cape Town's more affluent suburbs would be unusual. Saff (1996) argues that this unusual situation is unique to South Africa's political transformation where land rights have been a sensitive issue. Under stable conditions the settlements would

probably not have been permitted to develop. “(T)he perceived illegitimacy of all government structures (during the early 1990’s) and the segregated nature of the suburbs in question (Milnerton and Hout Bay) clearly worked to the benefit of the squatters (informal settlers). In such circumstances any large-scale eviction of squatters was bound to have both racial and political implications, something that both central government and local municipalities were desperate to avoid. It is thus ironic that the establishment of more legitimate government structures (such as democratically elected local and national government) together with the desegregation of suburbs are likely to undercut the bargaining position that many squatter settlements enjoyed during the transition.” (Saff 1996:251).

This chapter firstly discusses the historical and situational context in which the research of Marconi Beam took place. The role players are described first. The chapter then discusses the history of the settlement from the sporadic illegal occupation of the site prior to the 1990’s to relocation of residents to the greenfields sites and the first registrations of ownership in 1998. Thereafter the chapter discusses the management and power structures within Marconi Beam and the demographic patterns within the settlement. Building on the discussion in chapter 5, the research methods and data collection techniques, including a detailed discussion of the structured interviews and group sessions, are discussed. Following this, the results of the research into adjudication and tenure type, boundaries and space, registration and dispute resolution in the settlement is explored. Furthermore the chapter reports research into the tenure type that Marconi residents indicated that they wanted in future in the greenfields site(s) and the role of cadastral processes and instruments in this tenure system.

8.1 SITUATIONAL DESCRIPTION AND HISTORY

This section describes the location of Marconi Beam, the role players involved in administering the situation up to the registration of residents in Joe Slovo Park and the history of the site up to the end of 1998 when registration of ownership was in progress.

8.1.1 Location

The Marconi Beam informal settlement is presently situated 8km from the centre of Cape Town. The informal settlement was confined to an 8.02-hectare area, on a portion of a 214-hectare parcel of private land. This area was declared a transit area in terms of the Prevention of Illegal Squatting Act 52 of 1951 S6(1) in November 1990 (Marconi Beam Civic Association *et al* 1993:1)ⁱ. The settlement falls within the jurisdiction of Blaauwberg Municipality, in the middle class suburb of Milnerton. Prior to Cape Town’s local government reorganisation in 1996, Milnerton Municipality administered Marconi Beam. Milnerton Municipality was later absorbed into Blaauwberg Municipality in the restructuring of local government in 1996.

Marconi Beam is excellently situated for employment opportunities (Lohnert 1998:383), and this is arguably one of the main reasons that many Xhosa-speakers were drawn to settle there. It is situated adjacent to the Milnerton Race Courseⁱⁱ and the Montague Gardens Township and close to the Metro Industrial Township.

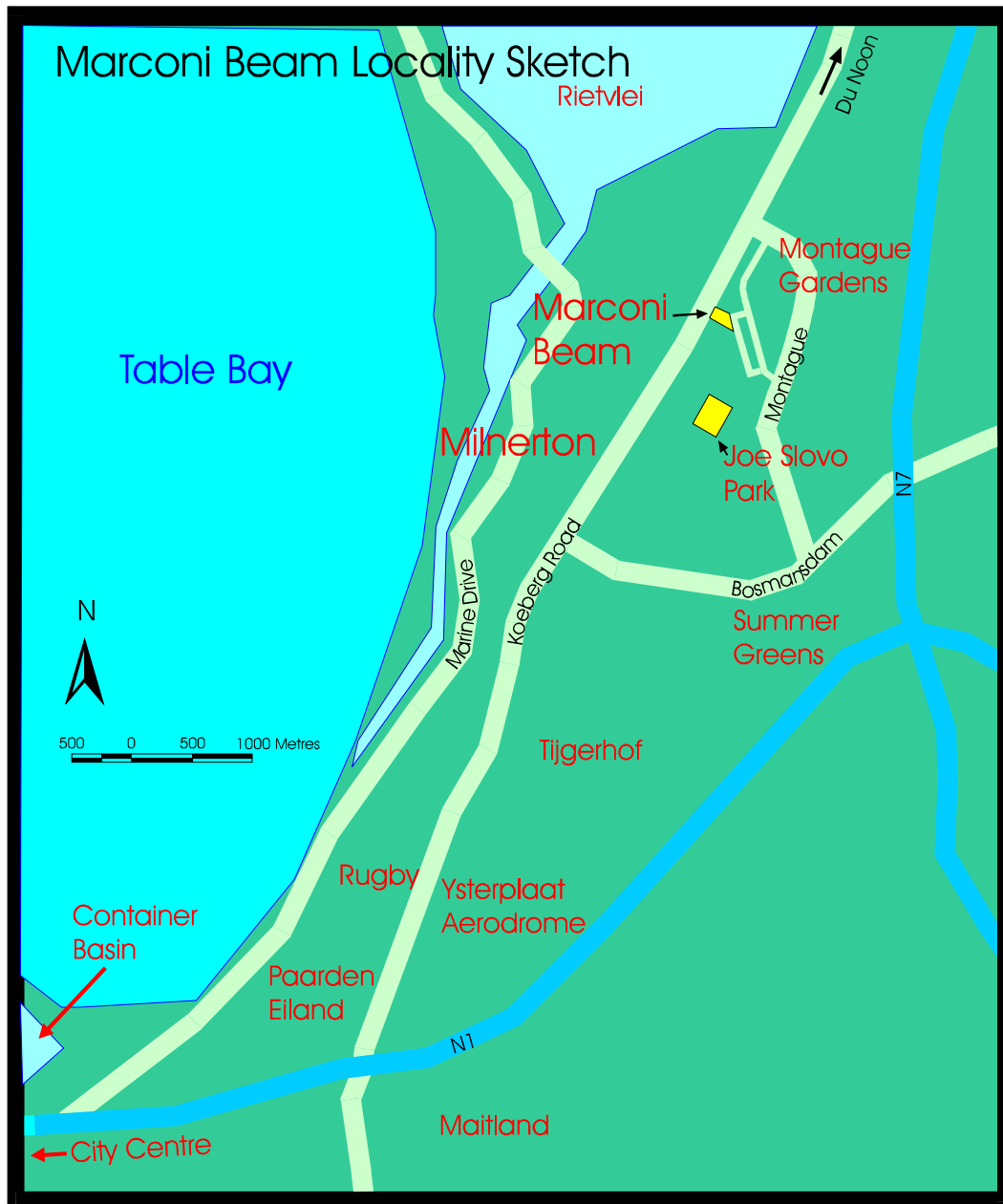


Figure 8.1 Marconi Beam and Joe Slovo Park Locality Plan

Source of Base Map of Streets: Cape Metropolitan Council GIS section

8.1.2 Role Players

There were a number of role players in the property development cycle in Marconi Beam. This sub-section describes the main actors.

8.1.2.1 *The Marconi Beam Development Trust.*

The Marconi Beam Development Trust (MBDT) was the institution responsible for administering the settlement, negotiating with various levels of government on behalf of the community, developing houses in the one greenfields site (Joe Slovo Park), and ensuring that people with a legitimate claim to rights in the greenfields sites were allocated land there (Clark pers. com. 1997)ⁱⁱⁱ. Day to day administrative functions that fell within the MBDT's mandate included processing of National Housing Fund (NHF) subsidy applications (up to 1996) and recording transactions of land rights in Marconi.

The MBDT was established in 1990 as a result of negotiations with the Marconi Beam Committee which was established by residents' groupings (called *Ikareni*), Telkom, Rabie/Cavcor Developers and two Milnerton ratepayers associations. The South African National Civics Organisation (SANCO) became involved in the Trust and superseded the *Ikareni* system and in this process the Marconi Beam Civic Association replaced the Marconi Beam Committee (Clark pers. com. 1997, Saff 1996:245). Trustees were drawn from the community, Milnerton Municipality officials and professional people such as bank managers, lawyers and construction experts. The MBDT ran an administration office in a community hall in Marconi Beam. This office was later relocated to Joe Slovo Park in 1997.

As will become clear later in this chapter, the MBDT did not enjoy universal support and it was difficult to implement policies and agreements to which the general community would adhere. There appeared to be a number of sub-groups within the community and the level and intensity of conflict and competition appeared to be high. By September 1998, at the end of the data collection period of this research, there were only three trustees remaining, two from the community and Lawry, a private sector construction expert from Milnerton (Lawry pers. com. 1998)^{iv}. The remainder had resigned. At that stage, administrative processes had been initiated by the MBDT trustees to disband the Trust as it had served its purpose (Gray pers. com. 1998)^v.

8.1.2.2 *Street committees*

Street committees were the second formal tier of management and power structure within the Marconi Beam community. They were established as internal management institutions as a result of the South African National Civics Association becoming involved in the MBDT (Ntini, Mahlentle pers. com. 1996)^{vi}.

Thirty-two elected street committees were responsible for local conflict resolution and general community administration. Marconi was divided up into four sections, each containing eight street committees. Each section had an area committee representing its street committees. The area committees reported to the MBDT, the overall administrative authority within the community.

8.1.2.3 *The landowners*

Telkom was the landowner in 1990 when the 8.02 ha transit site was made available in 1990 on the understanding that the settlement would not expand out of the confines of this area. According to Clark and Gray, Telkom's and the Municipality's understanding of this arrangement was also that the Marconi Beam leadership at that time would not permit more new residents to live in the settlement (Clark pers. com. 1997, Gray pers. com. 1998). The underlying parcel was later subdivided and the portion that included the Marconi Beam transit site was sold to property developers, the Rabie/Cavcor Joint Venture.

Rabie/Cavcor as the new landowner became involved in project managing the movement of people from Marconi Beam to Joe Slovo Park and du Noon in mid 1997 (Edgar pers. com. 1998)^{vii}. Prior to that, the authority external to the community responsible for administering the site and ultimately clearing the informal settlement was the Milnerton/Blaauwberg Municipality (Jones pers. com. 1998)^{viii}.

8.1.2.4 *Advisors and contractors*

The MBDT contracted a non-government organisation (NGO), the Development Action Group (DAG), and a construction company, CONDEV, as advisors and contractors. DAG was called in to assist in an advisory capacity in the original negotiations with the Municipality in 1990. DAG assisted in formulating policy, formulating negotiation strategies and organising legal assistance when necessary. DAG later assisted as advisors to the MBDT to develop houses, to manage the movement of people from Marconi to Joe Slovo Park and to administer the settlement at a local level (Clark pers. com. 1997).

CONDEV were employed as project managers on the Joe Slovo Park site. Amongst other functions, CONDEV took on the administration of the housing information management system from the MBDT. It compiled all the documentation such as subsidy applications and deeds of sale to ensure that registration of transfer of parcels in Joe Slovo Park to Marconi residents could take place (Gage pers. com. 1997)^{ix}.

8.1.2.5 *Milnerton / Blaauwberg Municipality*

Milnerton Municipality was the original local authority that administered the area in which Marconi Beam was located. Milnerton Municipality was dissolved and incorporated in Blaauwberg Municipality during Cape Town's local government restructuring in 1996. Prior to Rabie/Cavcor's direct involvement in 1997, the Milnerton Municipality was involved in direct negotiations with the Marconi Beam community and the Town Clerk was a trustee of the MBDT (Gray pers. com. 1998).

8.1.3 **History**

Rollins (1991) established that people had lived informally on the Marconi site for 20 – 30 years since the 1960's. It appears though that the informal settlement became noticeable as a problem to surrounding residents and the local authority with the accelerated influx of Xhosa-speakers into Cape Town in the mid-1980's. The

settlement of this particular site was also linked to events at the adjacent Milnerton Race Course, which employed a number of Xhosa-speakers. Many of the residents who were part of the early invasion in the 1980's and early 1990's were employees at the Milnerton racecourse and their families. According to Rollins, many women from the Transkei and Ciskei, wanting to consolidate their families, moved onto the undeveloped Marconi Beam parcel to be closer to their husbands who were employed as grooms at the adjacent Milnerton racecourse (Rollins 1991:40).

The main catalyst for the accelerated occupation of the site was a strike by the grooms at the Milnerton Race Course in August 1990. The grooms lived in single quarters at the racecourse. After the strike, approximately 200 grooms moved into existing shacks occupied by their families in Marconi Beam or erected new shacks on the site. In November 1990 there were 109 shacks on site. By the end of that year there were 226 shacks (Brooke 1992:1)^x. This accelerated occupation followed a court order that prevented the landowner, Telkom, from demolishing shacks. According to Clark, the cessation in demolition of shacks was conditional upon no new shacks being erected and the community staying within the confines of the transit site (Clark pers. com. 1997). The author observed that the community stayed within the bounds of the transit site but the condition that more people should be prevented from occupying the site was ignored. More and more people moved into Marconi Beam. A consultant to MBDT and former trustee indicated that he was aware of trustees who were resident in Marconi Beam allowing people into Marconi Beam, in spite of agreements to the contrary (Nel pers. com.1998)^{xi}.

Densification of the site created major engineering and social problems. Milnerton Municipality originally designed the site to hold between 400 and 480 shacks (Saff 1996:480, Milnerton Municipality 1991^{xii}). According to a survey by Derek Chittenden and Associates and the Urban Foundation, by June 1993 there were 834 households and 2 835 people living in Marconi (Urban Foundation *et al* 1993).

In this study, mapping from 1:10000 scale stereo photography of Marconi Beam flown on behalf of Cape Town City Council in August 1994 revealed a figure of 1278 shacks on the site. As discussed in chapter 5, the UrbanModeler research programme also conducted aerial surveys of Marconi Beam in 1996. The following figures^{xiii} (table 8.1) are an indication of increases in the number of shacks (and by deduction the population size) over the study period:

Table 8.1 Aerial Surveys of Marconi Beam

Date of Photography	Source	Number of Shacks
August 1994	1:10000 stereo analogue photographs from Cape Town City Council	1278
May 1996	Kodak DCS460 Video Still Rectified Image (pixel size 15- 18cm) ^{xiv}	1323
December 1996	Rectified and Scanned Medium Format Photography ^{xv}	1345

If the Chittenden/Urban Foundation survey (Urban Foundation *et al* 1993) is accurate, and if each of the 834 households occupied only one shack, then there was a major surge in population growth between June 1993 and August 1994^{xvi}. Appendix C1 indicates the resulting high population density in this settlement.

After a protracted period of conflict and negotiation between the Milnerton Municipality and the Marconi Beam residents, in 1995 an agreement was struck to house the majority of the residents in what has become known as Joe Slovo Park. Any additional people, such as lodgers, were scheduled to be moved to another settlement, du Noon (Saff 1996:245, Edgar pers. com.1998). The original arrangement, according to a senior official, was that the MBDT was to identify households heads who were entitled to a site in Joe Slovo Park (± 750 households) and the remainder (± 350 households) were supposed to move to du Noon (Jones pers. com.1998).

In August 1994, 870 household heads^{xvii} who were supposed to move with their families (to either Joe Slovo Park or du Noon) were registered by DAG and Milnerton Municipality. However, the process of generating separate registers for people who should move to du Noon or Joe Slovo Park was not done (Jones pers. com. 1998, Nel pers. com. 1998, Gray pers. com. 1998). No one was registered as being entitled to a parcel in du Noon. Given that there were 1278 shacks in Marconi Beam at that time, approximately 400 households should have been registered to move to du Noon. This became the root of major conflict between members of the Marconi Community and the landowner in 1998 when the landowner could not clear the Marconi Beam site for a proposed development.

More and more people moved into the Marconi Beam transit site throughout the research period. Edgar (pers. com.1998) indicated that by the end of September 1998, 1200 households had been moved to Joe Slovo park and du Noon, but ± 680 shacks remained on the transit site. In spite of attempts by Rabie/Cavcor project managers to clear the site, the evidence suggests that more people entered the area and erected shacks while existing shacks were being cleared. This influx of people was extremely difficult to control (Edgar pers. com. 1998, Nichols pers. com. 1998 and Jones pers. com. 1998^{xviii}). One NGO executive who had worked closely with the settlement suggested that one of the MBDT trustees was selling rights of access to the transit site, in spite of agreements not to allow people in to the area (Walker pers. com. 1999^{xix}).

The majority of the 870 households that the Milnerton Municipality registered as being entitled to a land parcel in 1994, and some Marconi residents whose names were not on this register who could prove a legitimate claim of entitlement, were finally allocated land in Joe Slovo Park in 1997 and 1998. Middel (pers.com. 1998)^{xx} indicated that by August 1998, 82 households had registered their properties in Joe Slovo Park in the Deeds Office and a further 806 registrations were in process.

However, in August 1998 substantial problems remained within the Joe Slovo Park and Marconi Beam communities concerning the legitimacy and authority of the MBDT. Conflicts involved a number of people in Marconi Beam who had not been granted a parcel in Joe Slovo Park. In August 1998 the project managers had a list of approximately 150 people who were still resident in Marconi Beam who claimed that they should have been allocated a parcel in Joe Slovo Park and who had not been

registered when the original registration of entitlements to ownership of a parcel took place. Furthermore the former chairman of the MBDT had not been allocated a parcel in Joe Slovo Park (Sigudla pers. com. 1998, Lawry pers. com. 1998).

For reasons that will become clear later in this chapter, the legitimacy of granting rights to particular individuals in Joe Slovo Park was open to challenge. The MBDT did not enjoy continuous, universal support in the Marconi Beam community. Different factions within the community continually challenged the behaviour and legitimacy of the MBDT on occasion. For example, in October 1996, sectors of the Marconi Beam community toyi-toyed against the MBDT, due to lack of delivery of houses that they had expected in February 1996 and demanded that the Milnerton Municipality take over the MBDT's administrative functions (Dludlu pers. com.1996, Ntini pers. com.1996)^{xxi}. Such challenges and protests occurred continually. Lawry (1998) believed there were a number of different, continually changing, factions in Marconi Beam. Community cohesion was difficult to achieve. It was observed at a number of general meetings that different factions raised agendas that were often in conflict with what had generally been agreed at previous general meetings. Consequently, agreements between the various external stakeholders and the MBDT as the representative of the Marconi Beam community were often not implementable (Lawry pers. com. 1998)^{xxii}. A senior official observed that: "Every agreement that had been made between the Municipality and the community between 1991 and 1998 was broken. There was no incentive for Marconi Beam residents to stick to the agreements with the local authority." The evidence also suggests that internal rules and courses of action that were determined by consensus at general meetings of the community were also not implementable.

One respondent, external to the community, believed that MBDT trustees drawn from the community were physically threatened on occasion. Moreover, fires often ravaged Marconi Beam. Another respondent suggested that some of the many fires that occurred in the settlement may have been started deliberately, but no reliable evidence emerged to corroborate these suspicions. However, there is unsubstantiated evidence of this occurring elsewhere. For example, in chapter 7 Du Toit (pers. com. 1997) was quoted as holding similar beliefs based on his experiences in Khayelitsha. The Cape Times (10 July 1998) reported shacks being burned in Brown's Farm as a result of factional conflicts.

Stemming from events in October 1998, the MBDT was in the process of being disbanded (Gray pers. com.1998). In July 1998, the MBDT called in the services of a facilitator to confirm the legitimacy of its initiatives and activities on behalf of the Joe Slovo Park and Marconi Beam communities. The communities duly upheld this legitimacy. However, a few days later, what appears to be an *ad hoc* steering committee^{xxiii} in Joe Slovo Park physically forced the MBDT to shut its office. The apparent basis of this action was the belief that certain people had been allocated houses in Joe Slovo Park illegitimately in terms of the adjudication procedures agreed by the community (Sigudla, Lawry, Gray pers. com. 1998). By September 1998, management of the MBDT had effectively been reduced to three trustees; two community members one outsider who had been assisting with construction expertise. A number of members had resigned from the trust, including the person^{xxiv} who had headed the Trust for a number of years, Welcome Mbangane (Lawry pers. com.1998).

Consequently, the fragile legitimacy of the trust and the questionable need for its continued existence motivated the dissolution of this corporate entity.

In summary, in the Marconi Beam case the power of the authorities to intervene in the administration of the informal settlement was limited during the 1990's. Moreover, the community acted in concert against the authorities at times, but clear legitimate leadership within the community did not exist. Agreements that were brokered between the authorities and the community representatives were seldom kept, as factions within the community challenged and manipulated the actions and agreements of the community leaders. Moreover, the evidence suggests that community leaders themselves manipulated the situation for personal benefit. In the author's observation there was a general culture of conflict surrounding attempts to provide formal housing for residents of Marconi Beam. As a consequence attempts by the landowner and the authorities to clear the shacks from the Marconi Beam site once the houses had been constructed in Joe Slovo Park were thwarted by factions within the community.

This situation of conflict and manipulation of agreements prevailed in other informal settlements and site-and-service schemes in Cape Town. Molloy (pers. com. 1997) had had similar experiences in Mfuleni in the eastern metropole. In his experience, it was difficult to clear the informal settlement site. Moreover, agreements between external stakeholders and the community leadership were often not adhered to by the Mfuleni community. The discussion in chapter 9 will show that the situation in Imizamo Yethu was similar to that in Marconi Beam.

8.1.4 Demographics

Demographic data may provide causal links to certain patterns in land tenure. The Urban Foundation *et al* (1993) survey of 834 households provided a snapshot of the community five years prior to occupation of houses in Joe Slovo Park. The data were old and such a census had not been repeated by the time the research was completed. However, at that time this Urban Foundation/ Chittenden survey showed that approximately 30% of the community were unemployed, 34% of the community had moved to Marconi directly from the Transkei or Ciskei, and 36% of the community had previously lived in Cape Town's other Xhosa-speaking settlements such as Langa, Guguletu or Khayelitsha. Moreover, nearly 70% of these households earned less than R1000 per month. Saff (1996:245) collected data in 1994 suggesting that approximately 9% of the community were coloured.

The relevance to cadastral system effectiveness is the following. Firstly a significant proportion of the community had arrived in Marconi Beam directly from traditional Cape Nguni tribal areas, the Transkei and Ciskei. It follows that if the hypothesis that land tenure in informal settlements combines conflicting group tenure and individual tenure practices is valid, then customary group tenure practices can be expected to have a strong influence in the Marconi Beam community. Secondly, a significant proportion of the community had previously lived in other Xhosa-speaking communities in Cape Town. It follows that tenure in Marconi would also reflect practices in those communities, which, in terms of the discussion on the influx of Xhosa-speakers into Cape Town in chapter 1, it is assumed also have a significant

proportion of recent arrivals from the former Transkei and Ciskei regions of the Eastern Cape. On this basis, it is argued that Marconi Beam validly represents the tenure practices of Xhosa-speaking communities in Cape Town. Finally, although not the main focus of this research, the high proportion of unemployed in the community implies that economic, specifically cost related factors may be significant in the effective utilisation of the cadastral system in the long term.

8.2 RESEARCH METHODS

The benefit of being able to observe the process of transformation from informal settlement through to formal individual property is that the full range of research techniques could be used in a single case study. In Marconi, it was possible to do time series overlays of maps of the settlement and compare these results with the results from the interviews. The elements of the theory of planned behaviour (TPB); beliefs, attitudes, behavioural controls, intentions and actual behaviour could be investigated in the informal settlement setting. All the local record system elements used to administer land rights in the site; adjudication, boundaries, registration and dispute resolution could be observed during the property development process described in chapter 4. Furthermore beliefs, attitudes and intentions concerning the cadastral system, and to a limited extent actual behaviour in the greenfields development could be investigated.

A special characteristic of the Marconi Beam settlement was the frequent shack fires. Due to the high density of the shacks, which is illustrated in Appendix C1, and Cape Town's windy climate, the numerous fires often spread rapidly through large sections of the settlement, at times with fatal consequences. For example, one fire on 9 October 1996 destroyed approximately 100 shacks and there were two fatalities. One trustee (Dludlu pers. com.1997) indicated that fourteen fires were recorded in 1995 and, in the author's observation, a similar number occurred in 1996.

Stemming from these frequent fires, it was possible to explore beliefs and attitudes regarding land and space in Marconi Beam by monitoring changes in the positions of shacks in the settlement over time as shacks were reconstructed after fires.

8.2.1 Interviews and Group Workshops

A total of 64 Marconi residents (35 male and 28 female), including key-informants resident in the settlement, were interviewed or participated in group discussion sessions in 1996. These data were augmented by interviews with key-informants from outside the settlement.

The questions and issues to be explored are listed in appendix B1 and the structure sheet for interviews and group sessions is included in appendix B2. Data collection techniques, and the contents of the instruments in appendices B1 and B2, were changed and refined as the study progressed. It was necessary to use simple techniques where respondents expressed their beliefs, attitudes, intentions and experiences

without the interviewer biasing the result. Initially, quantitative interview techniques were attempted, using a questionnaire based on an interpretation of the key-informant interviews, a number of social survey questionnaires used in the Cape Town Metropolitan Area^{xxv} and a questionnaire survey of attitudes to boundary accuracy's used by Hoogsteden *et al* (1992b) in Dunedin, New Zealand. However the complexity of the research material resulted in having to explain the meaning of each question at length. In the author's view the explanation tended to influence the response and also quantitative techniques were deemed to eliminate some relevant information, especially if a response was given that was not tabled in the questionnaire. Consequently quantitative methods were abandoned in favour of qualitative methods to explore the issues listed in appendix B1.

To establish the general set of beliefs in the key-informant interviews, open-ended questions were posed so as not to limit the range of responses. Initially, respondents were asked to draw diagrams to illustrate certain beliefs, attitudes and intentions especially if the question had a spatial component. For example, based on discussions with a number of social scientists, respondents were asked to draw the layout of their community to establish the social and spatial relationships. However, this was not successful. After the first few interviews the technique was replaced by using models of shacks in an informal settlement and houses in a formal housing layout to stimulate discussion concerning the system of tenure desired and the role of cadastral instruments and processes in such a tenure system.

8.2.1.1 *Key-informant interviews*

The first data were collected in 1996 in open ended and structured interviews with nine key-informants, who were residents of Marconi Beam. Five of these respondents were MBDT trustees and four were street committee members^{xxvi}. Thereafter interviews and *ad hoc* discussions with some of these key-informants, a number of other key-informants who were external consultants, MBDT trustees, staff members in the MBDT office and officials continued until the end of 1998.

8.2.1.2 *Group discussion sessions and interviews*

After the key-informant interviews were completed in 1996, group sessions were held with a cross section of the Marconi Beam community. Open-ended questions were posed using appendix B2 as a framework. Typical groups consisted of three to four people; the largest group comprising 10 people and the smallest two people. The first three group sessions were run in the Marconi community hall or by setting up a table and chairs in the street. These sessions explored most of the questions posed in appendix B2 and lasted between two and three hours. Thereafter other potential participants were reluctant to participate in these sessions, possibly because they lasted too long.

To cut down group session time, as a particular pattern or finding surrounding a particular issue unfolded, that issue would be explored less intensively. Subsequent group sessions would then seek to confirm, refine or negate the patterns that emerged from an in depth study of an issue in an earlier group session. As conclusive evidence

supporting a particular finding emerged, then that issue was purged from the agenda in subsequent group sessions. Other issues would then be explored in more depth.

Group sessions were conducted in the evenings after the first three sessions. This was done to reduce biasing the sample with a large proportion of unemployed respondents, and to ensure that employed decision-makers in a particular household participated in the study. These groups sometimes comprised only members of a particular family, or family members plus friends and neighbours.

What follows is a discussion on the design of this qualitative research and efforts to reduce potential biases in the data.

8.2.1.3 *Appropriate sample*

To ensure that an appropriate sample was studied, only decision-makers were selected as respondents. For example, teenagers of school going age were not included in the group workshops. Respondents were selected on the basis of having a right to a house in Joe Slovo Park (no one had been registered for du Noon in 1996). Moreover they should have been in a position in the family to influence decisions such as the alienation of a right or the sale of the house in Joe Slovo Park. Of a sample of 53 people who were asked if they had a right to a house in Joe Slovo Park as a family member or household head, 48 possessed such a right. Three of those who did not possess this right were middle aged male lodgers.

8.2.1.4 *Gender bias*

It was assumed that there might be a difference between male and female responses. In an attempt to ensure a balanced sample, the following ratios of males and females were used:

- The total Marconi sample consisted of 64 people of whom 35 were male and 28 female.
- The key-informant sample consisted of four females and five males
- The group sessions comprised a total of 16 groups in which a total of 30 males and 25 females participated. Four of these groups consisted only of males and three of these groups only of females. The remaining nine groups were made up of both male and female participants.

There were no discernible differences between male and female responses.

8.2.1.5 *Spatial bias*

For the group sessions, Marconi was divided into eight sections (grid blocks) as depicted in appendix B3. A minimum sample of 40 people^{xxvii}, a group of five from each section, was considered appropriate for qualitative research. A sample of 55 people was finally used in this phase of the research, which included 16 groups of varying sizes as opposed to eight groups. At least one group from each block was

interviewed. The additional 8 groups were selected on the basis of finding appropriate people to interview (e.g. decision-makers).

8.2.2 Aerial Surveys

Time series analysis of aerial surveys were used in conjunction with interview and group workshop data to establish the system of beliefs, attitudes and behaviour relating to the position of shacks in the settlement, especially after residents had been forced to reconstruct their shacks after a fire.

Two epochs of data from aerial surveys were generated and overlaid. The first epoch used 1:10000 stereo images flown in August 1994 and the second used monoscopic digital still video imagery with a ground pixel size varying between 15 cm and 18cm flown in May 1996 (see Mason *et al* 1997, Barry and Mason 1997). The monoscopic aerial survey was flown as part of the UrbanModeler project with the object of examining the effectiveness of low-cost cameras in conducting successive mapping of informal settlements for monitoring changes in land occupation patterns.

As with Brown's Farm, in terms of Kraus (1993) the planimetric accuracy of well-defined shack corner features was expected to be of the order of 10-20cm for the 1:10000 photography. However, ground-truthing of a few selected objects using GPS showed the actual planimetric precision of mapping of well defined objects to be consistent with the Brown's Farm photography (approximately 0.5m). A full shack survey of the settlement was generated from this 1994 imagery on the Topocarte/Adams analytical plotter.

Two of the May 1996 monoscopic digital images were georeferenced using 2nd order polynomial transformations using ERDAS Imagine software and GPS-determined control points and mosaiced to provide an image map of Marconi Beam^{xxviii}. Shacks and other features were then digitised from this mosaic in ArcView 3 and overlaid on the 1994 survey for comparison (Barry and Mason 1997).

The 2nd order polynomial rubber sheeting algorithms were found to be suitable for most of the site given that Marconi Beam has very little relief and a large number of control points were available. Rubber sheeting is also a simpler operation than orthoimage generation and therefore more likely to be used as a monitoring tool in a low-cost information system for managing informal settlements (see Mason 1997). A number of distortions introduced by the rubber sheeting were, however, noticeable in the south western and the eastern boundary areas (see appendix C5).

Because these distortion errors exceeded the 0.5m planimetric accuracy desired for this particular application, it became necessary to extract and georeference local tiles of approximately 80m x 80m. In these instances linear rectification using a first order polynomial proved to be sufficient. Point identification proved to be a greater problem than the achievable positional accuracy of the image. A test set of 51 shack corner points was digitised independently by the author and an experienced operator (Binedell)^{xxix} near the tile edges and compared by measuring on the screen using ArcView3 software. A RMS for this data set of 0.51 metres (± 3 pixels in the digital monoscopic imagery) was achieved between the two. Visual inspection indicated no

apparent bias attributable to the rectification algorithms. According to Mason this corresponds well to the expected ground pixel resolution of 30-40cm of the still video camera used and a pointing accuracy of at best 1 pixel (Mason 1997, Mason *et al* 1997, Mason pers. com. 1997).

In conclusion, a number of different data collection and processing techniques were used to conduct the aerial surveys. The planimetric accuracy of spatial data acquired was ± 0.5 metres, which is suitable for this research.

8.3 INTERVIEW DATA

This section describes the data collected concerning the beliefs, attitudes, intentions and actual behaviour in Marconi Beam up to registration of the first parcels in Joe Slovo Park. Section 8.4 describes the data collected from interviews and group workshops relating to beliefs, attitudes and intentions concerning land tenure and the cadastral system in Joe Slovo Park in the long term. These data are analysed in section 8.5.

8.3.1 Adjudication and Tenure Type

The key-informant interviews in 1996 showed that in terms of the generally recognised rules within the community, there were two types of tenure held by Marconi Beam occupants. There were people who could expect to be granted ownership of a parcel of land at some future date and there were people who were lodgers in the settlement who could expect to have to find accommodation elsewhere. Households falling in the first category had legitimate expectations of being granted registered ownership of land in Joe Slovo Park or du Noon, and possibly a NHF subsidy to assist them in purchasing the site and building a house on it (See Crone 1997)^{xxx}. As far as Marconi Beam's internal management structures were concerned, lodgers rented shacks or shared shacks with holders of the first category of tenure. Lodgers did not have a legitimate expectation of being granted registered land, although some respondents who were lodgers indicated that they hoped to be able to obtain such an entitlement^{xxxi}. A number of households fell into the former category on the basis of having being resident in Marconi in August 1994. However, they enjoyed insecure rights of expectation due to not having been placed on the register of people entitled to a parcel of land in Joe Slovo Park during the adjudication process in 1994.

As discussed in section 8.1.3, in August 1994 Milnerton Municipality and DAG registered household heads with a view to accommodating them in Joe Slovo Park or du Noon. Registered household heads were issued with a rent card and their names placed on a register kept by Milnerton Municipality. This registration or titling process formalised what de Soto (1989) labels the expectative right.

The key-informant interviews and group workshops established that there were rules determined by the community that applied to the transfer and inheritance of such expectative rights. Rules and regulations were established by a combination of *ad hoc* decisions and consultative processes. Community policy formulation, the

establishment of formal rules, discussion of issues under negotiation and general information dissemination were channelled through general (mass) meetings held in the community hall (see appendix C1). Street committees and area committees also held formal meetings concerning the administration of the settlement. It is assumed that rules were also established through experiences of grievances or disputes, similar to the development of common law derived from court cases.

The rule regarding the sale of a shack was that if a person left Marconi and sold their shack and its bundle of rights, then the rent card and the right to a site in Joe Slovo Park was transferred to the buyer. The sale had to be witnessed by the relevant street committee and the rent card had to be physically delivered from seller to buyer.

In terms of the generally agreed community rules there was not a private market in land rights. Land rights could not be sold, only the shack itself. The philosophy being that since residents had not paid for the land themselves, they were not entitled to sell it. Furthermore, the holder of an expectative right of ownership of a parcel of land was not empowered to choose to whom he or she might transfer this right. The first option on the purchase of a shack with a Joe Slovo Park entitlement, in terms of the generally agreed rules, resided in the family unit that had stayed in Marconi for the longest as lodgers. A secondary consideration would be the immediate needs of a particular family lodging in Marconi. Therefore a stranger might have to stay in Marconi for a substantial length of time as a lodger before they would be entitled to an option on a shack and a site in Joe Slovo Park (Dludlu, Ntini pers. com.1996)^{xxxii}.

In reality, these rules were not adhered to, but the general pattern that emerged from the interviews and discussions was that the relevant street committee would decide who should have first option on the right of purchase. Sigudla (pers. com. 1997), an MBDT staff member, indicated that a street committee might consult with its area committee. A register of lodgers was not maintained by the MBDT and therefore it was impossible to implement the policy of the longest standing lodger in Marconi Beam having the first option on the purchase of a shack. Consequently the rule was unworkable and open to manipulation. However, the process of transferring documents and the sale being executed in front of the street committee was generally applied. One household group interviewed had purchased a shack in Marconi Beam. They indicated that the head of house had gone to the MBDT trust office and the sale and handing over of the rent card was executed there in the presence of the street committee and MBDT staffers.

A total of 61 transactions, or corrections to the original 1994 registrations, had been noted in a book in the MBDT office between June 1996 and February 1997 (see appendix C4).

By mid 1996, access to open land for a new shack in Marconi was difficult. The aerial surveys show that there was very little available space and if there was space, neighbours might let a new 'settler' into a space (Dludlu pers. com.1996). (This was in contravention of agreements with the authorities). However in terms of the Marconi community rules this land right could not be sold (by neighbours or street committees) on the principle that the land had not been purchased at the original invasion (Dludlu pers. com.1996). In terms of the MBDT rules, these new arrivals were not supposed to

obtain an entitlement to a house in Joe Slovo Park though, and the MBDT expected these people to move out of Marconi when the time came to clear the site (Dludlu pers. com.1996).

Formal rules regarding inheritance that had been scrutinised and considered by the general community did not appear to have been formulated. The MBDT appeared to deal with such cases on an *ad hoc* basis based on a few broad guidelines. Ntini (pers. com.1997) indicated that as a general rule, a shack and the bundle of rights including an expectation of a parcel of land in Joe Slovo Park would be transferred to the deceased's family. In two cases where people had died intestate and family members could not be located, the street committees had reallocated the shack and the rights bundle to lodgers. MBDT staff members believed that rights of residence were superior to those of family or cognates. That is in the case of common law partners, the right of expectation of formal land would be allocated to the common law partner before the claims of the rest of the family would be recognised (Sigudla pers. com.1997, Yalwa pers. com.1997).

These policies could not be confirmed from the MBDT records. The MBDT record of transactions (see appendix C4) recorded two deaths over an eighteen-month period. One record noted the spouse as having obtained the rights upon presentation of a death certificate. The second record did not indicate to whom the shack and ancillary rights had been transferred, but an MBDT staff member indicated that it went to the deceased's wife.

Clark (pers. com.1997) related a further case of inheritance. A fire had killed an entire family with the exception of the teenage daughter. In this instance the daughter stayed with a neighbour who erected a shack on the girl's site and let it out to a lodger. The girl stayed on in Marconi and her aunt inherited her right to a house in Joe Slovo Park on her behalf. However, Sigudla (26/2/1997) of the MBDT office, and her assistant on the day, could not confirm the above case, as there was no record of it.

Dludlu (pers. com.1996) reported a case of an entire family being killed in a fire. However there was no written record of this event and the evidence could not be corroborated with other key-informants. In such a case however, or in a case where a family left Marconi Beam, the most probable outcome would be that ownership of the shack site and the right to a site in Joe Slovo Park would revert to the community via the street committee. Yalwa (1996) believed that the new owner would buy the shack from the street committee who would allocate the existing shack number to another family. Yalwa believed it was unlikely that the general community would willingly give effect to the conditions of a will (Yalwa pers. com.1996).

In terms of the formal rules, a person could be evicted as a consequence of a mass tribunal where members would cast a vote to evict a person or a family. However, this had not happened (Dludlu pers. com.1996). Only one case of eviction was reported, and it appeared to have been executed informally. A person had reputedly threatened other residents with a gun. Consequently, he had been assaulted and he and his family were forced to move out of Marconi Beam (Dludlu pers. com.1996).

As far as the community was concerned, eviction would mean that the rights to a house in Joe Slovo Park would revert to the community. The community would decide who should inherit the right of the evicted person (Dludlu pers. com.1996). This differs from the position of Milnerton Municipality. Officially the Municipality would stick to the 1994 register, although they had little power to intervene in these situations (Clark pers. com.1997).

In summary, two forms of tenure existed in Marconi Beam when the interviews were conducted in 1996. The first form was held by the early arrivals in Marconi Beam who held a formally documented expectative right of ownership of a parcel of land in Joe Slovo Park. The second form was held by later arrivals in Marconi Beam such as lodgers and households which had erected shacks in the settlement but had not been allocated a right in Joe Slovo Park. The tenure of this latter group was tenuous in that no record of these people had been created and at best they had a hope of a parcel in du Noon. Otherwise the MBDT and the authorities expected these people to vacate the Marconi Beam site and seek accommodation elsewhere.

There were formal community rules relating to the transfer of expectative rights. A holder of such a right did not hold the right to transfer it in an open market as in theory there was a waiting list of people to whom such a right should be sold. These rules were meant to be administered by street committees. However, there were no systems in place to effectively administer these rules and the evidence suggests that transfers were conducted on the basis of ad hoc decisions by street committees and individuals in the settlement.

8.3.2 Boundaries and Space

Beliefs, attitudes and behaviour concerning space beyond the walls of a shack in Marconi were not homogenous. There were two contrasting sets of beliefs and actual behaviour relating to the spatial relationships in land occupation. Some residents fiercely defended the right of exclusive use of the land parcel, on which their shack was built, that was demarcated by monuments to the exclusion of all others. Others believed that since their sojourn in Marconi was temporary, the space between shacks was common property. In terms of this latter belief, exclusive use of space was confined to the space occupied by their shack. Moreover, the geometric position of the shack was negotiable.

The interviews and group sessions explored the informal settlement's system of spatial arrangements between neighbours. It sought to establish general attitudes, beliefs and intentions relating to occupation of space. The study explored whether a geometric fixed concept of residential space prevailed or a negotiable, topological concept prevailed.

An explanation for these contrasting beliefs concerning space is that the first residents of Marconi were able to fence off a parcel of land that was demarcated by monuments that were placed by the Milnerton Municipality. Also at that stage the Marconi Beam community was negotiating with the local authority to stay on the transit area parcel and have it upgraded, rather than be moved to a greenfields site. For later arrivals this option did not exist.

Resulting from the negotiations to confine the informal settlement to the transit area site in 1990, Milnerton Municipality had pegged a layout of approximately 450 sites in Marconi Beam with access roads. However, Ntini (1996) related that as pressure for land in the settlement increased, people built shacks over the boundaries of these layouts and into the roads in defiance of attempts by street committee members to prevent this (Ntini pers. com.1996). It would appear from Saff (1996) that at that stage of South Africa's transition, the municipality lacked the power to enforce practices such as adherence to the formal layout. For example when it attempted to evict members of the community who had erected unauthorised shacks, the community, using legal pressure, forced it to back down (Milnerton Municipality 1992)^{xxxiii}. In a slightly contrary observation, Ntini (pers. com.1996) believed that the municipality did not point out the beacons adequately (and had therefore not exercised adequate control or commitment to getting residents to adhere to the layout in the first place). The interviews do indicate though that both the land administration authority, Milnerton Municipality, and the community's internal authority, the street committees, lacked the power to implement the rules that had been agreed upon internally in the community and between the community structures and the local authority.

In the interviews and group sessions, it became apparent that residents in leadership positions, who would have been privy to information due to internal meetings and meetings with the municipality, were aware of the layout. For example, five out of six key-informants with whom this issue was discussed were aware of the layout, four of whom had fenced their sites according to the monuments. One key-informant had fenced off a larger parcel than the one laid out, and one was not aware of the monuments but had fenced off a parcel for himself anyway. Of eleven groups (39 people) of residents to whom this question was posed, eight groups (29 people) indicated that they were not aware of the beacons demarcating parcels laid out by the Municipality. Three groups (10 people) were aware of them but did not indicate that they had fenced off areas accordingly.

Competition and conflict between groups and individuals, possibly intertwined in the activities of entrepreneurs who traded in land rights, may have motivated disregard of the layout. One key-informant stated that even though people may have been aware of the layout, it was ignored because of intense competition and conflict within the community. A senior official indicated that intimidation was a major problem throughout the history of Marconi Beam, even after people had taken occupation of houses in Joe Slovo Park in 1998. In his opinion "greed and desperation" motivated people to grab land (Gray pers. com.1998).

A senior official's attestation (Gray pers. com.1998), indicates that strong cohesive, leadership was absent in the community. Moreover, in spite of internally developed rules to the contrary, members of the community exploited their leadership positions for personal financial gain through land sales and landlordism, especially in the early days of the settlement (Gray pers. com.1998, Saff 1996:249). One land professional observed that even MBDT trustees had permitted additional households to build new shacks. The respondent was not aware of monetary payment taking place, but he did tender that in these situations payment could take a form other than a monetary

transaction (Nel pers. com.1998). There was also evidence that people had sold sites in Marconi where buyers understood the sale to include an entitlement to a Joe Slovo Park parcel, where this was clearly not the case (Gray pers. com.1998).

In the group sessions and interviews, people's beliefs concerning space were investigated (see question 14 in appendix B2). The question explored if people were possessive about the space occupied by their shacks in Marconi or if it was acceptable after a fire, to build a shack in space previously occupied by someone else's shack. In the key-informant interviews, an MBDT trustee and staff member indicated that he was aware of two such cases where a neighbour had opportunistically grabbed land by building a larger shack after a fire. In his opinion, it was important for a resident to stay at home and rebuild their shack as quickly as possible after a fire to ensure that encroachment did not occur (Ntini pers. com.1996). However two other key-informants were not aware of such behaviour, and they expressed shock that a person would actually purposely do such a thing.

Following the first three key-informant interviews, this issue was put forth for discussion to a total of 58 people, three key-informants and 55 people in the 16 group sessions. None of the respondents indicated that such behaviour was acceptable and, with the assistance of a street committee, they all stated an intention to eject the encroacher should such a situation arise. Five of these respondents had fenced off a parcel according to the pegs placed by Milneron Municipality. These people were fiercely protective of this space for their exclusive use. The remainder indicated that after a fire, they would be able to re-establish the position of their shacks from the burnt remains of the structure or by some other means. Two groups where the issue was explored more deeply indicated that they were amenable to some negotiated minor reorganisation taking place. One such group, comprising seven people, indicated that the encroacher would be evicted "unless there was sufficient space". Another group indicated it would be very difficult to forcibly get the offending party to move their shack, even with the intervention of a street committee.

Analysis of overlays of two aerial surveys, the digital still video imagery flown in May 1996 overlaid on the August 1994 1:10000 stereo imagery results, partially supported these results (see appendix C2 and C3). However, it appears from actual behaviour that reconstructing a shack in exactly the same place after a fire was not as important as the data from the group sessions and interviews indicate.

In the aerial survey overlays, three samples totalling 325 shacks identified in the 1994 aerial survey were selected to investigate actual behaviour concerning this issue. The samples have been named according to the grid cell in which they fall as depicted in appendix B3. The samples comprised:

- 1) A control sample containing 154 shacks in an area which had not burnt during the period between the two aerial surveys (Area B4/A4 in appendix C3);
- 2) An area containing 92 shacks that had been partially burnt by sporadic fires during this period (Area B1 in appendix C3); and
- 3) An area containing 80 shacks that had endured at least one major fire between the 1994 and 1996 aerial surveys (Area A2 in appendix C3).

In the control area and the area that had been partially burnt, there was little change in the land occupation pattern over the period of analysis, other than an increase in the number of shacks. In the area that had endured a major fire, approximately 25% (19 shacks) of the shacks appeared to have been rebuilt in roughly the same area but not on the same footprint of the original shack. In these 19 instances it was difficult to match a shack housing a particular family in 1994 with the shack housing the same family in 1996. However, the overlay maps do not provide significant evidence of land grabbing. Rather they indicate that the exact location of the shack was not particularly important, but the approximate location was. Details of this are documented in Barry and Mason (1997).

This finding is supported by the following author's on-site observations. After a major fire that destroyed more than 100 shacks in October 1996, where a shack had originally had a concrete floor prior to the fire, then the new shack was rebuilt around this floor footprint. In other areas, contractors cleared the entire area of burnt material and rebuilt the required number of shacks without paying too much attention to the original footprints of the shacks. There was no layout of parcels in this area.

In interviews, group sessions and follow up discussions with key-informants resident in Marconi Beam, a number of residents believed that the position of a shack in Marconi was not important, whereas this would be different in an area such as Joe Slovo Park where the land is owned. The belief was expressed that Marconi was a temporary settlement where residents believed they did not own their land, they owned the shack and the materials. For example in the interviews relating to questions 14 and 23 in appendix B2, one key-informant indicated that in Marconi boundaries can be moved by negotiation as conceptualised in a topological boundary system but he did not think this would be the case in Joe Slovo Park. A group of four men and a woman believed that in Joe Slovo Park "corner pins" would show the boundary of a parcel. This was not so in Marconi as "there's no yard to a shack; in Marconi one can negotiate space". Other than in areas where residents who had fenced off parcels, presumably according to Milnerton Municipality's monuments, shack residents could not prevent other people walking freely between shacks. This space was effectively common property.

The evidence suggests that the rebuilding of the shack in its exact location after a fire was not that important. Some individuals who were early occupants of Marconi had fenced off parcels and were fiercely protective of their exclusive use of this space. It is speculated that this behaviour may have been motivated by a need to defend their space and privacy, and enforce their claims to permanent land rights by fencing according to the official layout. The majority believed the peaceful enjoyment of their living space in their shack and the security of their entitlement to ownership of a greenfields site was important. The precise geometric location of the shack, in terms of rebuilding it after a fire, was unimportant. As could be expected, the general community's attitudes to behaviour that upset the general harmony were strongly negative. Opportunistic grabbing of space in a manner that diminished the rights or comfort previously enjoyed by others was considered intolerable.

To the early residents of Marconi Beam who indicated that they would fiercely protect the parcels that they had occupied, the geometric location of their parcel was

important. This emphasis on geometric location, it is speculated, may be related to the fact that occupants of these parcels may have originally expected to be allocated those parcels permanently while negotiations were in process for Marconi Beam to be upgraded *in situ*. Where parcels had not been claimed and boundaries demarcated by fences, the geometric position of a shack did not appear to be important.

In summary, land occupation in the Marconi Beam informal settlement carried a right of expectation of ownership of a formal parcel of land, which was dependent on a person occupying a shack in the settlement (when adjudication and titling took place at least). The shack was ownable, perhaps as a form of moveable property. The space surrounding the shack was regarded as common property by some and an exclusive use zone for their private use by others.

These conclusions are supported by a discussion with a person from outside of Marconi. As discussed in chapter 7, Ntshidi (pers. com.1997), had first occupied land in an informal area in site C Khayelitsha and then been allocated a greenfields site in Macassar, Khayelitsha. She indicated that site C was a temporary settlement and one did not have rights to the space between shacks. However, her beliefs and attitudes concerning the surveyed boundaries and monuments demarcating her parcel in Macassar were distinctly different. The Macassar parcel boundaries were demarcated by four “pins” and it was not acceptable or permissible to build over these boundaries.

8.3.3 Registration and Tenure Security

Tenure security in Marconi Beam implied more than security of occupation in the settlement but also security of entitlement to ownership of a parcel in Joe Slovo Park or du Noon. This section will demonstrate that failure to actively manage the original registration of household heads in 1994 and the maintenance of this register resulted in inaccurate records and conflicts over to whom parcels in Joe Slovo Park had been allocated. The original registration of people entitled to a site in Joe Slovo Park is described first, then the beliefs and attitudes about this system from the qualitative research is described. Dispute resolution is described in section 8.3.4. Thereafter problems experienced with the local system of records are described.

Registration of Marconi Beam residents who were entitled to a parcel in Joe Slovo Park took place in 1994. The Municipality did the data collection with the assistance of DAG (Jones, Gray, Nel pers. com.1998). At the end of this process, a register of 870 households who were scheduled to move to Joe Slovo Park was created. No data were collected concerning people who were supposed to move to du Noon.

Interviews and group sessions revealed that tenure security in Marconi was provided by a combination of local social processes and a local registration system. In terms of the community rules, which were understood by all the respondents bar one, the sale of a shack was executed by the physical, symbolic delivery of the rent card from the seller to the buyer in front of the local street committee. If either the delivery of the document or the witnessing of the sale failed to take place, then in principle the sale was invalid^{xxxiv}. Failure to follow due procedure might not result in the buyer being evicted by the community, but it would not entitle the buyer to the right to land in Joe Slovo Park.

A procedure to maintain the register of people entitled to parcels in Joe Slovo Park so that transactions in these rights were recorded was not established. Consequently the register was not properly maintained. Both DAG and Milnerton Municipality had a copy of the 1994 register. Clark indicated that he was unaware of any alterations being made to this register (Clark pers. com. 1994). A copy of the register was later forwarded to the Rabie/Cavcor project managers. Scrutiny of this list by the author and a Rabie/Cavcor project manager in 1998 revealed that the list had not been updated. One MBDT staff member indicated that it was the responsibility of the street committee to write a letter to notify Milnerton Municipality if a transfer took place (Yalwa pers. com.1997). Another staff member indicated that the municipality was not informed, but that after June 1996, she had recorded transactions in a book in the MBDT office in Marconi Beam. Prior to this date transactions in land rights had not been recorded (Sigudla pers. com.1997). A copy of a page of this update book is included in appendix C4.

The transfer system appeared to be well understood by the community. Of a total of 55 community respondents, in group discussion sessions and individual interviews, 42 people (9 key-informants, 10 groups) indicated that the rent card (document) was an important means of asserting one's claim to a right to stay in Marconi and a right to a parcel in Joe Slovo Park. Forty-seven respondents indicated that the street committee was important in supporting a claim. Others indicated that neighbours (12 respondents) would know who lived in a particular shack and 6 respondents indicated one would go to the Marconi office. Two respondents indicated that they would go to court in the event that their registration was challenged. A number of individuals and groups described the symbolic delivery process to the author. One couple and one key-informant indicated that they had been to the Marconi Office and signed documents in the office when they purchased their shack and the street committee witnessed this execution of delivery of the shack^{xxxv}.

Respondents believed that both documentary evidence and social processes were essential to affirming land rights. In certain group sessions and interviews, the author attempted to establish a hierarchy of evidence. "Which is more important; the document, or the knowledge of the street committee?" This did not produce conclusive results however. The general belief was documentary transfer and the social process of symbolic delivery were both equally important. Without the document and the execution of the transfer being witnessed by the street committee, they believed the sale to be invalid.

A further form of proof of a land right in Joe Slovo Park was if the MBDT had accepted an application for a NHF subsidy and processed the forms. The MBDT was responsible for processing these forms and if a person's name was not on the register, they would have to prove via the street committee that they were a bona fide owner of a shack.

In conclusion, the Marconi registration system that was described by residents is analogous to a deeds system using private conveyancing of the deed (rent card) with public witnessing integral to the system. The seller delivered the deed, the rent card in this instance, to the buyer. The Milnerton Municipality supposedly fulfilled the role of

the registry, which was purely an information system. The Municipality played no role in assessing if a person had a right to buy or sell. Moreover, none of the transactions in land were recorded on the Municipality's register and so it became a form of private conveyancing. The quality control was placed directly in the hands of the street committee and ultimately in the hands of the MBDT. The MBDT did rudimentarily record a number of transactions, but this process was only initiated approximately two years after the initial register had been created. Local social processes were important as a means of proving ownership. Street committees had to verify sales and without the transparency incorporated in the witnessing of the sale; a sale was null and void. Both the handing over of the document and the witnessing were vital for a sale of a shack to be valid. If either was missing the sale was invalid.

In essence, this was a form of private conveyancing where formal registration of the transaction was not compulsory. Both documentary evidence and social processes were integral to upholding rights in land.

8.3.4 Dispute Resolution

There was a hierarchy of structures that an individual could use to raise a grievance without resorting to formal legal institutions. Disputes in the community, land related or otherwise, were firstly resolved by the street committees. If an individual did not receive satisfaction they could approach a community leader and ultimately an individual could call a general meeting under the auspices of the trust (Ntini, Dlodlu pers. com. 1996).

In discussing a dispute arising out of encroachment after a fire (question 14 in appendix B2), forty-nine of a total of fifty-five respondents indicated that the street committee would be brought in to mediate in such a dispute and if necessary the encroacher would be forced to move.

However it appeared that street committees lacked the power or authority to enforce their judgements or local level rules. There was not a system in operation to force compliance, albeit that there were rules that could result in people being evicted. As discussed earlier, Ntini indicated that the street committees had not been able to force people to move shacks out of streets originally laid out by Milnerton Municipality in the early history of the settlement (Ntini pers. com. 1996). Furthermore, street committees were also meant to implement a number of different strategies to move people to Joe Slovo Park in an equitable manner in December 1996 and January 1997. However this did not take place. It was also clear that the MBDT did not play a managing role in this process (Mbangwe pers. com. 1997). Ultimately the landowner, Rabie/Cavcor, then took responsibility and managed the process to move people to Joe Slovo Park without involving street committees.

8.4 THE LOCAL REGISTRATION SYSTEM

Using the operational definition of a cadastral system established in section 2.2.7, the local system of records used in Marconi Beam was a form of local level registration system in that it was a register of rights in land. It was also meant to serve as a system

whereby the Municipality would administer its system of service charges. However, in the turmoil of the early 1990's, very few service fees were paid. Clark indicated that only five households had paid their service charges in the history of the settlement (Clark pers. com. 1997). This section describes and analyses problems with this system of records of rights in land.

Poor design of the operations management processes in the local level registration system, lack of quality assurance and control, and inadequate information management resulted in major problems in the translocation of Marconi Beam residents to Joe Slovo Park and du Noon. As described earlier in this chapter, the system was poorly designed, inaccurate at its conception, and inadequately managed to the extent that it was open to abuse, fraud and manipulation. Moreover, in practice DAG and the Milnerton Municipality believed that the MBDT staff were maintaining the register. The MBDT staff at first were unaware that this was necessary.

As discussed in section 8.1.3, the Trust office was forced to shut down in July 1998 after factions in Joe Slovo Park questioned the legitimacy of allocations of land to certain people in Joe Slovo Park (Sigudla, Lawry pers. com. 1998). According to a trustee, the complainants had not identified these "illegitimate" landowners when requested to do so, but he indicated that it was quite possible that some of their claims were valid. Furthermore, in August 1998, there were approximately 150 households remaining in some of the shacks in Marconi Beam claiming that they had been unfairly excluded from obtaining a house in Joe Slovo Park. It was not possible to establish if these claims were legitimate or not (Lawry pers. com. 1998). To address the problem, Rabie/Cavcor had subdivided land originally designated for public purposes in Joe Slovo Park to accommodate these additional people (Edgar pers. com. 1998).

Inadequate design and implementation of this local level registration system, both in terms of definition of space and the abstract bundle of rights had resulted in far more people having to be accommodated than originally planned and uncertainty over the legitimacy of rights of expectation.

8.4.1 Original Adjudication

The first problem was that the original adjudication and setting up a register of entitlements was not properly executed nor were adequate quality assurances established in setting up this register. Only 870 households were registered in 1994. Assuming that each shack was occupied by a household, the August 1994 aerial survey reveals that approximately 400 households that should have been registered were not registered. Moreover, only household heads were registered. Family members and lodgers were not recorded. Ultimate responsibility for the maintenance and accuracy of the register was not assigned to any particular institution. No transactions in land were reported to Milnerton Municipality. None of those who were scheduled to move to du Noon had been recorded on a register. Neither the municipality nor the MBDT (assisted by DAG) collated the figures on the register with the number of shacks shown on the aerial photography flown at the time that registration took place in 1994.

8.4.2 Maintenance

A single institution or person did not take ultimate responsibility for the process of determining the various rights of expectation, the process of moving people to Joe Slovo Park and the local level registration system purported to support this process. Milnerton Municipality and DAG established the original register in 1994. However, the Municipality played neither an active nor monitoring role in maintenance of the system thereafter. In follow up interviews, former Milnerton Municipality and DAG employees each asserted that the other institution was responsible for the creating the original register and maintaining it.

Allied to the original register, the MBDT, assisted by DAG, were meant to maintain a register of NHF applications. Collating these two registers would have identified inaccuracies in the original 1994 register. At a meeting that the author attended as an observer between DAG, CONDEV and MBDT on 2 October 1996 it was apparent from the discussion that this update had not taken place at all. Furthermore, no attempt had been made to match NHF applications with the original register. Subsequent to this meeting, CONDEV, as contractors to MBDT, took over maintaining the register of NHF applications in an office in Joe Slovo Park and used this as the list of people who were entitled to a site in Joe Slovo Park. CONDEV reconciled the NHF applications with the 1994 register as NHF applications were lodged. If there was a mismatch, then CONDEV referred the matter back to the MBDT to adjudicate and establish if a person was entitled to a parcel in Joe Slovo Park. In 1997, Rabie/Cavcor took over managing the movement of people from Marconi to Joe Slovo Park and du Noon. Rabie/Cavcor were given a register containing 954 names by CONDEV, who had updated the register as housing subsidy applications were lodged. This register had been created out of a combination of the original 1994 register and the NHF applications and the MBDT verifying that certain people whose names were not on the 1994 register were legitimately entitled to a land parcel in Joe Slovo Park.

A major flaw in the system was that ultimately street committees had the power to decide who was entitled to a Joe Slovo Park parcel, but there was no external means of verifying the validity of their judgements. No formal system to maintain the register existed. MBDT office staff were unsure how security of a right to a house in Joe Slovo Park was maintained in the event of the transfer of a shack in Marconi Beam. Three staff members gave the author different descriptions of how the register was (supposedly) kept up to date. Khala (pers. com.1997)^{xxxvi}, an MBDT employee, indicated that sales of land were executed in front of the street committee who informed the MBDT office. A letter was then sent to Milnerton Municipality for the update of their records. This differs from a statement by Yalwa who indicated that the street committee in conjunction with Milnerton Municipality issued a new card in the event of a sale of a shack. Yalwa indicated that the MBDT administered the NHF applications, the street committees administered sales. His interpretation was that the street committees communicated directly with Milnerton Municipality to ensure that the register of people entitled to a house in Joe Slovo Park was maintained (Yalwa pers. com.1996)^{xxxvii}.

The actual system used in the latter stages of the project was devised by a MBDT staff member, Sigudla (pers. com.1997)^{xxxviii}. She had noted land transactions in a hard cover book, commencing in June 1996. The record noted changes in ownership of a right to a parcel in Joe Slovo Park, the witnesses to transactions and any other relevant information. By February 1997, 61 transactions had been noted (see appendix C4). Scrutiny of the record indicates that perhaps some of these transactions had taken place prior to June 1996 and were recorded in the book later. Sigudla indicated that Milnerton Municipality was not informed of these transactions.

Thus there were two independent systems of records being kept, the MBDT notebook of transactions and the CONDEV register of housing applications. However, in the case of a person's name not appearing on the original register, CONDEV did not refer to the MBDT notebook of transactions. Adjudicating if a claim to a site in Joe Slovo Park was valid rested with the MBDT. It can be assumed that the MBDT referred to this book when adjudicating disputes. However, according to Walker certain transactions had not been recorded in this book and certain recorded transactions were challenged as being inaccurate (Walker pers. com. 1999).

According to Gage, in the case of allocating a site in Joe Slovo Park, CONDEV used the register created in 1994 as the primary evidence. If there were problems with that record, then local social processes were used. If applicants names were not on the register, the street committees and the MBDT staff had to affirm that a particular person was entitled to a house in Joe Slovo Park. If a person's name was not on the original register, then CONDEV required a letter signed by the head of the MBDT indicating that a particular person was legitimately entitled to a house in Joe Slovo Park (Gage pers. com.1997). In the case of an unrecorded sale of a shack, the seller and the street committee had to verify with the MBDT that the person claiming a right to a parcel in Joe Slovo Park was legitimate (Gage pers. com.1997). Alternatively, if extreme difficulties were encountered in locating the seller, the street committee would have to verify that a person had been living in Marconi for at least four years (Gage pers. com.1997). At the time, Gage was unaware of the notebook of transactions kept by the MBDT staff.

Possession of a rent card carried little weight in these situations as no mention was made of it in resolving these cases of conflict by MBDT staff or CONDEV staff. CONDEV, as project managers of the Joe Slovo site ignored the rent card as evidence. The card could be used within the Marconi community to affirm a person's rights, for example should they be queried by a street committee. The card was not treated as an official document. Clark also indicated that since there had been rent and service boycotts, the municipality placed little weight on the validity of the rent card (Clark pers. com. 1997).

Monitoring of the movement of people by the author in late 1996, 1997 and 1998 to Joe Slovo Park indicated that there were few initial problems. In 1997, one fraudulent attempt by extended family members to use a shack number allocated to someone else in the family to gain an additional house was encountered. At that time, there were approximately 15 other cases of dispute where people's names did not appear on the original 1994 register (Gage, Sigudla, Clark pers. com.1997). In such cases, CONDEV refused to allocate a parcel of land in Joe Slovo Park to anyone who was

not on the original Milnerton Municipality list. The MBDT first had to resolve the legitimacy of their claim and a letter by the head of the MBDT was required before the transaction could proceed.

In addition to issues described earlier in this section and in section 8.1.3, there were other factors that had a bearing on moving people from Marconi Beam to greenfields sites in Joe Slovo Park and du Noon. The first factor was a resistance to re-registration of people entitled to move to Joe Slovo Park. The second factor was high staff turnovers in a number of the institutions involved in the processes. Rabie/Cavcor attempted to resolve the lack of clarity in the 1994 register of people entitled to a site in Joe Slovo Park by re-registering people in Marconi Beam in 1997. However, this exercise elicited a strong negative reaction from the community, and the exercise was unsuccessful (Edgar pers. com 1998). The information management problem was exacerbated by high staff turnovers in Milnerton Municipality, the MBDT and DAG. Lack of continuity in key positions in all these institutions meant that new incumbents were not *aux fait* with certain critical issues, such as keeping the register(s) up to date.

Furthermore, the authorities relied on the MBDT to manage the situation, but there were no mechanisms to enforce compliance. External authority and management of some sort would have been advisable, given that the legitimacy of the trust was continually challenged and there were suggestions that staff members may have been threatened. However, enforcing compliance with agreements between the authorities and the community was extremely difficult. The internal community rule of implementing punitive measures using a mass meeting does not appear to have been implementable. Moreover, it appears that external authority was also continually challenged. Given that the Marconi Committee had legally forced the Municipality to halt demolitions of shacks in 1992, interviews with a number of officials showed that they believed it was better for the Municipality to leave management of the settlement to community structures.

8.4.3 Analysis of the System

Analysing this local level registration system, the major cause for it being ineffective stems from inadequate adjudication and registration of entitlements in 1994 and inadequate operations management of the local level registration system thereafter. The number of households in Marconi Beam was approximately 50% higher than the number registered. Moreover, neither the local authority nor the MBDT took final responsibility for the process of moving people from Marconi Beam to Joe Slovo Park and the local level registration system that was designed to support this. Consequently there was no quality management that ensured that the register accurately mirrored the number of households that expected to be granted land in Joe Slovo Park. Moreover, it would appear that certain factions in Marconi Beam had manipulated the situation by allowing more people into the area in spite of agreements to the contrary.

In spite of respondents in this research extolling the value of the rent card as a means of affirming land rights, the authorities placed little value on it as an adequate form of documentation. CONDEV ultimately relied on the social processes of witnessing and affidavits by the MBDT as the means of establishing the legitimacy of a claim in the event of uncertainty. The MBDT in turn relied on street committees who in turn relied

on rent cards and public witnessing and public knowledge to affirm claims to entitlements to land in Joe Slovo Park.

The Marconi registration system ended up being a local registry without the Milnerton Municipality register being kept up to date. Essentially what was a form of registration of entitlements, with contracts of sale and purchase being determined by the community rather than the individual, ended up being a form of private deed conveyancing with strong evidence being the witnessing procedure. In terms of residents' beliefs, the transfer of the document (rent card) in front of the street committee was essential for a sale to be recognised. However, the authorities (CONDEV) relied on the register and the social processes. Unlike Brown's Farm where rent cards were regarded as strong evidence, the original document was not given substantial weight in the hierarchy of evidence to support a claim. CONDEV relied on written affidavits from MBDT staffers and the head of the MBDT to certify that a particular person whose name did not appear on the register was entitled to a house in Joe Slovo Park. Sigudla indicated that the hardcover book wherein she had recorded transactions was used to verify if a person was entitled to a site in Joe Slovo Park (Sigudla pers.com 1998). One respondent who had purchased a shack in Marconi Beam did confirm that he had been given a rent card at the Marconi Beam office and the transaction witnessed by a street committee.

Discussions with Lawry and Gray (pers. com. 1998) indicate that the events in 1998 where MBDT staffers were threatened, the office closed and the validity of this written record challenged, could be attributed to three things. Firstly, the record of transactions could have been inaccurate. Secondly, the process was insufficiently transparent so that certain factions did not trust the MBDT staff, or thirdly these factions were attempting to manipulate the situation. It was not possible to follow up this issue with MBDT staffers as they were unwilling to be interviewed after the office had been closed.

The failure of the local authority to take a more hands on approach is explained by Saff's (1996) reasoning that the powers of Milnerton Municipality were substantially diminished during the country's transition. Gray (pers. com. 1998) noted that direct intervention in Marconi Beam by the Municipality had sparked violent protest. Furthermore Milnerton Municipality itself was undergoing substantial change in that it was becoming part of the larger Blaauwberg Municipality. There were changes in staff and organisational restructuring that would have created a certain amount of uncertainty in staff members themselves.

In the author's observation, the MBDT staff and DAG staff members appeared to be unaware of the importance of maintaining accurate information relating to transfers of expectative rights. MBDT staff were inadequately trained in how to run a registration system and ensure that the record was accurate and up to date. There was a lack of training and education and hands on management to ensure that the process of moving people to Joe Slovo Park and du Noon was not open to challenge. This was exacerbated by the fact that the original expectative rights were not properly adjudicated.

A further problem was the legitimacy of decisions taken by the MBDT. Events in Marconi Beam support the social change model assumptions developed in chapter 1 that an informal settlement comprises a plurality of groups, sub-groups and individuals, each with different goals. Conflict and inter-dependency is inherent in struggles for land, resources and power within a community. Consequently, using Payne's (1997) classification of winners and losers, the winners were those registered in 1994 with a right to a house in Joe Slovo Park. It was in their interests to comply with the decisions of the MBDT to obtain their house in Joe Slovo Park. It was in the interests of losers, those who were either not registered in 1994 inadvertently, or who were lodgers or had arrived in the settlement after August 1994, to disrupt the process of moving people to Joe Slovo Park in an effort to obtain such rights for themselves.

Some other pertinent facts that arose from the Marconi Beam case study, that are not the main focus of this research, are that approximately 20 people who were shown on the original register as being entitled to a house in Joe Slovo Park, had not turned up to claim them (Lawry pers. com.1998). Furthermore, there was also manipulation of the NHF system in that one woman had been willing to sell her house in Joe Slovo park for R5000, which had cost in excess of R20000, to return to the Transkei. Lawry indicated that he believed that the woman wanted to use her proceeds from the sale of the house as a form of pension (Lawry pers. com.1998).

In 1996, Dlodlu had mentioned that she believed that the MBDT would have a long-term role in administering Joe Slovo Park. She believed that the trust would administer certain houses as rental units. Furthermore she believed that a title deed restriction of a twenty-year buy-back rule in favour of the MBDT would exist on Joe Slovo Park parcels. "Some people feel Cape Town is not home or people are itinerant contractors who flit in and out of Cape Town. The MBDT will own units to rent out to people such as these." (Dlodlu pers com 1996).

The belief that the MBDT would have a twenty year buy back option did not materialise and so there were no mechanisms to prevent gentrification. According to Dlodlu (pers. com.1996) the idea behind the reversionary right in favour of the MBDT was there would be a waiting list of people who had lived in Marconi as lodgers who should get an option of a house in Joe Slovo Park if one became available. However, an inspection of a registered title deed and a discussion with the conveyancing attorney revealed that individual title in the name of a person was registered. There was no reversionary clause as a condition of title (Middel pers. com.1998).

In an interview at the end of the data collection process in Marconi Beam and Joe Slovo Park, a senior official (Gray pers. com.1998) suspected that a number of informal sales of houses registered in ownership in Joe Slovo Park had taken place, some even before they were registered. However, this information could not be corroborated.

8.5 TENURE IN JOE SLOVO PARK

This section describes the beliefs, attitudes and intentions expressed in the interviews and group sessions conducted in Marconi Beam in 1996 concerning the land tenure arrangements and the cadastral system wanted in Joe Slovo Park. These interviews

and workshop sessions were held approximately two years prior to Joe Slovo Park being occupied. The focus of the interviews was on Joe Slovo Park because at the time of the interviews, no one in Marconi Beam had been informed that they would be going to du Noon. Respondents either believed that they were entitled to a parcel in Joe Slovo park or they believed that they were lodgers. The theory of planned behaviour described in chapter 3 has been used as a framework for description and analysis of this data.

8.5.1 Tenure Type(s)

From the key-informant interviews and group sessions, it was universally stated that individual ownership of a parcel of land with ownership of land surrounding the dwelling was desired. In contrast to the situation in Marconi Beam, there was no concept of ownership of a dwelling with common property existing in between dwellings. There were however, some tendencies toward family rights as opposed to allodial ownership vesting in the registered owner. However, general attitudes to overriding rights in land vesting in community structures such as street committees were, in the main, strongly negative. The beliefs, attitudes and intentions showed that group biases in land tenure did not extend beyond the family. These group biases in land tenure were not homogenous though. Responses ranged from strong beliefs in the individual, registered owner holding the power to manage the land as he or she sees fit to beliefs that a parcel of land in Joe Slovo Park would be owned by the family. These issues are discussed in further detail in this sub-section.

8.5.1.1 Overriding community rights

What emerged from the workshop sessions was that there was an aversion to an overriding community right to determine to whom a person might sell their property in Joe Slovo Park. However, family rights to a house might exist over and above the registered right. Outside of the owner's immediate family, the role of the street committee was largely seen as one of witnessing transactions as a component of tenure security and dispute resolution. With a few exceptions, the group sessions and interviews communicated a belief that community structures should not have the power to influence the selection of the buyer in a sale was largely rejected as a behaviour. This power should vest in the individual or the family, not the broader community.

The question of the role of community structures that existed in Marconi Beam having a role to play in the tenure system in Joe Slovo Park emerged out of the first exploratory key-informant interviews. In contrast to the general beliefs and attitudes, two key-informants who were MBDT trustees and employed by the MBDT as administrative staff indicated that the MBDT should have an administration function for a lifetime to administer the rental of houses. Furthermore, one respondent believed that the MBDT should have first option to purchase houses for twenty years in the event of a sale in order to sell these to people on a waiting list. As described earlier in this chapter, these people were envisaged as being lodgers in Marconi Beam who were not entitled to a Joe Slovo Park parcel.

Drawing on this, and given the power and influence of street committees in land transactions in Marconi Beam, beliefs and attitudes concerning the power of street committees to choose the buyer in Joe Slovo Park were explored in 13 group sessions (see question 27 in appendix B2). The groups totalled 46 people comprising 25 males and 21 females.

Two groups indicated that community based structures should possess the power to screen newcomers to the community. One such group, comprising six males indicated that street committees should be empowered to decide to whom a person might sell their house in Joe Slovo Park. Similarly, the second group comprising two females indicated that this is how things happened in Khayelitsha where one of the respondents had lived (i.e. street committees screen new entrants to a suburb), so it would probably be the same in Joe Slovo Park. The remaining eleven groups indicated that they believed that street committees should have no power to screen or select the buyer at all. Most of these groups indicated that street committees might perhaps play a role in witnessing a transaction in land rights. Four groups held strong negative attitudes to any street committee involvement^{xxxix}. Two of these groups were familiar with formal property transactions. The one group indicated that a seller would go to a lawyer and the other group indicated that the seller would go to an estate agent. A third group indicated that a seller would go to the registration office, the street committee would have no say in the matter.

It follows that the tenure rules vesting the choice of buyer in the broader Marconi Beam community was not desired as a formal property option by the majority of the respondents. An individually owned parcel is what people desired which a family or an individual could manage and enjoy free of overriding local community powers. The notion that the MBDT should have a twenty year buy back option, which is what two MBDT trustees believed would happen, did not emerge in the discussion in any of the group workshops that followed these interviews. Moreover, there was a generally held belief that the power of street committees should be curtailed once the community had moved to Joe Slovo Park. In general their role should be limited to that of witnessing a transaction, if they were to play any role in the land tenure system at all.

What is significant is that in the one group which stated that street committees should screen newcomers to the community, this belief was based on prior experience elsewhere in Cape Town in Khayelitsha. In the other groups where there was prior experience of living in areas where land was registered in ownership, the emphasis was on using formal structures and institutions and exclusion of street committees from land transaction processes.

8.5.1.2 *Inheritance and family rights*

Beliefs about inheritance were not homogenous. The desire to have title to an individual parcel existed, but Marconi Beam residents held conflicting beliefs and attitudes concerning an individual's right to alienate a house bequeathed to him or her and the rights of the rest of the immediate family in the event that a landowner died in Joe Slovo Park. Views ranged from extremes of complete full and free ownership rights of the individual registered owner, including the rights to alienate the house by sale or by the conditions of a will, to beliefs that a house could never be sold. The

latter belief was that the house (or parcel) belonged to the family, not the individual. Individuals should have a usufructuary, or some other form of personal servitude *par excellence* or *fidei commissary* right, but not an allodial right of alienation. In essence the land should be held in perpetual usufruct or similar tenure form.

This issue was put forth to a total of 12 groups comprising a total of 35 people. Six of these groups mentioned the existence of a will or “a form you fill in”.

The groups leaning towards individual ownership were five groups comprising fourteen people that responded that if the husband in whose name the house was registered died, then the wife would inherit the house. Most of these indicated that the wife would be entitled to sell the house. One group said, “The wife would first have to consult the family before she sold, but the family would have no comeback if the wife sold the house without consulting them.” A slightly more family tenure oriented response from another group was that the wife should inherit if the husband dies. In this group it was stated that: “the wife should be able to sell if the children are young, but not necessarily if the children are older. If the eldest child wants to continue to live in Cape Town then the house must be transferred to the eldest child, even if it means that the wife then cannot purchase a house elsewhere.”

One group comprising five men believed that some form of family ownership should exist in perpetuity. A number of members of this group reiterated that “The house may never be sold, it belongs to the family”. Other groups showed that there are conflicting beliefs about family versus individual ownership. Different individuals in different groups (group responses were not homogenous) responded that the house should be inherited by one of; the eldest son, or the eldest child, or the youngest child. One respondent indicated that there would be hierarchy of heirs written in the will. The wife would be at the top of this hierarchy, then the eldest child and then other children. The author interpreted the response as implying that the will should define some form of personal servitude *par excellence* (e.g. usufruct, *habitatio* or *usus*) or *fidei commissum* in favour of the wife. However, if necessary the wife would be empowered to sell the house. Another respondent indicated that: “The house would be inherited in terms of a form you fill in. But if the daughter inherited the house and then sold it, the brother might react very strongly.”

8.5.1.3 Analysis: tenure type(s)

The interviews and workshops showed a universal desire for a single parcel owned by a household unit. A communal form of tenure was not desired, although two groups did indicate that street committees should play a role in screening new entrants to the community. There were differing beliefs, attitudes and intentions expressed concerning the power of the registered owner relative to the rest of the family. At the one extreme was the belief that a house may never be sold. Although it may be legally owned by the family member in whose name it is registered, *de facto* ownership vests in the entire family (which may be ill defined). Individual family members' rights are limited to a form of personal servitude *par excellence* or a *fidei commissum*. At the other extreme is the belief that the *de jure* registered owner has the power to deal with the property as he or she chooses, subject to external controls (e.g. family law).

8.5.2 Boundaries and Spatial Organisation

Individual tenure with non-ambulatory or static boundaries was the overwhelming want expressed in the interviews and group sessions. Encroachment, no matter what the cost to the encroacher to remove the offending structure, would be intolerable. The notion of a topological system in Joe Slovo Park did not arise in any of the group sessions or the key-informant interviews.

Based on the results indicating encroachment in Brown's Farm, the concept of static, non-ambulatory boundaries and negotiable, topological boundaries was explored. In examining this issue, attitudes and behavioural intentions concerning encroachment were examined, noting that the majority of encroachments in Brown's Farm were into the road reserve. Consequently beliefs and attitudes to public land and encroachment were explored too. Finally, given that most of the respondents were aware of the existence of beacons or boundary monuments, the knowledge of mathematical relationships between monuments was explored. Furthermore, beliefs concerning who should replace monuments if they were destroyed or removed was explored.

This last question indirectly explored whether land administration should be a community-based function or external to the community? Prior to the commencement of the research, there had been proposals in various professional meetings and workshops proposing the use of semi-skilled community surveyors who would be involved in maintaining boundaries in informal and semi-formal settlements. This research explored if the concept of community based land administration workers had been examined by the community at all and if such a system was desired.

The above issues were explored using questions 23, 24, 25 and 26 in appendix B2 in interviews of all nine key-informants and in 15 group sessions. There were a total of 61 respondents, 28 female and 33 male. Models were used to simulate events and behaviour between neighbours in the group sessions. Respondents were asked how they would know where the boundaries to their parcel in Joe Slovo Park were. Moreover, how would they react if a neighbour built an encroaching structure into their property? Who should put the monuments back if they were removed and what were their beliefs and attitudes to encroachments into the road reserve?

All the key-informants were aware of some form of monumentation marking out the site. Five of the nine were aware of steel pegs. Three offered the knowledge that measurements establish the positions of these pegs. One indicated that someone must take measurements when sites are handed over to ensure that the dimensions between the pegs are correct. All the key-informants indicated that encroachment would not be accepted. One indicated that an encroachment of less than 30cm would be acceptable, but the attitude of the remaining key-informants was that even the smallest encroachment was unacceptable. They stated an intention to eject the encroacher and the offending structure in the event that a neighbour built an encroaching building or fence onto their parcel. Most of the key-informants indicated the need for an external authority to resolve a dispute over boundaries and to establish the correct positions of the boundary monuments. One respondent indicated that one would go to a lawyer to re-establish beacons and resolve disputes. Four others indicated they would go to the

street committee, two of whom indicated the committee would appoint someone to resolve the problem or perhaps the local authority or a court.

Models were used in conjunction with the questionnaire sheet in the group sessions in which a total of 52 people participated on these issues. Of the fifteen group workshop sessions, in only two of these sessions were group members unsure how boundaries would be marked. The remaining groups indicated that there would be “pins” (12 mm iron pegs), stones or wooden pegs at the boundary apices. One person indicated that in the Transkei one marked out one’s property with stones when it was allocated, and one would do something similar in Joe Slovo Park. Another person indicated that “it is something you trip over, an iron”.

Attitudes to encroachment were strongly negative. All the groups, barring one where the two people were largely unaware of land ownership matters, indicated that no encroachment (0 cm) would be tolerated. In two groups the author followed up by asking what the respondents would do if a neighbour mistakenly encroached by only 1cm. The response was that they would still eject the encroacher on the grounds that: “If you allow 1 centimetre today, then tomorrow it will be more”. Two other groups indicated that even if the neighbour had built a R20 000 wall, they intended to order the removal of the offending structure even if the encroachment was done in error^{x1}.

All the groups indicated that boundary monuments demarcate the extent of a parcel of land. All of them indicated that it was unacceptable to build into the road reserve, although one key-informant stated that “if a person can get away with it then good luck to them”.

There was a belief that people external to the community should establish boundaries and adjudicate disputes. Four groups indicated that one would need to get a land surveyor in to re-establish boundaries or adjudicate in boundary disputes. One person stated that one needed a land surveyor “otherwise there will be a big fight (in the case of encroachment)”. One female had lived in Khayelitsha and had observed people having to move after the land surveyor adjudicated a boundary dispute. Four groups indicated that one should go back to the original contractor or the person who put them in originally. Another group indicated the municipality would appoint someone. One group indicated that the street committee would appoint someone to investigate the problem.

8.5.2.1 *Analysis: boundaries and spatial organisation*

From the above it is inferred that firstly the belief system is that individual parcels are appropriate in Joe Slovo Park. Non-ambulatory or static boundaries are desired and the responses indicated that fixed, monumented boundaries are appropriate. Attitudes to people external to the community determining the layout of the sites, placing the monuments at the boundary apices and adjudicating disputes over boundaries are positive. None of the respondents indicated a desire for the community to be involved in these processes, other than the need for street committees to call in an appropriate person.

Attitudes to encroachment by a neighbour were strongly negative. All the respondents stated an intention to eject the encroacher and order him or her to remove the offending structure, even if it was at great cost. However, in the author's opinion, the intention to order the removal of an encroaching structure even if it encroached by 1 cm may not translate into actual behaviour. This may be symptomatic of cramped space in Marconi Beam and competition for space in Marconi, which translates into a strong negative attitude to encroachment. However, it does indicate that there is a want for a system where boundary monuments can be replaced within a reasonable zone of uncertainty of the lawful position of the boundary apex (see Simpson and Sweeney 1973: chapters 6 and 7).

In terms of the theory of reasoned action this strong negative attitude to encroachment and the stated intentions to eject the encroacher does provide stronger evidence of static boundaries being appropriate than merely a belief that pegs demarcate the boundary.

The evidence suggests that the system of fixed boundaries used in the existing South Africa cadastral survey system are appropriate. Beliefs, attitudes and stated behavioural intentions support this. However, the evidence does not indicate that general boundaries are inappropriate or that attitudes to them would be negative. Respondents' beliefs are clearly biased by their experience of pegs in South African cities or stones as markers in the Transkei and Ciskei. Moreover, a few of the respondents were aware of the role of the surveyor in placing and replacing these monuments and ordering people to move encroaching structures when such a situation arose. The concept of negotiable, topological boundaries was not supported at all.

8.5.3 Registration

The evidence indicates that the residents of Marconi believe that registration is the most appropriate instrument to support claims to rights in land. The type of registration system (title, deed or private conveyancing) was not considered. However, the research shows that Marconi residents believe that some form of documentation is at the top of the hierarchy of evidence in affirming land rights.

Questions 20, 22 and 27 in appendix B2 explore registration and other instruments and processes as means of affirming rights of ownership. The issue was put to eight key-informants and fifteen groups for discussion. Respondents were asked how a person would prove that they own a house in Joe Slovo Park if another person, perhaps fraudulently, claimed that the occupant was not the legal owner(s) and that someone else owned the house. Secondly, in the case of a transaction, how would the seller prove that he or she owned the house, and how would they prove that they were entitled to sell it? How would the buyer prove that he or she owned the house? Lastly what were the beliefs and attitudes relating to a local level registration system or local level registry? Should the Marconi Beam community administer land registration once residents had moved to Joe Slovo Park? If not which institution should be responsible for this?

The above issues were discussed with eight key-informants and in fifteen group sessions. All the key-informants and fourteen of the fifteen groups indicated that there

should be a document indicating who owns the house. One group indicated the symbolic delivery of the keys and possession of the keys was the primary evidence.

In the case of challenge to the validity of ownership, where perhaps the validity of the document was challenged, two key-informants indicated they would go to a lawyer and two others said they would go to some form of government office. One key-informant indicated that he would go to the bank. Two groups indicated that they would call in the street committee. One key-informant indicated that in addition to going to a lawyer and possessing a document, possession of the keys to the house was also important.

Of eleven groups with whom the issue of a dispute was raised, two groups indicated that they would go to a lawyer, and five to some form of government office. Two groups indicated that the street committee would resolve the matter. The reasons for going to some form of government office varied. One group's reason was that the government office should have a copy of the original record or a record on computer to prove that the owner's document matches the government record. The owner's identity number should be on these records. Another group indicated that the date on the owner's copy should match the "office's" copy. A second reasoning was that if you had paid your rates and service fees, the local authority would know that you are the legal owner.

In the case of a sale of a land parcel, respondents were aware that the documents should be transferred to the buyer. Respondents were not familiar with details of the land registration process though. The responses indicating how the transfer process would be executed included: "I would go back to the person who originally issued the document"; "a lawyer will draw up the contract"; "the bank will assist in the process of selling the house"; and "the street committee will witness the sale and sign the documents".

Respondents were ambivalent about a local level registry administered by the community. However, what was clear from the group discussions was that external power and influence over such a system should be in place, even if it was sited in Joe Slovo Park and members of the community were employed to run it. Some groups were strongly against the idea. One group indicated that they believed Joe Slovo Park should be different, they wanted "a legal person" in control. Three other groups indicated that they would be happy if the members of the Marconi Beam community ran the office provided there was external management, such as the local authority or a professional manager.

8.5.3.1 *Analysis: registration*

The interviews and group sessions indicated a general belief that the process of land registration using a document as a record of rights in land should be the primary evidence underpinning claims of ownership. The written legal document enjoyed strong support. In the author's observation of the group sessions and the interviews, the set of beliefs and attitudes to the document appeared to be similar to those concerning the monuments marking out a boundary. Possession of the document as a physical object appeared to be important. The author's analysis of the group workshop

sessions is that the document is important as an icon that symbolises land ownership in a similar manner to the boundary monuments being important in demarcating the spatial extent of the proprietary unit in land.

Overall attitudes to the use of a document such as a registered deed were interpreted to be strongly positive. Moreover, the general intention was that the document should be used and amended or replaced when a transaction in land takes place. Negative attitudes or beliefs that a registered document is inappropriate or inferior to other tenure support mechanisms were not observed.

8.5.4 Dispute Resolution

In terms of the evaluative framework developed in chapter 3, dispute resolution follows from the discussion on tenure definition, registration and boundary types. Conflict situations were used to test the validity of monuments and title deeds as appropriate instruments to support tenure security. As discussed in the sections above, in some groups there were negative attitudes to street committees being involved in the land transaction processes and dispute resolution. For example some groups indicated that “you go to court or to a lawyer, not the street committee” in the case of a dispute. In cases of boundary disputes, two respondents who had experience of the role of surveyors in demarcating boundaries mentioned land surveyors. Other groups indicated that street committees should fulfil a dispute resolution function.

In Marconi Beam, in terms of the internal rules street committees had the power to determine who might purchase or inherit a shack and an entitlement to formal property. This particular role of the street committees was tested to determine how much power respondents believed that they should have in Joe Slovo Park. Question 27 in appendix B2 investigated the power of the street committees to determine new entrants to the Joe Slovo Park community. The issue was put to one individual and thirteen groups. All the groups but one indicated that the street committee should have no influence whatsoever in determining new entrants to a house or the community. One group indicated that they may have some influence but did not specify what. One individual indicated that the street committee would be empowered to witness a sale but not veto it. However, he believed the street committees should have the power to evict people and sell their house to someone else. As discussed earlier, the respondent from Khayelitsha indicate that street committees had this overriding right to determine new entrants where she came from and the same thing would probably occur in Joe Slovo Park.

8.5.4.1 Analysis: dispute resolution

Overall many respondents believed that street committees would still be necessary in dispute resolution, but that their powers would be substantially curtailed in comparison with the powers that they held in Marconi Beam. Attitudes to street committees retaining the power to influence the choice of new entrants were strongly negative. Moreover, amongst other persons and institutions, the courts, lawyers, land surveyors, the police and the local authority were identified as people who would

resolve disputes in many groups, with the street committees role perhaps facilitative or extinguished completely.

8.5.5 Summary: Joe Slovo Park

There is conclusive evidence indicating that individual bias toward a single parcel owned allodially by a household unit is homogenous. Group and individual biases in land tenure within the household or family unit are heterogeneous in that they exist on a continuum between group and individual biases. Family or household ownership vests in the entire family (which may be ill defined) and *de facto* individual family members rights are restricted to a form of personal servitude par excellence or a *fidei commissum*.

Using the model of the theory of reasoned action (excluding subjective norms and perceived behavioural controls embodied in the theory of planned behaviour), the beliefs, attitudes and intentions point to the existing cadastral system's instruments and processes being appropriate to the wants of the community. That is the monuments demarcating the boundaries are viewed positively and stated intentions are that encroachment over the legal boundaries will evoke removal of the offending object. Furthermore the mathematical evidence defining the position of these monuments is believed to be important in cases of dispute over the position of an object that may be encroaching over a boundary or in reconstructing the most likely position of a boundary. The title deeds and the process of registration are believed to be superior instruments and processes supporting land tenure security. Lastly, the beliefs and attitudes concerning the involvement of land professionals, lawyers and land surveyors, and government institutions in defining and maintaining the system(s) of land rights and resolving disputes are positive, especially compared to the involvement of community based institutions.

On this basis, in terms of research in MIS described in chapter 3 (e.g. Miller 1989), there is a persuasive argument to consider the cadastral system as effectively supporting land tenure security in Cape Town's Xhosa-speaking communities. However, as the discussion of the context of the research suggests in chapter 1, the respondents in this study may not have the volitional control to the extent that the system is used as it is designed to be used. Moreover, the data from Brown's Farm and the eastern metropole show that in other Xhosa-speaking communities the cadastral system is not being used in the manner that land administration authorities intended.

8.6 PRIOR EXPERIENCE OF CADASTRAL SYSTEMS

This section investigates the issue of prior experience that was discussed in chapter 3. According to Taylor and Todd (1995) prior experience of a system is likely to result in a closer fit between perceived behavioural controls and actual behavioural controls. Tenure in place of origin was explored to see if there were major differences in the way land is held and occupied in the particular areas where the respondents came from. The majority of residents in Marconi originally come from the Transkei and Ciskei regions of the Eastern Cape Province. As discussed in section 8.4, a number of

respondents did have prior experience of the role of lawyers and land surveyors in formal land tenure in other parts of South Africa where they had lived previously.

As discussed earlier in this chapter, the objective behind this part of the investigation was not an in depth comparison of instruments and processes that support land tenure in the Transkei/Ciskei regions of the Eastern Cape and the existing cadastral system. A detailed comparison of tenure-cadastral system interrelationships in these regions and those in Cape Town's Xhosa-speaking communities is a separate study in itself. It was an investigation into prior experience based on Taylor and Todd (1995) study of information systems, discussed in chapter 3, arguing that knowledge gained from past experience should help to shape intention. Moreover, their empirical work yielded that prior experience provides a more realistic match between actual behavioural controls and perceived behavioural controls. Also, what prompted the investigation into Taylor and Todd's theory and empirical work, was that Ngeze (pers. com.1996) had indicated that a similar system to the Brown's Farm rental system existed in the Transkei and that it was easily understood. Given that it was not possible to explore this in Brown's Farm, the issue was explored in Marconi Beam.

Due to time constraints in the interviews and group sessions, prior experience of cadastral systems amongst Cape Town's Xhosa-speakers was explored in Marconi Beam, but not the other case studies. It has been assumed that establishing that Xhosa-speakers have prior experience of cadastral systems improves the validity of the data relating to stated intentions to use or not use the cadastral system.

The issues in questions 29, 30, 31 and 32 in appendix B2 were tested as open-ended questions in the key-informant interviews. Thereafter in the 16 group sessions, people were asked if certain processes existed in their village in the Transkei or Ciskei regions of the Eastern Cape.

The responses indicated that residents in Marconi Beam had experience of processes and instruments that were similar to those of South Africa's cadastral system. The respondents indicated that in most of the rural villages in the Transkei and Ciskei from which they originally hailed, a chief or a headman allocated land. In some villages a community board of elders (one respondent referred to them as a street committee) may be involved in this process. The local magistrate may also be involved in this process. In some villages, that appear to be rural isolated villages, respondents indicated that there is no involvement by the magistrate nor is there documentation to support claims to land rights. However, in most villages the magistrate issues a rent card to landholders, or keeps a rent book, and villagers pay a monthly rental to the magistrate. Boundaries of individual plots are demarcated by stones or fence posts. There were often gaps between (residential) plots. In the event of a dispute, one of or a combination of the chief, headman, magistrate and a council (community board) of elders would be called in. (An attempt was made to get respondents to rank the importance of calling in people, but intuitively the results were regarded as unreliable). Where documents exist, all respondents stressed the importance of a document and the boundary stones in affirming a person's claims to land rights.

It was evident that group and individual biases in land tenure varied from place to place too. In some villages it was not possible to sell land to a stranger, it could only

be passed onto other members of the family. If a person left the village, the land would revert to the community and be reallocated to someone else. In other villages, one could sell land to a stranger.

8.6.1 Analysis: Prior Experience

In conclusion, in general the cadastral instruments and processes described in the Transkei and Ciskei are similar to those used in Joe Slovo Park. It is legitimate to conclude from the data that Marconi Beam residents had prior experience of similar instruments and processes, especially documents from the government (magistrate's rent card) and boundary monuments that would influence their behaviour and perceptions of controls on behaviour in Joe Slovo Park. Some of these influences were stated directly: For example one key-informant stated that in Joe Slovo Park, the records would be something similar to the rental document she has from the magistrate in the Transkei. Concerning boundaries, another respondent in a group remarked that in rural areas there are stones marking the boundaries, and in Joe Slovo Park there will be something similar.

The tenure system in Marconi Beam also does demonstrate varying, and not necessarily consistent, influences of tenure systems in the Transkei and Ciskei. For example, in Marconi whether a shack and an entitlement to a site in Joe Slovo Park reverts to the community for reallocation or is inherited by family members outside the community was not clear. Moreover, street committees, although differently constituted in that they are elected, play a similar role to a council of elders or a community board. However, as described earlier, the bias toward individualisation in Joe Slovo Park was very strong.

In conclusion, an in-depth comparison between the tenure system in Marconi Beam residents' place of origin and the system that prevailed in Marconi Beam falls outside the scope of this study. What the interview and workshop data do show is that Marconi Beam residents had prior experience of processes and instruments that are similar to those that have subsequently been used in Joe Slovo Park. In terms of the discussion on prior experience in section 3.3.3, it is concluded that the data in section 8.4 that were gathered in the interviews and group workshops are founded upon experience of instruments and processes that are similar to those of South Africa's *de jure* cadastral system. In terms of Taylor and Todd's (1995) thesis, these data can therefore be regarded as reliable and the conclusions drawn can validly be used to predict the type of behaviour that can be expected in Joe Slovo Park if social conditions are stable. As stated in section 3.3.3, direct experience should result in a stronger, more stable behavioural intention - behavioural relationship (Ajzen and Fishbein 1980). However, if warlords, gangs or political organisations intervene in the land tenure system in Joe Slovo Park as was the case in Brown's Farm, then the actual behaviour of Marconi Beam residents may not match their stated intentions.

8.7 CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS

This section draws together the analyses of the various sections in order that the data may be compared with that of Brown's Farm and the eastern metropole. In each sub-

section, the situation that existed in Marconi Beam when the interviews were conducted is analysed first and then the beliefs, attitudes and intentions relating to the system of tenure wanted in Joe Slovo Park is analysed.

8.7.1 Land Tenure and the Hypothesis

As with Brown's Farm and parts of the Xhosa-speaking sections of Cape Town's eastern metropole, Fourie's (1993) social change model can be used to describe the tenure system in Marconi Beam. In terms of the main hypothesis stated in section 1.4, land tenure in Marconi Beam had strong overriding group biases. However, the tenure system desired in 1996 for Joe Slovo Park by Marconi Beam residents was substantially different as there was a general want for a system of tenure based on individual parcels with the group influences that prevailed in Marconi Beam substantially diminished. At the end of the data collection and monitoring period in mid-1998, many Marconi residents had been allocated individual parcels and approximately 10% of them had been registered in the Deeds Office. However the discussion in section 8.1.3 shows that at that early stage the group biases in tenure, carried over from Marconi Beam, existed in Joe Slovo Park.

The discussion in section 8.3.1 shows that in Marconi Beam conflict and competition for land, resources and power was continual between elements within the community and between the community and the local authority. Internal rules and procedures for the settlement were established and agreed upon under the auspices of the general community. The interviews and workshops also show that in general these rules were generally known and understood. However, the data also show that the rules were manipulated by certain factions and individuals and often ignored or overturned. For example, street committees did not or could not prevent people building shacks onto land that had been designated as road. Moreover, the various factions changed continually and people representing the land administration authorities and other land professionals were not always sure of the composition or identity of various factions in the community. Agreements between the institution representing the community, the MBDT, and the authorities were continually manipulated as the legitimacy of the MBDT was continually challenged. Moreover, the evidence of certain land professionals indicates that certain MBDT trustees allowed additional people into the settlement in spite of being party to agreements to the contrary with the local authority. Analysing the above in terms of Fourie's (1993) social change model, the data show that there were simultaneous, fluctuating patterns of fission and integration as well as ongoing transactional behaviour.

Beliefs and attitudes to space in Marconi Beam in 1996 varied between people fiercely defending the exclusive use of a parcel of land that they had fenced off, to people who had exclusive use of the space occupied by a shack and the space between the shacks was common property. The few people in the former category fenced their parcels according to monuments that had been placed by Milnerton Municipality. It is speculated that they had fenced off these parcels when there was a possibility of them being granted permanent rights to parcels in Marconi Beam. Most of the people who fell in the latter category appeared to have arrived in Marconi Beam later than those who had fenced off parcels. For these people the issue of permanent land rights in

Marconi Beam was no longer on the agenda in negotiations between the community and the land administration authorities.

The 1996 research described in section 8.4.1 shows that the general beliefs, attitudes and behavioural intentions of respondents toward the system of land tenure desired and the instruments and process to support it in Joe Slovo Park were substantially different to the existing tenure practices in the Marconi Beam. The desire for individual parcels of land owned by individuals or households was universal. The beliefs concerning the powers of the registered owner to manage the land relative to those of the rest of the family or household were not homogeneous. Beliefs ranged from extremes of complete full and free ownership rights of the individual registered owner, including the rights to alienate the house by sale or by the conditions of a will, to beliefs that a house could never be sold. The latter belief was founded on the principle that the land belonged to the family, not the individual. Individuals should have a usufructuary right, or some form of personal servitude *par excellence*, or *fidei commissary* right but not allodial ownership incorporating the right of alienation. Statute law administered and enforced by formal government institutions, as opposed to local community custom using street committees, to resolve disputes was seen to be desirable for most residents although some respondents did believe street committees should play a role once formal property was delivered.

Overall the research shows that the tenure system that existed in Marconi Beam in 1996 supported that part of the main hypothesis in section 1.4 that states that: “*the land tenure system in Cape Town's Xhosa-speaking communities comprises elements of both individualised tenure and group tenure rights.*” However, the social research encompassing key-informant interviews and workshop sessions with Marconi Beam residents in 1996 revealed a strong desire for an individualised form of tenure, free of overriding group rights outside of the family or household. Under ideal, stable circumstances, a cadastral system such as the existing one in South Africa should effectively support such a system of individualised tenure.

The results from the Marconi Beam study are in harmony with those of the eastern metropole and Brown's Farm. There was a desire for ownership as the ideal form of tenure wanted. *De facto*, there were many group influences in the tenure system and most of the aspects of the social change model was found to apply in all three studies.

8.7.2 Cadastral System and Land Tenure

In harmony with the evidence of Ntshidi and that of the key-informants in Brown's Farm and the eastern metropole, the workshop sessions and the key-informant interviews indicated that a system of individual tenure supported by a formal cadastral system is what was wanted by Marconi Beam residents when they were to be moved to Joe Slovo Park. As discussed in section 8.5.2, non-ambulatory or static boundaries were desired and the responses indicated that fixed, monumented boundaries are appropriate. Respondents indicated that encroachment would not be tolerated.

8.7.2.1 Registration

In the Marconi Beam case study, land registration was found to be a legitimate process to affirm rights in land in the system of tenure wanted by respondents. Prior experience of Marconi Beam residents of systems that are similar to the existing formal cadastral system should ensure that the responses relating to intentions to use land registration and cadastral boundaries in future should be a reliable predictor of actual usage of the cadastral system in future. However, this reasoning is tempered by significant non-usage of the local registration system of expectative rights in Marconi Beam itself. In this sub-section, the local registration system in Marconi Beam is analysed and compared with Brown's Farm and the eastern metropole first. Then beliefs, attitudes and intentions relating to land tenure and land registration in Joe Slovo Park in future are discussed.

The interviews and group workshops were conducted in 1996 prior to when conflicts over the allocation of rights to land in Joe Slovo Park became apparent to the author. Similar to Brown's Farm, the local registration system used a combination of documents and social processes where street committees verified that a buyer or heir was entitled to take transfer of an expectative right and witnessed the transaction. Unlike Brown's Farm, there was no official representative of the local authority to administer the process. This was done by the MBDT staff.

The information system ended up being inaccurate with the result that the validity of the entire process of land delivery was challenged for a variety of reasons. Firstly there is evidence of inadequate quality management in the original adjudication and thereafter failure of any organisation other than CONDEV to accept ownership of the processes of maintaining an accurate record. In the end the people and institutions (external to community) who were responsible for handing over the sites in Joe Slovo Park only recognised the names on the original register of names created in 1994 and the CONDEV register. The MBDT office, as the owner of the land in Joe Slovo Park, adjudicated whether persons whose names did not appear on this original register were entitled to land in Joe Slovo Park. A range of social processes and written records, the notebook of transactions described in section 8.3.5 and the rent cards, were used in these adjudications. A record of land transactions had been written in a book. If names did not appear in this book, then street committees were supposed to verify that a legitimate transaction had taken place. However, given that street committees had not managed to prevent people from building shacks in the roads in Marconi Beam nor manage the process of moving people to Joe Slovo Park, it is likely that this situation was manipulated. Ultimately challenges to the manner in which this process was managed by the MBDT led to factions in the community forcing the MBDT office to close in 1998.

Comparing Marconi Beam to the other studies, the hypothesis posited to explain non-usage of the rental registration systems in Brown's Farm and the eastern metropole are tested in the ensuing discussion. As with Brown's Farm and the eastern metropole, in Marconi Beam informal sales or transfers to strangers and family members and incorrect original adjudication and registration were also largely responsible for the inaccuracy in the local records held by the MBDT. In Marconi Beam this situation was exacerbated by poor operations management of the local registration system. In addition to the issues relating to the management of the local registration system

discussed above, the following hypotheses are analysed as underlying the non-usage of the local registration system by the community.

- 1) *High costs or impedances in using the local registration system discouraged residents from using it;*
- 2) *A culture of non-compliance with local or national government systems, rules and regulations that carried over from boycotts and revolutionary activities in the 1980's;*
- 3) *Attitudes to land registration systems are positive, but landholders believe that it is not necessary to register every transaction in land and the implications of using or not using land registration are not fully understood;*
- 4) *Residents may not have used the system as they saw no benefit in using it;*
- 5) *Residents may have avoided using the system to hide the transaction from factions within the community such as street committees for a variety of reasons.*
- 6) *Street committees, political organisations or gangs control land and have evicted people and allocated the land to other people without ensuring that the land administration authority's (MBDT) records reflect the change in occupation or ownership.*
- 7) *Land is held de facto as family land or in joint tenancy or ownership. If the head of house separates from his or her spouse or common law partner and leaves, the household remains in residence without updating the records.*

No evidence emerged in the Marconi Beam case study to support hypotheses 2 and 7 above.

In terms of hypothesis 1 above, as with Brown's Farm and the eastern metropole, no evidence emerged in Marconi Beam to suggest that the local registration system of expectative rights was not used because of the cost of the system. There were no monetary costs involved in using the system. This shows that the costs may discourage landholders from using cadastral systems, but that there are other factors that motivate landholders not to use it too. In this research, costs have not been a variable in determining if a cadastral system is to be used or not.

The data do not support hypotheses 3 and 4 above. All the respondents in the key-informant interviews and the group sessions understood how the local registration system worked. All the residents in the sample who participated in this component of the study understood how the system of transactions in expectative land rights worked and the need for these transactions to be recorded.

Hypotheses 5 and 6 may underlie certain transactions not being recorded in the MBDT office. However, data was not acquired that support or negate these hypotheses, although it is speculated that given the two types of tenure that existed in Marconi Beam they may well be valid. It was in the interests of residents who did not enjoy expectative rights of a parcel in Joe Slovo Park to acquire such rights by whatever means possible.

In relation to future land tenure wants, there was a general belief that the process of land registration using a document as a record of rights in land should be the primary evidence underpinning claims of ownership in Joe Slovo Park. A written document

that enjoys legal status as a record of the owner's details enjoyed strong support. Moreover, the author's analysis of the group workshop sessions is that the document (title or deed) is important as an icon that symbolises land ownership in a similar manner to the boundary monuments being important in demarcating the spatial extent of the proprietary unit in land. This finding is in harmony with those in the eastern metropole (see section 7.3.2.1).

In terms of research in management information systems, the validity of the responses should be strengthened as a predictor of behaviour if respondents have prior experience of using a system. The Marconi Beam study confirms what was speculated in Brown's Farm in section 6.3.2.2 and supported by the life history described in section 7.1. Cape Town's Xhosa-speakers have prior experience of cadastral systems. Firstly, the system of records in Marconi Beam used processes and instruments that are similar to those of the South African cadastral system and respondents understood the system and held positive attitudes toward it. Secondly, most of the respondents in the social survey had prior experience of using documents and boundary monuments in the Transkei or Ciskei or in other urban areas of South Africa.

In conclusion, the interviews and group workshop sessions in 1996 showed that residents understood the local level registration system and were positively disposed towards it. In terms of the theory of reasoned action, the local level system should have been effective and the responses to questions indicated that the formal system of cadastral surveying and deeds registration should be effective in Joe Slovo Park in future. However, this case study shows that when the integration side of the social change model applies to a particular situation, the cadastral system can be overridden by social processes when rules and procedures are manipulated by different factions within the community. Moreover, the substantial changes taking place in the macro-environment arguably diminished the local authority's power to intervene in Marconi Beam. In an ideal stable state, the Marconi Beam case study suggests that the cadastral system will be effective, but that certain factors may cause landholders not to use it, in spite of a general want for such a system and stated intentions to use it.

8.7.2.2 Boundaries

The Marconi Beam case study is not suitable for direct comparison with Brown's Farm and the eastern metropole because few boundaries existed in the informal settlement. The interviews and group discussions do allow some of the hypotheses posited in chapters 6 and 7 to be tested. Moreover, it was the first case study where it was possible to measure attitudes and beliefs concerning the system of boundaries wanted in future.

The Marconi Beam study supports the hypothesis that:

A system of monumented fixed boundaries or stationary general boundaries as opposed to a topological boundary system is appropriate to the tenure system wanted by residents of Cape Town's Xhosa-speaking communities.

In terms of the system desired in Joe Slovo Park, the interviews and group discussions indicated that a system of fixed boundaries is appropriate and encroachment would

not be tolerated. There was no data to indicate a want for a topological boundary system. The reasons for Xhosa-speakers not adhering to surveyed boundaries in other Xhosa-speaking areas of Cape Town were not explored in Marconi Beam. Issues such as contractual encroachment were raised with in the eastern metropole in chapter 7 and in Imizamo Yethu in chapter 9.

To an extent, the circumstances in Marconi Beam support the following hypothesis.

Individuals may not be able to define or defend the parcel boundaries that were originally allocated to them because the group over-right (integration) is stronger than the individual bias (fission) (Davies 1998:38);

A small sample of early residents fenced off parcels pegged by the Milnerton Municipality in Marconi Beam. However, in general this layout was not adhered to. It became impossible for street committees to prevent residents from building shacks in areas that the Milnerton Municipality had laid out as streets.

8.7.2.3 Conclusions

The set of interviews and group discussions in the Marconi Beam case study confirms the hypothesis put forward by various officials in the eastern metropole and Brown's Farm that in general Xhosa-speakers hold positive attitudes to the formal system of cadastral boundaries and deeds registration. Moreover, under the right conditions, such as in the 12000 parcels that had been developed privately in Khayelitsha (see section 7.2), the formal cadastral system is likely to be used effectively. However, the Marconi Beam case study also shows that in a volatile situation, agreements and formal systems can be manipulated for the benefit of certain individuals and factions within the community. This manipulation diminishes the effectiveness of the cadastral system to the extent that it becomes one of a range of systems used to uphold the land tenure system. This hypothesis may partially explain why boundaries were not adhered to in Brown's Farm and why there was a $\pm 20\%$ inaccuracy in the rental scheme register in Khayelitsha.

What was different in Marconi Beam to the other case studies thus far reported was that there was no effective quality management of the local registration system. Consequently, the inefficient management of the system in Marconi Beam is a major cause of the records being inaccurate. This was not found to be the case in Brown's Farm or the eastern metropole.

An issue that was not resolved in the Marconi Beam case study was that approximately twenty people had been registered as being entitled to a house in Joe Slovo Park, had filled in the NHF subsidy applications and then not turned up to take delivery of their parcel in Joe Slovo Park. Dlodlu's belief that some people that Cape Town is not home but rather the Transkei or Ciskei may explain this phenomenon in part, but it was not explored in any depth in this research.

8.7.3 Land Policy

The Marconi Beam case supports Lawrence's (pers. com. 1999) submission outlined in section 7.3.3 that the achievement of the land policy objective of equitable, just and secure land tenure is not possible in a single step. Even when individual parcels had been delivered and were being registered, group structures controlled aspects of the tenure system.

In terms of land policy objectives, at the macro-level the Marconi Beam case demonstrates similar characteristics to the situation in Brown's Farm described in section 6.4.3 and Cape Town's eastern metropole described in section 7.3.3. The generally agreed rules that were established by the community were just and equitable. However, the situation was manipulated due to volatile conditions within the community and external institutions such as the municipality lacked legitimate power to intervene in a rapidly changing macro-environment. The group biases in land tenure were not strong in the context of the discussion in section 7.3.3. No evidence emerged to suggest that residents had to show allegiance to a particular group to ensure their continued occupation of land in Marconi Beam. Such allegiance may have been necessary for a person to gain access to the settlement in the first place but this is speculative, as there is no data to support this conjecture. What the interviews and workshops did reveal though was a desire to live an environment where the power of group structures within the community is substantially diminished and social justice is administered by the State.

8.7.4 Land Administration

In harmony with the findings in section 6.4.4, at the micro-level the local registration system in Marconi Beam showed that land administration and the cadastral system are often inextricable. The system of registration of Marconi Beam residents to be moved to Joe Slovo Park was supposed to be maintained by the MBDT office staff. Moreover, the MBDT office staff were supposed to keep the database of NHF applications up to date.

There were essentially two different information systems. The first system registered a right to a parcel of land in Joe Slovo park, irrespective of whether a person was entitled to a NHF subsidy or not. The second system was established to administer NHF subsidy applications. When the information system relating to land rights became inaccurate, the database of NHF applications was used by CONDEV as the basis for allocating land in Joe Slovo Park. In this way a system designed to administer housing applications was used to allocate land. This system became the local level registration record. The original system was maintained separately by recording transactions in a book. However, the information in the system maintained by CONDEV was used to finally allocate land, albeit that it was not originally designed for this purpose. The entry of a person's name in the CONDEV database depended on their name being on the original 1994 register. If not then CONDEV relied on the MBDT to make a decision on whether a particular applicant for a housing subsidy was entitled to a land parcel in Joe Slovo Park. The MBDT used a range of processes such as the record in the hardcover book plus the testimony of street committees and the testimony of the seller of a shack to establish the veracity of a particular claim to land in Joe Slovo Park.

8.8 SUMMARY OF ANALYSIS AND CONCLUSIONS

In summary, the Marconi Beam case study entailed exploring the tenure system that prevailed in Marconi Beam and the instruments and processes that sustained that system. The beliefs, attitudes and intentions of a cross section of the community who were destined to be allocated land in Joe Slovo Park were explored in key-informant interviews and group workshops. This aspect of the study also investigated the land tenure system envisaged in Joe Slovo Park and the role of the existing formal cadastral system in upholding this desired form of tenure. Lastly the case study entailed monitoring the translocation of Marconi Beam residents to Joe Slovo Park up to the initial registration of residents.

The study of the tenure system in Marconi Beam supports the part of the main hypothesis that land tenure in urban Xhosa-speaking communities comprise both individualised and group rights. Furthermore social change theory was also found to validly describe conditions in Marconi Beam. Conflict was inherent between the community and external actors such as Milnerton Municipality and the landowner, and between factions within the community itself. The data show that the activities of fission and integration and transactional or entrepreneurial behaviour were all present in this case study.

The social research showed that the tenure system wanted in Joe Slovo Park was one based on individual parcels that are owned by individuals or families. Moreover, monuments to fixed boundaries and a written legal document (deed or title) should affirm tenure. The elements of the theory of reasoned action, these being beliefs, attitudes and behavioural intentions, showed that the existing cadastral system's instruments and processes should effectively uphold the desired tenure system and that the cadastral system is likely to be used to affirm rights in land. Attitudes to encroachment and land grabbing were strongly negative. Attitudes to group rights that prevailed in Marconi Beam, such as street committees determining to whom a shack owner might sell, continuing in Joe Slovo Park were strongly negative. If they were to play any role at all, the power and influence of such group structures should be substantially diminished. Some respondents envisaged that street committees might play a diminished role in dispute resolution.

However, actual behaviour was slightly different from that envisaged by respondents in the social surveys. When registration of land was taking place in Joe Slovo Park in 1998, group structures still maintained a powerful influence. Moreover, there was evidence of people attempting to sell their houses at below the cost price to return to the Transkei and one senior official suspected that informal sales had already taken place in mid-1998. However, these were isolated cases at that stage and further monitoring of the situation over a long period is required to draw reliable conclusions.

In terms of the theory of planned behaviour, the stated behavioural intentions may not match actual behaviour because of control factors that were not perceived by residents of Marconi Beam. However, in terms of the discussion in section 3.3.3, the stated intentions should be gauged as reliable. Most of the respondents had prior experience of instruments and processes that are similar to those of the cadastral system before

they lived in Marconi Beam and they had had experience of them when they lived in Marconi Beam. Therefore respondents should have had a reliable understanding of the nature of a number of control factors that would discourage them from using the formal cadastral system.

The local level registration system used to administer land rights in Marconi Beam was not effective in that it was not used to record all transactions in land rights. However, it still fulfilled a considerable role in upholding rights in land. The system relied upon residents of Marconi Beam adhering to a set of generally agreed rules and procedures, but there was insufficient information to administer these rules. The system was used in a manner that is similar to one of deeds registration which allows private conveyancing. Street committees witnessed a land transaction and the symbolic delivery of the rent card from buyer to seller, but not all such transactions were recorded. In this way the system can be likened to one of private conveyancing. A number of such transactions were recorded in book in the MBDT office. In this way the system was also similar to a basic form of deeds registration. Ultimately allocation of land in Joe Slovo Park was based on a database used to record NHF subsidy applications. Conflicts surrounding the accuracy and legitimacy of this register were resolved using a range of social processes and the records kept in the MBDT office. This register formed the foundation for affirming land rights. Social processes were used to trace the lineage of off-register transactions and establish the legitimacy of these transactions.

There are a number of reasons why this system was not used in the manner intended. Firstly there was no clear owner of the processes involved in adjudicating and registering people originally and no clear directive as to which institution should maintain the register. Secondly there is evidence to suggest that informal transfers took place outside of this register. Thirdly both the local authorities, the elected community leadership and the street committees lacked the legitimate power to enforce certain decisions. Actions by these power structures could spark off mass protest as is evidenced by periodic toyi-toying against the MBDT during this research and mass protest action against the Milnerton Municipality prior to 1996. Even though the general community may have regarded the local registration system as legitimate, it was not possible to prevent members of the community contravening the rules and manipulating the rules to suit their own ends.

The Marconi Beam findings are in harmony with those of Brown's Farm and the eastern metropole. Individual tenure based on ownership using a system of fixed boundaries is what residents indicated that they wanted in an ideal future state. Respondents also indicated that they wanted official affirmation of their rights in land, and minimal community intervention in the system. A system of boundary monuments and a system of documents to affirm rights in land was desired. Moreover, residents intended to use the cadastral system in the manner that land administrators intend it to be used. These findings confirm the data obtained from officials and a life history in Brown's Farm and the eastern metropole. However, actual behaviour in the Marconi Beam informal settlement showed that the system of records was one of a range of instruments and processes used to uphold the system of land tenure in the settlement. This indicates that under volatile circumstances, where the social change model

describes social conditions in a settlement, the cadastral system may not be used in the manner intended by land administration authorities.

The Marconi Beam case study has fulfilled the informal settlement case study requirement stipulated in section 5.2.1. It has provided insights into the instruments and processes that underlie tenure security during the informal settlement stage and during the transition from informal land rights to ownership. Moreover, it has provided insights into how people intend to make use of a cadastral system that's purpose is to support residents' formal land rights. It has filled a gap in the data provided by officials and land administrators in the eastern metropole in that it is the first case study where it was possible to interview residents. Where issues between different areas correspond, the findings in Marconi Beam are generally in harmony with those of Brown's Farm and the wider eastern metropole. A complex mixture of formal and informal instruments and processes upheld *de facto* land tenure in Marconi Beam. In the ideal future state, residents intended to use formal instruments and processes with group structures playing a minor role, if any role at all. It was not possible to draw direct comparisons with the various hypotheses posited to explain non-usage of the rental registration systems and non-adherence to surveyed cadastral boundaries in Brown's Farm and parts of the eastern metropole. Other than poor management of the local cadastral system used to administer expectative rights in Marconi Beam, other reasons for non-usage of the local registration system could not be reliably established. Chapters 9 and 10 describe the results of the remaining two case study types stipulated in section 5.2 where it was possible to interview residents.

ENDNOTES

ⁱ Cited by Saff (1996).

ⁱⁱ The Milnerton racecourse was closed down during the course of this study, but the original invasion of the site was closely linked to employees at the racecourse.

ⁱⁱⁱ Clark 3 February 1997, a senior official at Blaauwberg Municipality and formerly of Milnerton Municipality responsible for Marconi Beam.

^{iv} Lawry 17 August 1998. Had been involved in the Marconi Beam Development Trust since 1994 on the basis of 20 years experience in low-cost housing construction.

^v Gray 6 October 1998. Senior official, Blaauwberg Municipality and former Milnerton Municipality, former MBDT Trustee.

^{vi} MBDT trustees and residents of Marconi Beam.

^{vii} John Edgar, 22 September 1998. Project Management Consultant for Rabie/Cavcor, the landowner and property developer.

^{viii} Jones, 5 October 1998. A senior official at Blaauwberg Municipality and former Milnerton Municipality who had worked with the Marconi Beam registration.

^{ix} Gage, CONDEV employee involved in project management and allocating sites in Joe Slovo Park.

^x Cited by Saff (1996:243).

^{xi} Nel 2 October 1998. Former employee of Development Action Group (DAG), Cape Town.

^{xii} Cited by Saff (1996:244).

^{xiii} Note that there is some uncertainty in these figures, particularly those digitised on screen using rectified imagery. A major difficulty in a densely populated settlement such as Marconi Beam is for the operator to identify the individual shacks. Shacks often share a common roof and the same shack can use several different types and colours of roofing material.

^{xiv} See Mason *et al* 1997, Barry and Mason 1997.

^{xv} See Barry and Mason 1997.

^{xvi} The Chittenden/Urban Foundation study did not count the number of shacks.

^{xvii} Edgar indicated that he had received 870 names on his list from Milnerton Municipality. Crone (1997) indicated that in 1996, there were 870 entries in the Housing Information System database (HIMS) that DAG had put together for Marconi Beam.

^{xviii} On a site visit on 4 August 1998, the transit area still had a substantial number of shacks. An aerial photograph of Edgar's at the time revealed between 600 – 700 shacks on the site. In a discussion with two female residents, it was clear that they were new arrivals on the Marconi site. Neither had an entitlement to land in Joe Slovo Park or du Noon, but they indicated they were hopeful of obtaining such a right.

^{xix} Nora Walker, 31 October 1999. NGO Executive.

^{xx} Erna Middel, 20 August 1998, Conveyancer, H Mohammed and Associates. Ms Middel was responsible for registering the Joe Slovo Park properties.

^{xxi} Dlodlu, Ntini 16 October 1996.

^{xxii} Lawry 17 August 1998.

^{xxiii} Lawry, 17 August 1998, indicated that the Steering Committee had not identified itself. Gray, 6 October 1998, later identified the faction. Gray noted that a major problem with the Trust was legitimacy and the power to make decisions. Charismatic "leaders" easily turned the community against the Trust. "Every agreement with community was broken, since 1991. There was no incentive to stick to an agreement, people are also desperate." Gray observed that intimidation had been a major problem throughout, even in the formal housing in Joe Slovo Park. Staff were often intimidated by one individual who had the power to agitate residents into marching and toyi-toying against the Trust on seemingly minor issues. At times staff were scared to go to the Trust office.

^{xxiv} Welcome Mbang.

^{xxv} The assistance of Dudley Horner of South African Labour Development Research Unit at the University of Cape Town is acknowledged.

^{xxvi} Gender bias was minimised in that the sample comprised five males and four females.

^{xxvii} Discussions on site with Beate Lohnert who provided assistance with group session methods and structure.

^{xxviii} A 2nd order transformation as opposed to a linear transformation was selected to partially compensate for the significant lens distortion effects in the digital still video imagery.

^{xxix} Sue Binedell.

^{xxx} According to de Soto, the expectative property right has no specific equivalent in the legal world. In Peru this right is first based on the physical presence on the land. Next it comes based also on the censuses which people conduct to certify their possession of the land and thus reduced the need for their constant physical presence to protect challenges to their occupation. Later the expectative right is based on the authorities own activities (de Soto 1989:23-24). Analysing this concept, the powers of attached to this expectative right increase over time. The Marconi Beam case study mirrors this model. In 1990 residents could expect to be evicted and have their shacks physically removed. In 1994, they could expect to be granted ownership of a parcel of land in a nearby suburb.

^{xxxi} In 1998, the author discussed this issue with two people who clearly had recently moved into Marconi Beam. Both of them indicated that they did not have a right to land in Joe Slovo Park or du Noon, but they were hoping to obtain such a right.

^{xxxii} Dikana, Dlodlu 6 September 1996.

^{xxxiii} Cited by Saff (1996:249).

^{xxxiv} This principle was stated in a number of the interviews and group sessions.

^{xxxv} Field notes, 26 November 1996.

^{xxxvi} Khala, 10 February 1997.

^{xxxvii} Yalwa, 18 December 1996.

^{xxxviii} Sigudla, 26 February 1997.

^{xxxix} Bandile Mtshatsha, a research assistant, indicated that while doing interviews for another researcher, he encountered some strongly negative attitudes to street committees too. He indicated that some respondents believed that street committees tended to favour their friends.

^{xl} The figure of R20000 was used, as this was the approximate cost of creating a serviced parcel and building a rudimentary house in Joe Slovo Park at the time.

CHAPTER 9

IMIZAMO YETHU: HOUT BAY

9.0 INTRODUCTION

Imizamo Yethu, meaning “through collective struggle”, is a site-and-service scheme situated on 18 hectares of land made available by the former Western Cape Regional Services Council to accommodate squatters in Cape Town’s suburb of Hout Bay. Hout Bay falls in a valley bordering the ocean and, barring three roads into the valley, is isolated from other Cape Town suburbs by the surrounding Table Mountain range mountains (see figures 1.3 and 9.1). Nathan and Spindler (1997) observe that until the last decade, the valley was predominantly rural with large tracts of agricultural land on the margin of cultivation. However, rising land values induced rezoning and subdivision, and the area has rapidly developed as an upper middle class urban area. Employment opportunities are mainly in the local fishing harbour, formal sector construction around the valley and tourist and commercial activity centred in village type clusters (Nathan and Spindler 1997:5-6). Despite the trend toward housing development, Hout Bay has maintained a rural atmosphere.

As discussed in chapters 1 and 5, Imizamo Yethu was selected as an additional site-and-service scheme because it was not possible to interview residents of the Brown’s Farm site-and-service scheme. The main purpose of the research in Imizamo Yethu was to interview residents of the settlement to obtain a complete set of data from site-and-service schemes. These interviews were conducted in June 1997 and thereafter the site was monitored up to October 1999. Although other meaningful case study data were collected, in terms of the research design the original emphasis in this case study was on measuring the beliefs, attitudes and behavioural intentions of the community with respect to the existing cadastral system.

In addition to the interviews of residents in Imizamo Yethu, key-informant interviews were conducted and an overlay analysis of an aerial survey of occupation patterns on the surveyed cadastral layout was carried out. This latter exercise examined if the same encroachment patterns that prevailed in Brown’s Farm were also characteristic of Imizamo Yethu. Furthermore, descriptions by key-informants and documentary evidence provided historical data, which explain some of the phenomena observed.

It was not possible to monitor the Imizamo Yethu settlement up to registration. The last key-informant interview was conducted in October 1999 while readjudication of residents entitled to be granted ownership of the surveyed parcels on which they resided was in progress. It was not necessary to monitor Imizamo Yethu through to registration for the purposes of this research on the basis that the case studies have provided more data than was originally stipulated in the research design in sections 1.5 and 5.2. Imizamo Yethu is one of three cases that were studied prior to registration. Two of these had proceeded to registration by the time the research had been completed. Most of the parcels in Brown’s Farm had been registered by October

1998 when data collection for the purposes of this research in that case study had ended. In Marconi Beam the first registrations had taken place by the time the research of that case study was closed at the end of 1998.

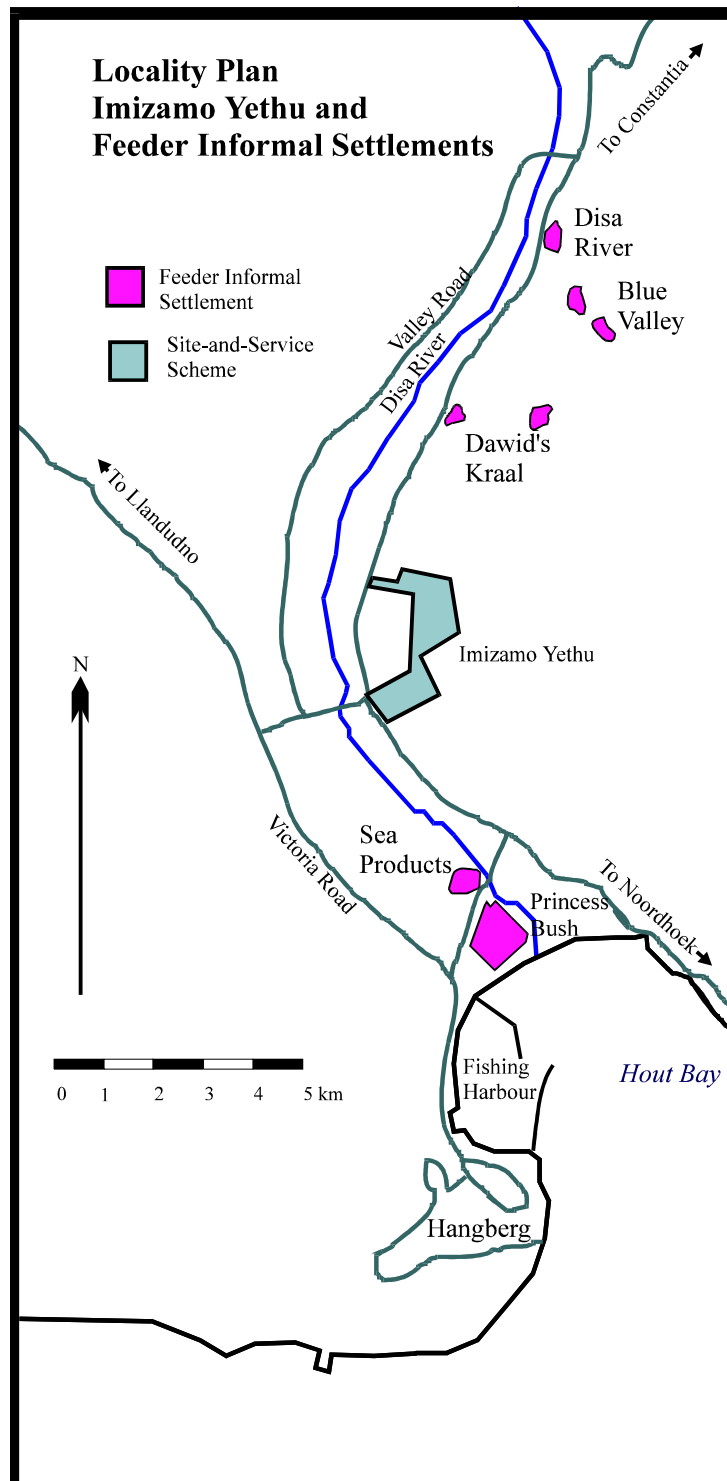


Figure 9.1 Imizamo Yethu Locality Plan

Source of base map: Gawith and Sowman 1992.

9.1 HISTORY

Until the 1950's, the land in Hout Bay was used primarily for agricultural purposes. Under apartheid racial segregation policies the Hout Bay urban area was zoned as a white residential suburb in terms of the Group Areas Act 41 of 1950, as amended, with the exception of the area above the harbour which was zoned for occupation by Coloureds. Most of this Coloured community worked in the harbour (Zille 1990)ⁱ.

9.1.1 Informal Settlement in Hout Bay

The subdivision of farms as a result of growing urbanisation of the area displaced a large number of labourers, most of whom were Coloured, whose families had resided in Hout Bay for many years. These became the "traditional squatters" who had a long association with the land in Hout Bay (Zille 1990)ⁱⁱ. In addition the need for labour in the harbour attracted black migrant workers who were precluded from ownership or secure leases by group areas legislation.

Squatting occurred sporadically in pockets for more than fifty years (see figure 9.1). Initially the effects were minimal on the existing white middle class community as squatting occurred along the Disa River banks and in the backyards of corporate accommodation supplied by the fishing industry. However by late 1990 more than 2000 people lived in five informal settlements, the largest being Princess Bush and Sea Products near Hout Bay harbour. Other smaller settlements developed at Disa River, Blue Valley and Dawids Kraal. Residents of these settlements came from the harbour area, from other settlements on the Cape Flats and from rural areas (Gawith and Sowman 1992).

Collective action by informal settlers to obtain legal property rights and the reaction to the informal settlements from existing property owners in Hout Bay forced the authorities to make formal property available for the informal settlers. Forestry land at Imizamo Yethu was made available in late 1990 and 429 sites were occupied as from March/April 1991 (Gawith and Sowman 1992, Oelofse 1994). These were registered "squatters" and the site was regarded as a transit area while the formal layout in the same vicinity was being planned (see appendix D2). Planners at that time (May 1991) envisaged 700 parcels being created for 2400 people. However, by May 1992, there was pressure from the community for more land as squatters and new arrivals were laying claim to the buffer zones around the settlement (Nathan and Spindler 1997:37). By June 1997, an estimated 5000 people occupied the settlement and surrounding green belt areas (Mabhai pers. com. 1997).

Surveying and demarcation of parcels commenced in 1993. Two general plansⁱⁱⁱ were surveyed and approved by the Surveyor General for registration purposes. Phase I comprising 195 parcels was laid out before residents occupied these parcels. Phase III, comprising 123 parcels was surveyed as people were settling on the site (see appendix D2). (Phase II had not been surveyed by October 1999.) In phase III, in cases where people had already assembled their shacks such that they encroached over the formally planned boundary, the household was supposed to move the shack to conform to the legal boundary that the land surveyor had set out (McSweeney pers. com. 1997). Up to

1999, further surveying of new parcels was held up until the authority that had recently taken over administration of Imizamo Yethu, the South Peninsula Municipality (SPM), had comprehensively assessed the situation (Paton pers. com. 1998).

9.1.2 Administrative Authority

During the data collection period for this research, the South Peninsula Municipality administered Imizamo Yethu. Nathan and Spindler (1997) note that several national, provincial and local authorities had previously administered Imizamo Yethu. Administration of the Imizamo Yethu settlement passed through two central government ministers (Sam de Beer until January 1991, then Leon Wessels until 1992), then to the Cape Provincial Administration (Administrator Meiring). After the national and provincial elections in 1994, administration passed to the Provincial Administration of the Western Cape (Minister Gerald Morkel in 1994; who was elected in April under the new interim Constitution) and then to the nominated Interim Hout Bay Local Council (formed under the Local Government Transition Act 209 of 1993 as amended in January 1995). Finally, after the local government elections in May 1996, Imizamo Yethu fell under the jurisdiction of a newly created local authority, the South Peninsula Municipality (Nathan and Spindler 1997:27). It should be noted that each change resulted in a different physical location of the administering authority with different personnel having to take responsibility for the settlement, albeit that there was a local administrative office in the settlement itself. Given the impermanence of these relationships, there was little incentive for a particular authority to commit funds and human resources to the settlement.

The issue of the existence of Imizamo Yethu was a contentious issue with long standing property owners of Hout Bay. A liaison committee consisting of representatives from Hout Bay formal property owners, members of a committee that represented the residents of the informal settlement, local politicians and the Cape Provincial Administration (CPA) was set up as a forum to address issues relating to the planning and development of the settlement (Oelofse 1996:279). However, this liaison committee was dissolved at a meeting with Provincial Minister Morkel when he relinquished Provincial Administration responsibility for the settlement in 1994, pending the formation of the Interim Hout Bay Local Council (Nathan and Spindler 1997:38). In the community itself, representatives of the South African National Civics Organisation (SANCO) filled most of the leadership positions in a community committee elected to represent the residents of Imizamo Yethu (Oelofse pers. com. 1998^{iv}, Mabhai pers. com. 1997).

Lack of continuity in local government is arguably the main reason why registration had been delayed in Imizamo Yethu. Compared to Marconi Beam and Brown's Farm, the land administration institution responsible for Imizamo Yethu changed several times and the people who held executive responsibility for the settlement changed continually. In the case of Brown's Farm and Khulani Park, and to a lesser extent Marconi Beam, most of the local government officials had remained in their positions or changes in staff in the relevant organisations had been sporadic.

In Imizamo Yethu, the Cape Provincial Administration had set up an office on site to administer the settlement. This was later taken over by Communicare, a private organisation which administered the office on behalf of the Provincial Administration and each successive administrative authority until the SPM took over administration of the on site office in 1998. In contrast to Imizamo Yethu, in Marconi Beam, Brown's Farm and Khulani Park the structure of the local authority had changed once in the 1990's that change being at the time of the local government elections in 1996.

9.2 DEMOGRAPHICS

As stated in section 9.1.1, in 1997 Imizamo Yethu had a population of approximately 5000 people on both formal, serviced parcels and informal land (Mabhai pers. com. 1997). The demographic profile in Imizamo Yethu differs slightly from the other case studies. The majority of the Imizamo Yethu community members are Xhosa-speakers from the Eastern Cape and there are a number of Coloured people who hail from the historical Hout Bay squatter communities. There are also a number of informal settlement dwellers from other parts of Africa such as Namibia, Angola and Zaire living in the buffer zone of Imizamo Yethu. One hypothesis posited by a number of observers is that these people from other parts of Africa entered the country illegally having docked in Hout Bay harbour in fishing trawlers (Nathan and Spindler 1997:6, Oelofse pers. com. 1997, 1998, Paton pers. com. 1998).

9.3 RESEARCH METHOD

The following data collection methods were used in Imizamo Yethu.

9.3.1 Key-informant Interviews

Key-informants external and internal to the community were interviewed. These included SANCO members living in the settlement who worked in the community office, two of whom were involved in the original land allocation. Discussions were held with them from time to time. The land surveyor who surveyed the site, a number of other land professionals involved in Imizamo Yethu, researchers and provincial government and local government officials also provided valuable information.

9.3.2 Aerial Mapping

Mapping of shacks using 1:10000 stereo imagery flown in December 1994 was overlaid on the legal cadastral maps of phases I and III. At that stage an insufficient number of fences had been constructed to draw meaningful analysis and so only shacks were mapped. Gildenhuis (1997) established ground control to a suitable precision on the national geodetic control system using GPS (see section 6.2). Mapping was done on the Zeiss Topocarte/Adams analytical plotter by an experienced operator (Binedell) and the overlays on the cadastral layout generated in ArcView3 software. Drawing on the results obtained in Brown's Farm in section 6.2, the planimetric accuracy of well-defined points was assumed to be of the order of 0.5 metres.

9.3.3 Structured Interviews

Twenty-five structured interviews and group discussion sessions were held in June 1997 with a total of 42 registered home occupants. Eleven of these were individual interviews and the remaining 33 respondents were interviewed in small groups using the interview sheet in appendix D1. This interview sheet is based on appendices B1 and B2 and, as with Marconi Beam, the research was conducted qualitatively by the author with the assistance of an interpreter.

To ensure that the sample was not biased by a large proportion of unemployed persons, the interviews were conducted at night and over weekends. To reduce spatial bias in the sample, at least one interview was held in each block in the formal layout of the settlement (see appendix D2). Gender bias is considered to be insignificant, as the sample comprised 24 females and 18 males. The sample contained a total of 9 Coloured people, which is probably a reasonable reflection of the demographics of the settlement. One female Coloured respondent was married to a Xhosa-speaking male. Another respondent had worked for Communicare in the local settlement office.

The groups interviewed were small (average 2.3 persons per group). Interviews were held in people's homes and most groups comprised spouses and other family members, and on occasion visitors who happened to be in the shack at the time of the interview. Interviews were conducted if there was an individual at home or if there was a group of people in a shack who were prepared to be interviewed.

In the remainder of this chapter, an interview of community members means an interview of an individual or a group. The results from the interviews and group discussions have been reported as the response of the group as opposed to a number of different individual responses, unless there were conflicting responses from different group members. If the latter situation arose, the conflicting responses of individuals have been reported. Small group interviews and individual interviews were deemed to be sufficient because the issues to be explored in this research had been established in a set of three long group workshops and key-person interviews in Marconi Beam. The questions to be asked and the most likely responses to them had been established in the research of Marconi Beam by the time the research in Imizamo Yethu commenced.

9.4 DATA COLLECTION AND ANALYSIS

9.4.1 Adjudication and Tenure Type

9.4.1.1 *Original adjudication*

This section discusses the systems to establish and maintain rights in the settlement. Beliefs and attitudes to the formal registration system are discussed in section 9.4.3.

The Cape Provincial Administration (CPA) administered the original adjudication of people entitled to a site in Imizamo Yethu. The CPA created a register of residents in the five feeder informal settlements who were entitled to a site in Imizamo Yethu and issued each household with a document indicating when they would be moved to Imizamo Yethu^v. Residents were first moved from the five informal settlements to a transit area in the Imizamo Yethu site, from where they were to be moved to formal sites commencing in 1992. Lodgers, who were not originally inhabitants of invaded land in the feeder informal settlements, moved in as tenants of the registered households in shacks in the transit area (Oelofse pers. com. 1998).

As a result of the frequent changes in the authority responsible for administering Imizamo Yethu, it was not possible to interview officials who had been involved in this process on the ground. Moreover, the one provincial administration official who had been responsible for the CPA office in Imizamo Yethu was not prepared to be interviewed^{vi}.

In the original agreement with the provincial authorities, the CPA, lodgers in the transit area were supposed to move from the transit area to a surveyed parcel in Imizamo Yethu together with their landlords, who were entitled to a surveyed parcel. This agreement was on the understanding that any additional sites might be allocated to the lodgers once all the registered households had been accommodated. Oelofse (pers. com. 1998) indicated that, as with Marconi Beam, people entitled to a formal parcel were reluctant to take their lodgers with them. And, similar to the Marconi Beam experience, when the time came to move onto a formal surveyed site, many households left the lodgers in the transit area. Thus the informal settlement in the transit area was perpetuated after all the persons who had occupied land in the feeder informal settlements in Hout Bay had been accommodated on formal surveyed parcels.

The entitlement register was created on dBase software and maintained by various organisations over the years such as the Cape Provincial Administration. Communicare, a non-profit development company, later administered the register on behalf of the CPA (Nathan pers. com. 1997^{vii}, Trumpelman pers. com. 1997^{viii}, Swart pers. com. 1997^{ix}). The South Peninsula Municipality (SPM) took over the site office and the rental and entitlement register from Communicare in November 1998 (Paton pers. com. 1998)^x. Development Action Group and SPM conducted a new census and readjudication in 1999.

Unlike Brown's Farm and Marconi Beam, once they had occupied their surveyed sites in Imizamo Yethu, residents were not issued with a document such as a rent card or temporary title indicating that they could expect to be granted ownership of their parcel. The register was maintained in the local office, but documents were not issued by the local officials, ostensibly to discourage informal or "off register" sales. If a person wanted to sell their site, they would have to bring a letter to the local office from the community committee that the sale was acceptable and the register would be updated (Swart pers. com. 1998, Mabhai pers. com. 1997).

9.4.1.2 Local rules

Internal community rules for the sale of a shack were similar to those in Marconi Beam and Brown's Farm. Firstly, the land itself was not saleable. According to Mabhai, "You did not pay for it, therefore you are not entitled to sell it". The building materials could be sold though. As with Marconi Beam, in terms of the local community rules a person had to sell to the first person on a waiting list. A landholder was not permitted to sell to a lodger (Mabhai pers. com. 1997)^{xi}. According to Oelofse at one stage such a waiting list, a secondary register, did exist during the early history of the settlement (Oelofse pers.com. 1998). A further local rule was that each household was entitled to one parcel, landlordism was prohibited (Swart pers. com. 1997).

Management and administration of the settlement was difficult. The power of the community leadership to enforce agreements made with external authorities and the power to enforce internally agreed rules of tenure was limited. Similarly to Marconi Beam, there was an agreement struck with the CPA in 1993 that no new shacks would be built in the settlement. Oelofse (pers. com. 1998) indicated however, that the CPA expected community leadership structures to police this rule. Initially the community leaders were either unwilling or unable to do this. According to Oelofse, in liaison committee meetings, the CPA and other external committee members attempted to get the community leadership to keep people out of Imizamo Yethu. The response from the community representatives was that these people were homeless and the community had a responsibility to house them. However, Oelofse believed that attitudes and the legitimate power of the internal community leadership had changed in the settlement by 1998. By this time, the community leadership strongly supported the SPM dismantling illegal shacks in unsurveyed areas in 1998 (Oelofse pers. com. 1998).

As with Marconi Beam and Brown's Farm there were a number of competing sub-groups and conflict at times was physically violent. Swart (pers. com. 1997) indicated that he had been threatened with a gun when he had tried to prevent landlordism on one occasion. Some sub-groups practised land entrepreneurship in that rights to land in Imizamo Yethu were controlled and traded by factions in the community (Nathan pers. com. 1997, Oelofse pers. com. 1998, Swart pers. com. 1997). According to a key-informant, attempts by the internal community leadership to prevent these practices had resulted in a murder and the community leadership had been threatened.

As was the case with Marconi Beam, the power of the land administration authority (in this case the CPA) was limited in that it could not enforce agreements during the political transition of the early and mid-1990's. For example, the CPA site office in Imizamo Yethu was burnt down at least once during the CPA's tenure (Nathan pers. com. 1997, Oelofse pers. com. 1998).

Nathan and Spindler argue that in the case of Imizamo Yethu:

".. this joint failure (to enforce agreements) did not arise as much from a failure to agree on the assignment of rights, as from a failure to enforce the agreed assignment of rights. Enforcement costs for individuals in isolation were undoubtedly too high relative to enforcement benefits, while communal

and government enforcement was complicated by unreconciled competing interests” (Nathan and Spindler (1997:23).

Oelofse noted that it was not possible for the community to manage and police the influx of new residents into Imizamo Yethu. Oelofse observed that this issue was contextual in terms of external structural factors that existed at that time. “During the (initial part of South Africa’s) transition, there was a policy vacuum and a legislation vacuum wherein it was difficult (for land administration authorities) to make decisions. Moreover the police did not have legitimacy (to enforce the law in the settlement) and the squatters had a lot of power.” (Oelofse pers. com. 1998). Moreover, in Oelofse’s observation (in the period leading up to 1998), there was space available for unauthorised squatting on the periphery of the settlement.

However, as discussed earlier in this sub-section, by 1998 the structural factors had changed so that the community leadership and the land administration authorities were invested with more power to administer the settlement. At the macro-level, national land tenure policy in the form of the White Paper of 1997 was in place and the actions of the land administration authorities in policing the settlement enjoyed greater legitimacy. At the settlement level, there was little space available for unauthorised construction of shacks. Paton did note however that the SPM did have conflicts with the community leadership over administration of the settlement as the community leadership attempted to assert a right to appoint people who should work in the settlement. However, there was no resistance to the activities of the SPM officials, whom Paton referred to as the rangers, once they commenced their duties (Paton pers. com. 1998).

In conclusion, in the early, volatile history of the settlement, neither the authorities nor the elected community leadership enjoyed sufficient legitimate power to enforce agreements between the community leadership and the authorities, nor could they enforce adherence to the internal rules of tenure that had been established for the community. A hard line approach carried the real risk of fomenting social unrest, as was evident in the burning of the site office. Later, as the situation stabilised, the community leadership acted in partnership with the South Peninsula Municipality in enforcing agreements and internal rules.

9.4.1.3 *Inheritance and family rights*

In the interviews and group discussions, the issue of inheritance was explored (see question 9 in appendix D1). Respondents were asked what had happened when people had died in Imizamo Yethu. Should the heir to the land be entitled to sell the shack without the possibility of being overruled by other members of the community? The question explored the current situation in Imizamo Yethu. Although the interviews were held prior to registration of ownership in the Deeds Office, some of this data could be used to infer the beliefs, attitudes and intentions relating to inheritance when the land is registered. For example, when respondents indicated that a house may not be sold for 100 years, this has been interpreted to mean that the respondent(s) was aware that the house would be held under registered ownership in the near future.

Mabhai (pers. com. 1997) indicated that in terms of the local rules, land was inherited in the site-and-service scheme by the family. In the event that the head of house died, the register in the local office would be changed to record the name of the new head of house, whether they be male or female. In his experience, there had been one case where a person had died in a fire. SANCO had called in the family from Khayelitsha, who did not want the parcel, and so the local officials reallocated the parcel.

The issue of inheritance was raised in 22 interviews. None of the respondents was aware of internal family disputes arising out of inheritance. One respondent had purchased her shack from her sister in law who had been widowed and indicated that there had been no internal family problems with this arrangement.

As with Marconi Beam, beliefs about family tenure and inheritance were not homogenous. Building on the research in Marconi Beam, the issue of inheritance and family tenure was explored in more depth in Imizamo Yethu than in Marconi Beam. Six interviews ($\pm 25\%$) yielded a result indicating that the person in whose name the parcel is recorded in the local office should not need the permission of other family members to dispose of it. In these cases the bias was toward individual tenure (e.g. ownership) being vested in the person whose name was recorded on the local office register, or on a title deed.

At the other extreme, six interviews ($\pm 25\%$) yielded the belief that the house should be inherited by the family and could never be sold. In these interviews, one respondent indicated that such a sale should never happen “not even in a hundred years - it (the house) belongs to the family”. Two respondents indicated that such a sale could perhaps happen in a hundred years but not fifty years time.

The remaining nine groups ($\pm 50\%$) indicated that the children would inherit the house and it could be sold providing there was general consent within the family. The family was defined to include children and the cousins in four of these interviews, whereas in one session cousins were explicitly excluded from this definition.

A mother and son were interviewed in one session in a case where the father had died recently. The mother indicated that her name was on the local office register, but she would not be able to sell the house without the permission of her son. In the event that she did sell the house without his permission, the son indicated that he would go to the office to try to resolve the matter. He believed that the local community office would force the new owner out and return the house to the family.

In summary, the beliefs about inheritance and the power of the person in whose name the land was officially recorded differed substantially. If the assumption that the data collected in Imizamo Yethu in 1997 validly infer what the situation will be when the land is registered in ownership, then approximately half of the sample of respondents favour an heir to a land parcel having to consult the family prior to alienating that parcel. One quarter favour the registered landholder having absolute power without having to consult, The remaining quarter believe that the registered landholder has a form of usufructuary tenure where the land belongs to the family and is not alienable.

9.4.1.4 Evictions

The issue of people being evicted from the community was raised in thirteen interview and discussion sessions. Based on item 10 in appendix D1, respondents were asked to relate their experiences of evictions in Imizamo Yethu. If respondents were unaware of evictions, then they were prompted that perhaps people might have been evicted for committing a crime or some other anti-social act.

No evictions in the formal property section of Imizamo Yethu were reported by any of the respondents. One group indicated that people had been evicted from the Princess Bush informal settlement prior to the creation of Imizamo Yethu. Two groups indicated that people who had erected informal shacks on the periphery of the settlement had been “chased away” for committing crimes. Two different groups indicated that it was possible for the community to “chase someone away”. However, along with eight other groups, they believed that the police should handle crime. At the time of the interviews, June 1997, there was a community-policing forum in place which liaised with the Hout Bay police station. Moreover, when the author witnessed the results of a violent incident in Imizamo Yethu in August 1999, members of the community called the police to handle the matter.

Oelofse (pers. com. 1998) indicated that she believed some of the Namibian and Angolan settlers had been harassed by Imizamo Yethu residents when they first arrived. However, Oelofse believed that by September 1998 these foreign nationals were generally accepted in the community.

In summary, people had been harassed in Imizamo Yethu, but there was no evidence of people being evicted physically. At the time the interviews were conducted in 1997, the majority of respondents believed that external agents such as the police were the legitimate authority to handle anti-social behaviour. This was not the function of groups within the community.

9.4.1.5 Summary: adjudication and tenure

It would appear that local tenure rules regarding sales of land were similar to those in Marconi Beam. The difference being that in Imizamo Yethu a waiting list of lodgers who hoped to be granted an expectative right of ownership did exist at one stage in the early 1990's. As with Marconi Beam it appears that the rule of allocating a land parcel to the next person on the waiting list was ignored or manipulated. In contravention of the internal community rules, landlordism and land entrepreneurship existed. Moreover, conflict over control over land allocation resulted in violence and murder.

Building on the findings in Marconi Beam, there were varied beliefs about the limits of the rights of the person in whose name the rights in a formal land parcel was recorded. The investigation into inheritance revealed a heterogeneity of beliefs ranging from the rights of *allodium* being vested in the person whose name the land was recorded to a partial right of occupation such as a usufruct or *fidei commissum*. In some instances, the belief was that this partial right of occupation should vest in the family in perpetuity. However, the general view was that the registered owner or

holder of the entitlement to ownership might dispose of the land if there was consensus within the family that he or she may do so.

There was a small proportion of respondents who believed that the community should have the right to evict people from the settlement. However, the majority displayed a bias toward individualism. Attitudes to a community power to evict people were strongly negative in most instances. In general the belief was that dealing with crime was a police mandate and should be dealt with as such.

As with Marconi Beam, local rules were difficult to enforce. Initially, the community leadership was unwilling or unable to implement and enforce rules that they had agreed upon with the land administration authorities. Moreover, the police lacked the legitimacy to intervene and the residents of the settlement and new squatters held substantial power. By 1998 the land administration authorities and the police enjoyed greater legitimacy. There was an incentive for the community to comply with SPM directives as a failure to do so would further delay the delivery of ownership of parcels, registered in the Deeds Office, to those who had been adjudicated as being entitled to it.

9.4.2 Boundaries

There were numerous instances of land grabbing in the settlement, although attitudes to the system of fixed boundaries were found to be positive. Mabhai had worked for the CPA when the settlement was created and he had assisted in moving residents onto their formal sites in Imizamo Yethu. He had been involved in five cases where the first arrivals on their parcels had pulled out the 12mm iron “pins” serving as monuments to the parcel apices. These monuments were either moved to enlarge the parcel or disposed of and the person(s) then built a structure that was larger than the parcel itself (Mabhai pers. com. 1997).

The 1994 aerial survey overlaid on the two general plans produced results that were similar to those of Brown’s Farm (see appendix D2 and appendix D3). In phase I, the photogrammetric survey showed that 157 parcels had dwellings (shacks) on them in 1994. Of these, 21 dominant parcels (13.3%) were interpreted to have shacks that encroached over neighbouring boundaries. Of these 21 dominant parcels, three also had structures that encroached on the road reserve or on public land. Only one of these three latter encroachments appeared to be economically motivated, as it was a shebeen. In phase III, 105 parcels had structures on them. Of these 29 dominant parcels (28%) were interpreted to have shacks that encroached over the boundary.

At the time of the photogrammetric survey in 1994, not many of the households had constructed fences yet, so these were not analysed, although the photogrammetric survey indicated that where fences had been constructed, there were additional encroachments. Site inspections in 1997 also revealed that a number of households had fenced off a portion of the road reserve and included it as part of their gardens.

Encroachment figures for shacks (13.3%) in phase I are consistent with the results obtained in Brown’s Farm (10%) and the Khayelitsha site-and-service schemes (estimated to be between 7% and 11% in section 7.2.2). However, those in phase III

are substantially different to the results obtained in phase I and the other studies. A speculative explanation is that although residents in phase III were supposed to move their structures to comply with the cadastral layout according to McSweeney (pers. com. 1997), in reality this did not take place. It was not possible to establish the reasons underlying this substantial difference between phase I and phase III. Consequently, the encroachment figures for phase III have been treated with caution as the encroachments may not be due to land grabbing rather than failure of residents to move their structures to comply with the surveyed cadastral layout.

In contrast to the results of the overlay analysis using aerial surveys, measurement of beliefs, attitudes and intentions and descriptions of behaviour in the interviews in June 1997 concerning encroachment are in harmony with the findings in chapters 6, 7 and 8. In Imizamo Yethu, a system of non-ambulatory boundaries demarcated by monuments is what is wanted. Attitudes to encroachment were strongly negative.

Question 5 in appendix D1 explores boundary definition. In line with the findings in Brown's Farm, the data from the eastern metropole and interviews in Marconi Beam, the Imizamo Yethu data support the concept of non-ambulatory boundaries demarcated by monuments at the apices of the polygons defining the parcels. In 23 out of 25 interviews and group discussions, the response was that "pins" (12 mm iron pegs) demarcate the boundaries. Two of these groups pointed out stripes that had been painted on the road kerbs by CPA staff as indicators of positions of the pegs. In the remaining two interviews, one individual and one group of four indicated that they did not know where the boundaries to their parcel were.

However, in harmony with the findings in section 7.2.2, boundary monuments tended to be stolen in Imizamo Yethu. In a follow up visit in July 1999, three landholders were asked to point out their "pins". None of the pegs were found in the positions that were pointed out to the author. At the time Mabhai suggested that they had been stolen.

Similar to the experiences reported in Brown's Farm and other site-and-service schemes in the eastern metropole, there were a significant number of boundary disputes in Imizamo Yethu. Respondents were aware of boundary disputes and encroachments. The issue was investigated in question 6 in appendix D1. Respondents were first asked if they were aware of boundary disputes. In the 21 interviews and group discussions where the issue was investigated, the response was yes in 10 of the interview sessions and no in 11 others. In the 10 interviews where respondents were aware of boundary disputes, when asked to describe the disputes, respondents said that in the case of encroachment people went to the CPA office on the site. CPA (Communicare) staff came out to inspect and measure up the dimensions of the site. If necessary they then ordered the encroacher to move the structure to conform to the boundary monuments. The author was aware of three instances where encroachers had refused to remove an offending structure. Two different respondents related a case of a shop where the community committee and the CPA staff had not been able to get the encroacher to move. One respondent said, "The committee has not been able to get the shop owner to move. People are afraid of the man." In another area of Imizamo Yethu, a respondent indicated that he had been stabbed by his neighbour in an argument over an encroachment, but he had not been able to get the neighbour to remove the

encroachment. In the third case, while the author was conducting interviews, the research team was approached by a woman who requested assistance in resolving a boundary dispute with her neighbour. In her case, the Communicare office staff had ordered her neighbour to remove an encroaching structure, but the neighbour refused to do so. The Communicare staff were reluctant or powerless to enforce their decision and according to the respondent the Communicare staff had told the neighbours to “settle the dispute between themselves”.

Respondents were asked why encroachments had taken place and what they would do if a neighbour encroached on their property. All except one of the respondents indicated that they would order the removal of the encroachment. As was the case in Marconi Beam, most respondents expressed this intention emphatically. However, further investigation revealed that under certain circumstances encroachment would be permitted.

The issue of contractual encroachment was raised in nineteen interviews (32 people). In nine interviews (17 people), respondents indicated that they would allow a neighbour to encroach if there was an agreement allowing this. In the other ten interviews (15 people), respondents were emphatic that they would not enter into such a contract and would not allow encroachment under any circumstances. In the first cluster of nine, one respondent said that if the neighbour was his friend he would allow the neighbour to encroach by agreement. When another respondent gave a similar answer, he was then asked where the boundary of his site would be in such a case. He replied that the pins were still the boundary; “that person is like my lodger and I can order the encroachment to be removed at any time”. In another interview, when asked why people would agree to encroachments, a group of one male and two females said, “If you have no money to extend your shack, you can allow someone else to build over the boundary. They don’t pay rent in this case, but one can enforce the (boundary demarcated by the) pins at any stage.” Another group quizzed on this issue comprised a male and his female neighbour. The male indicated that he would permit a negotiated encroachment, but if they had an argument, he would tell the neighbour to move.

Contractual encroachment, or encroachment by agreement is a key finding in this work. After the interviews in Imizamo Yethu had been completed in June 1997, the issue of contractual encroachment was raised with Du Toit at the end of June 1997. As discussed in section 7.2.2, Du Toit confirmed that the practice of contractual encroachment (“a gentleman’s agreement”) prevailed in Khayelitsha’s site-and-service schemes. The findings in Imizamo Yethu are also in harmony with Ngeze’s (1996) description of events in Brown’s Farm (see section 6.3.2.2).

Assuming an encroachment was not by agreement, respondents were then asked by how much they would permit an encroachment over the boundary before ordering its removal (see question 7 in appendix D1). As with Marconi Beam, models were used to explore this issue. In the 20 interview sessions where this issue was raised, one male indicated that he would allow an encroachment of up to 30cm, and a mother and son indicated that they would act if there was an encroachment by more than 5 cm. In 17 sessions, the respondents indicated that they would not allow any encroachment at all, that is 0cm.

In the one interview a contrary belief was expressed to encroachment. A Coloured woman believed that the pins were not that important. She was happy if the boundary (fences) were in more or less the right place. It did not matter if fences were moved around a bit from time to time.

Given the high number of encroachments onto streets, school sites and other public open space observed in Brown's Farm, beliefs and attitudes concerning boundaries abutting public property were investigated. The issue was explored in 20 interviews and group sessions where people were asked if they believed that they could extend their street boundary fences onto the road reserve to the edge of the tarmac. Seventeen interview responses indicated that it was both illegitimate and illegal to encroach onto the road reserve. The general norm in these cases was that a person should not build beyond one's boundary pins. One respondent indicated that building into the road reserve would be dangerous.

Three interview responses indicated that it was permissible to build into the road reserve. One female respondent indicated that a person could build up to the street as it was her property, even beyond the pins. Moreover, her neighbour had done so (this was observed *in situ*). What was unusual in this case was that this particular respondent had, in response to earlier questions, indicated that the pins formed the boundary and that under no circumstances would she allow a neighbour to encroach, not even by 1 cm. Two other female respondents in a group believed that one should be able to build into the road reserve because "it does not belong to anyone". The third response, also by a female, was the belief that one could build up to the tarmac.

This issue surrounding grabbing of public property is the only instance in this study where there appeared to be different responses between male and female. All those who believed that it was permissible to build into the road reserve were female. However, given the small sample size, there is not sufficient evidence to support a hypothesis that males and females hold different beliefs on this issue. It requires further investigation.

9.4.2.1 Summary: boundaries

In general the majority of respondents' beliefs and attitudes support the system of fixed boundaries demarcated by monuments used in the existing cadastral system. However, the aerial surveys, although not measured at the same epoch as the social surveys were conducted, revealed a substantial number of encroachments by shacks over the surveyed boundaries.

Attitudes were strongly negative to encroachment, and respondents stated an intention to order an encroacher to remove an offending structure. However, a significant number of respondents indicated that they would allow encroachment if there was an agreement between neighbours. Notwithstanding such an agreement, the belief was expressed that the *de jure* boundary remained the *de facto* boundary. The encroachment was in effect a contractual agreement where the encroacher was viewed as a lodger. The *de jure* boundaries could be reinstated at any stage. This finding is in

harmony with the evidence provided by Du Toit relating to Khayelitsha which is described in chapter 7.

As discussed in section 7.3.2.3 this concept of an encroacher being a lodger is similar to Letsoala's (1986) notion of "borrowing of land" in the traditional land tenure system of the North Sotho. to recap, in the North Sotho tenure system, land can be borrowed indefinitely by one family from another for growing crops in return for services such as ploughing the lenders' fields. In exceptional cases, such as the lender dying without descendants, the borrowers could end up owning this land (Letsoala 1986:23).

In contrast to encroachment by agreement, there was also conclusive evidence of land grabbing and refusals to remove offending structures.

One Coloured female respondent (non Xhosa-speaking), gave a response that favours the notion of topological boundaries described in chapter 2. That is, she did not mind if the fences moved around slightly from time to time providing they were "more or less in the right place".

The norm concerning the grabbing of public land was that this was not acceptable. However, there was a contrary belief by a minority of respondents that the road reserve could be fenced off for an abutting parcel holder's exclusive use. In what appears to be an anomaly in these responses, in all instances where this belief was expressed, the respondents (all female) had also indicated that the pins are monuments to the spatial extent of their land parcel. One of these respondents also indicated that because her neighbour had fenced off a portion of the road reserve, then she could do so too. This adds support to the hypothesis derived from an analysis of fencing patterns in the Brown's Farm aerial surveys (see chapter 6) and the belief expressed by Hendrickse (pers. com. 1997) relating to his experiences in Khayelitsha (see chapter 7). This hypothesis being that neighbours, perhaps out of pragmatism or the belief that "if they (the neighbour) can get away with it, then so can I", are likely to attach a fence to the neighbour's existing fence, even if such a fence is encroaching.

9.4.3 Registration and Tenure Security

Imizamo Yethu is different to the other cases studied in that no form of documentation such as a rent card to support a parcel holder's expectation of registered ownership was issued to residents. A holder of an expectative right had his or her name recorded in a register kept in the local office which was also backed up by CPA staff (Trumpelman pers. com. 1997). The reason for this practice was to discourage informal, off register sales using a *de facto* system of privately conveying a document from buyer to seller without recording the transaction on the official register (Mabhai pers. com. 1997, Swart pers. com. 1998). One respondent produced a paper instructing him to demolish his shack in the Disa River settlement by a certain date (in 1991) in order that he could be moved to Imizamo Yethu. The respondent believed that this document affirmed his rights to his particular parcel in Imizamo Yethu. In June 1997, this was the only house in which people were interviewed that was constructed of permanent materials, these being bricks and mortar as opposed to galvanised iron sheets.

There was a general belief in the community that the office record was the primary means of affirming a person's claims to a parcel. Attitudes to this system of records were found to be positive. No negative attitudes to the system were expressed. In 13 interviews and group discussions where the issue was raised, people stated an intention that in the event that their rights were challenged and they had to prove their claims to land rights they would go to the local office on site, which one respondent stated "has folders" for each site.

One respondent did express dissatisfaction with the situation whereby landholders were not given some form of documentation. He was dissatisfied that he had to rely on the office on site to prove that they held a right to ownership of their parcel. The author sensed that this dissatisfaction stemmed from the respondent not having complete trust in the system, but the issue was not pursued.

It is speculated that this dissatisfaction with not having a copy of a document to affirm rights in land may have arisen out of the risk of the official record being destroyed. At the time of the interviews, the author was unaware that the community had burned down the site office in the past^{xii}. However, in one interview, two respondents were asked what would happen if the office did burn down and the records were destroyed? The response then was that community knowledge of who occupied a particular site would then affirm parcel holders' rights. Neither of these respondents mentioned that the office had in fact burned down previously.

As stated at the beginning of this section, the rationale behind not issuing residents with a document was to discourage informal sales using a form of private conveyancing. However, this strategy was unsuccessful. One respondent had worked in the Communicare (CPA) office in the settlement. In June 1997, he was aware of approximately 15 informal sales of surveyed parcels taking place. A senior Communicare official provided similar evidence in 1997.

A census and re-adjudication of rights by the Development Action Group (DAG) was in process in 1999. At this stage DAG had become involved in facilitating the process of registering parcels in the Deeds Office. Re-adjudication of the first 300 parcels was completed in August 1999. Crozer (pers.com. 1999)^{xiii} stated that there was a mismatch of approximately 50% between the names on the list given to DAG by Communicare and the *de facto* occupants of the parcels who expected to be granted ownership of these parcels. DAG had readjudicated on the basis of getting the community to confirm that a particular household was legitimately entitled to live on a particular parcel. They had held a general meeting, published the new list of people in whose names the parcels were to be registered, and called for objections to be raised within a week of the public meeting. There were five objections raised to the new list, but Crozer was unsure of the basis for these objections as they had not been addressed by October 1999.

A further, independent census was performed in the latter half of 1998 by SPM. According to Paton (pers. com. 1998), the reason for conducting this census was that the SPM was unsure of the accuracy of any of the information on the existing registers that the SPM had inherited from the CPA and Communicare. Consequently it was not

possible for the SPM to perform its day to day fiscal administration such as delivering invoices for service fees and collecting these fees.

Crozer (pers. com. 1999) was unsure of the reasons for the substantial difference in the names on the register and the *de facto* occupants. He hypothesised that it was due to “comings and goings” between Imizamo Yethu, other parts of Cape Town and the Xhosa-speaking regions of the Eastern Cape. Swart (pers. com. 1998) indicated that he was aware of informal sales of parcels in Imizamo Yethu where sites had changed hands for between R1500 and R9000. He believed that in these cases the seller sold a parcel and then squatted in a new shack on the periphery of Imizamo Yethu or moved out of the area. He indicated that it had been very difficult to administer the situation or control informal sales. “Agreements between the community leadership and Communicare were never kept.” He also believed that a significant proportion of Imizamo Yethu residents did not want a permanent home in Hout Bay and they would rather invest in a home in the Transkei or Ciskei. This belief is in harmony with the findings in Marconi Beam described in section 8.4.3. When questioned about incorrect original adjudication, Swart also indicated that it was possible that errors could have arisen when people were moved from the transit area in Imizamo Yethu onto the formal surveyed parcels. The wrong people could have been allocated a surveyed, serviced parcel in terms of the names on Communicare’s CPA register. However, the issue had not been raised by the Communicare office.

9.4.3.1 Summary: registration

According to the author’s social survey in June 1997, the local level registry appears to be an appropriate form of supporting claims to tenure security in a situation where residents are expecting to be granted registered ownership of the parcel of land that they currently occupy. The norm derived from expressed beliefs was that the office record was the primary means of affirming claims to rights in land. Attitudes to this institutional arrangement appeared to be positive and respondents indicated an intention to use this system. No alternative means of affirming land rights was proposed in the interviews and discussions.

From this it can be extrapolated that residents believed that the formal system of registration to provide proof of ownership is appropriate. There were no negative sentiments expressed about such a system during the interviews nor were counter proposals advanced as ideas for an alternative system of supporting land tenure security.

However, actual behaviour was different to what the interviews indicated. As Crozer’s (1999) evidence of the readjudication of 300 parcels completed in August 1999 shows, $\pm 50\%$ of the names on the register were different to those of the people who were officially entitled to ownership of a parcel in Imizamo Yethu. It would appear that this inaccuracy was largely due to informal transactions in land. There was evidence of factions controlling an informal land market in the settlement. Due to the volatility of the situation during a period of Imizamo Yethu’s development, the land administration authorities were powerless to prevent informal transactions.

9.4.4 Dispute Resolution

Dispute resolution was handled by the local office in conjunction with the community committee. Unlike Brown's Farm, parts of Khayelitsha and Marconi Beam, at the time the interviews and group discussions were held in 1997, the role of the street committees had gradually dissipated in Imizamo Yethu and the functions that they performed in these other settlements had been taken over by the local office. One respondent, after being prompted, indicated that street committees existed but that there was little for them to do. None of the respondents ventured that street committees should play a role in dispute resolution. The community committee did play a role though in that transactions in land were meant to be approved by this committee before the office record would be altered.

Although the local community office did become involved in resolving disputes over boundaries and attempting to reverse informal sales of parcels to people who were not on the waiting list (e.g. landlords), they had little power to enforce their judgements. As discussed earlier, one Communicare official had been threatened with a gun. In addition, the woman who requested the author to adjudicate a boundary dispute between her and her neighbour indicated that office staff had requested her neighbour to move the part of his shack that encroached. However, the neighbour had refused to do so. The office staff had then indicated that the two neighbours should sort out the matter between them.

As discussed in section 9.4.1.2, Oelofse also observed that by September 1998 agreements were being enforced and regarded as legitimate. Two SPM officers were dismantling shacks on the periphery of the settlement. Oelofse believed that the community leadership strongly supported the removal of these shacks because by that time land had become scarce in the settlement. Moreover, community leadership structures were also implementing a form of local building regulations in that additions to shacks were monitored and approved by community leadership structures (Oelofse pers. com. 1998).

9.4.4.1 *Summary: dispute resolution*

In Imizamo Yethu, by June 1997 the role of community based institutions such as street committees evident in the other settlements had dissipated to a stage where their roles were performed by structures more resembling of the formal land administration system in areas where individual tenure prevails. Dispute resolution was handled by people external to the settlement such as the community office in conjunction with community leaders. Moreover, at the time of the interviews, the legitimacy of the police was becoming stronger as people expressed a belief that the police should handle crime and not the community. Overall when judgements relating to land issues were made, people tended to comply with these. There were however instances where people refused to comply and both threatened to use and actually did use physical force to defend their positions. However, by September 1998 the legitimacy of the land administration authorities to clear illegal shacks had strengthened and the community leadership structures supported this practice.

9.5 CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS

9.5.1 Land Tenure and the Hypothesis

As with Brown's Farm, the eastern metropole and Marconi Beam, the data from the social survey in Imizamo Yethu show conclusively that a form of tenure based on individual occupation of parcels is desired and appropriate. However, as with the Brown's Farm and Marconi Beam case studies and the eastern metropole study, Fourie's (1993) social change model applied in Imizamo Yethu during this progression toward individual ownership. Dialectics where conflict or structural tension is inherent in the social system, ongoing processes of fission and integration and transactional behaviour were evident in Imizamo Yethu. Conflict and competition within sub-groups was continual. Group biases in tenure were dominant at times, especially during a period when factions had challenged the power of the community leadership and the land administration authorities. However, the evidence suggests that there was a trend toward an individual bias in the land tenure system. The legitimacy and power of the land administration authorities increased over time as the situation stabilised and residents enjoyed a real expectation of having ownership of a parcel of land bestowed on them.

Local rules regarding sales of land were similar to those in Marconi Beam. In both Marconi Beam and Imizamo Yethu, the lodger who had stayed in the settlement the longest had first option on obtaining the expectative right in a parcel that was to be vacated. The difference between Imizamo Yethu and Marconi Beam being that at one stage Imizamo Yethu possessed a formal waiting list. However, as with Marconi Beam it appears that this rule of allocating a land parcel to the next person on the waiting list was ignored or manipulated. In a sample of 300 parcels surveyed in 1999, the register was inaccurate by 50%. There was also evidence of landlordism and land entrepreneurship.

As with Browns Farm, the eastern metropole and Marconi Beam, the data from Imizamo Yethu supports that part of the hypothesis which states that:

The land tenure system in Cape Town's Xhosa-speaking communities comprises elements of both individualised tenure and group tenure rights. In these communities, some of the existing cadastral system's processes, and the instruments generated as part of these processes, are used to support claims to rights in land. Others are substituted by extra-legal mechanisms more suited to de facto tenure in a particular situation.

The data showed that during the early part of the country's transition at the beginning of the 1990's, the community leadership was unwilling or unable to implement agreements made with the land administration authorities. Moreover, frustration and dissatisfaction with the authorities had resulted in the site office in Imizamo Yethu being burned. Over time, the legitimacy of the land administration authorities and the police improved to the extent that in 1998 it was possible for the authorities to demolish illegal shacks where previously this would not have been possible. Moreover a community police forum existed. Where previously the police lacked

legitimacy, the author had witnessed the police acting unhindered in the community in 1999.

By the time the data collection had ended in 1999, the evidence shows that the bias in the tenure system was stronger toward individual than communal tenure. In June 1997, a small proportion of respondents indicated that the community should have the right to evict people from the settlement. However, the majority displayed a bias toward individualism. Attitudes to a community power to evict people were strongly negative. In general the belief was that dealing with crime was a police mandate and should be dealt with as such. Moreover, in June 1997 respondents indicated that land related disputes were to be handled by officials, not street committees. Although street committees still existed, they played a minor role in administering the affairs of the settlement. This phenomenon is in harmony with the results obtained from the social surveys in Marconi Beam where the belief was expressed in the latter half of 1996 that although street committees had a role to play in Marconi Beam, their role should be substantially diminished in Joe Slovo Park.

9.5.2 Cadastral System and Land Tenure

In harmony with the conclusions drawn in the Marconi Beam case study, the interviews in Imizamo Yethu showed that in terms of the elements of the theory of reasoned action, the surveyed cadastral boundaries and title deeds registered in the Deeds Office can be expected to be used. However, as was the case to varying degrees in Brown's Farm, Khayelitsha's site-and-service schemes and Marconi Beam, non-usage of the local registration system that recorded expectative rights and encroachments over surveyed cadastral boundaries suggests that the cadastral system may not be used in the long term in the manner that land administrators envisage. In this section, the hypotheses that were posited to explain non-usage of registration and cadastral boundaries in chapters 6, 7 and 8 are tested against the Imizamo Yethu data.

9.5.2.1 Registration

In harmony with the findings in Brown's Farm and the eastern metropole, the following hypotheses were found to hold, although to varying degrees, in Imizamo Yethu as reasons underlying the inaccuracy, or non-usage, of the register of occupation rights:

- 1) *informal sales or transfers to strangers; and*
- 2) *informal transfers or sales to family members;*

The following hypotheses may be valid but no data were acquired to support or negate it:

- 3) *incorrect adjudication and registration of original lessees.*

Drawing on chapters 6, 7 and 8 the following hypotheses were posited as possible explanations for non-usage of the local registration system intended to record the names of household heads who were entitled to ownership of the parcel that they occupied.

- 4) *High costs or impedances in using the local registration system discouraged residents from using it;*
- 5) *Attitudes to land registration systems are positive, but landholders believe that it is not necessary to register every transaction in land and the implications of using or not using land registration are not fully understood;*
- 6) *Residents may not have used the system as they saw no benefit in using it;*
- 7) *Residents may have avoided using the system to hide the transaction from factions within the community such as street committees and gangsters for a variety of reasons;*
- 8) *Street committees, political organisations or gangs control land rights and have evicted people and allocated the land to other people without ensuring that the land administration authority's records reflect the change in occupation or ownership.*

With respect to hypothesis 4 above, as with Brown's Farm, the eastern metropole and Marconi Beam, the costs of using the registration system in Imizamo Yethu was minimal. However, the data show that the system was not used. In agreement with the findings in the other study areas, the reasons for non-usage of the local registration system in Imizamo Yethu are more complex than monetary cost or impedance in using the system. Costs may encourage landholders to conduct informal transactions in land. However, in all the case studies reported thus far, the issue of costs has not been tested. It has been possible to exclude this as a cause underlying non-usage of the cadastral system.

No evidence was forthcoming to directly support or negate hypothesis 5 above, but it cannot be discounted. By the end of 1998, the information in the local registration system was so inaccurate that the local authority considered it unusable. Paton (pers. com. 1998) noted that the SPM had such little faith in the information about the site that it was necessary to carry out a further census so that invoices for municipal services could be delivered to residents. Even if people wanted to comply with the requirements of the land administration authority at that time, this was not possible due to inaccurate land information and poor operational systems.

The evidence does support hypotheses 6 above, although it was not possible to establish from community members why the local registration system was not used to record land transactions. The social survey of beliefs, attitudes and intentions showed that the majority of residents considered the local registration system to be the most effective system of affirming rights in land. Street committees were specifically excluded from this process at the time of this survey in 1997. However, hypotheses 7 and 8 are the more likely explanations for non-usage of the local registration system.

In support of hypothesis 7, what may explain the informal transactions is that the generally agreed rules within the community encouraged people to avoid recording transactions in land. At one stage (1997-1998) there was a moratorium on sales in terms of the community's internal rules. Moreover, as was the case in Marconi Beam, it was in the interests of residents (e.g. lodgers) who did not enjoy expectative rights of ownership of a land parcel to acquire these by whatever means possible. It is speculated that it may not have been possible for certain individuals to procure these expectative rights by putting their names on a waiting list. Furthermore, given the

volatility of the settlement at certain times, such individuals may have had little confidence in the formally agreed process of using the waiting list and therefore entered into an informal transaction in the hope that their occupation rights would later be recognised as expectative rights. It appears that the informal transactions in land may be more related to the deliberate flouting of internal community's rules rather than a negative attitude to the registration system. Using the registration system would have exposed the transactions that contravened the rules.

The data support part of hypothesis 8 above in that at times gangs and powerful individuals controlled land allocation by using the threat of violence and in one reported case, murder. There was also evidence of landlordism, which was expressly forbidden in terms of the internal community rules. Swart's (pers. com. 1998) evidence suggests that none of the transactions that took place during phases when gangs and powerful individuals controlled land allocation were recorded on the local register. There was no evidence of people being evicted from the settlement in contrast to Brown's Farm and the eastern metropole.

In conclusion, the local registration system that was used to record expectative rights of ownership was viewed as legitimate. The interviews revealed that the system was well understood and the majority of respondents held positive attitudes to it. However, the system was not used in the manner intended, probably due to a number of conflicts in the internal dialectic where it was often not in the interests of the various actors (e.g. gangsters, lodgers) to record transactions and so informal transactions were executed. Furthermore, attempts by the land administration authorities and the community leadership to impose a moratorium on transactions in expectative rights probably further encouraged informal land transactions that were not recorded in the official register of expectative rights.

9.5.2.2 Family tenure

The following hypothesis was posited in chapter 7 on the basis of information provided by key-informants in Cape Town's eastern metropole.

Land is held de facto as family land or in joint tenancy or ownership. If the head of house separates from his or her spouse or common law partner and leaves, the household remains in residence without updating the records.

There is evidence from the June 1997 interviews in Imizamo Yethu to support the first part of the above hypothesis that land is held *de facto* as family land and may continue to be held under this form of tenure in future. Beliefs about the limits of the rights of registered ownership of formal parcels varied. The investigation into inheritance revealed a heterogeneity of beliefs ranging from the rights of *allodium* being vested in the person whose name appeared on the deed to a partial right of occupation such as a usufruct or *fidei commissum*. In some instances, the belief was that this partial right of occupation should vest in the family in perpetuity. However, the general view was that the registered owner or holder of the entitlement to ownership might dispose of land if there was consensus within the family that he or she may do so.

The second part of the hypothesis, which was found to hold in the eastern metropole, was not supported or negated by the data in Imizamo Yethu. The issue of divorce was not explored in Imizamo Yethu. Data relating to divorce and separation surfaced in the Khayelitsha study (see chapter 7) after the social survey in Imizamo Yethu had been completed.

9.5.2.3 *Boundaries*

The following hypotheses were developed to explain the phenomena observed in Brown's Farm and the eastern metropole and, to an extent, Marconi Beam.

- 1) *A system of monumented fixed boundaries or stationary general boundaries as opposed to a topological boundary system is appropriate to the tenure system wanted by residents of Cape Town's Xhosa-speaking communities;*
- 2) *Encroachment, particularly onto public land, is due to opportunistic land grabbing;*
- 3) *Encroachment is due to lack of awareness of the position of surveyed cadastral monuments;*
- 4) *Encroachments are motivated by a need for more space to house lodgers or extended family members or to build a spaza shop or a shebeen;*
- 5) *Encroachments are the result of contractual arrangements and disputes only arise when the servient party attempts to reassert his or her rights to usage of the full extent of the parcel allocated to them;*
- 6) *Individuals may not be able to define or defend the parcel boundaries that were originally allocated to them because the group over-right (integration) is stronger than the individual bias (fission) (Davies 1998:38);*
- 7) *Fence encroachments are a result of one fence being out of position and then neighbours subsequently attaching their fences to this fence, thus continuing the pattern of encroachment;*
- 8) *Residents believe that structures such as fences and shacks are temporary and moveable. When a permanent structure is constructed, they intend to align their structures with the surveyed cadastral boundaries.*

The interviews and group discussion data from Imizamo Yethu support hypothesis 1 above. In general, beliefs, attitudes and intentions support the system of fixed boundaries demarcated by monuments used in the existing cadastral system. Attitudes were strongly negative to encroachment, and respondents stated that in the absence of an agreement they intended to evict an encroacher. In agreement with the findings in Brown's Farm, the eastern metropole and Marconi Beam, stationary general boundaries may be appropriate, but data was not collected in Imizamo Yethu to support this concept of a boundary system.

However, the aerial surveys indicate that a substantial number of encroachments existed over the surveyed boundaries in 1994, albeit that some of this pattern may have been due to people not moving their shacks to conform with the surveyed boundaries in phase III. Officials and community leaders were also aware of the occurrence of encroachments.

The data support hypothesis 2 above. There were reported cases of land grabbing from neighbours, residents moving boundary monuments to enlarge their parcels and of residents deliberately removing boundary monuments. There were also cases of residents refusing to remove an offending structure in spite of being aware that they were encroaching. The social survey did show that a minority of respondents (3) held positive attitudes to encroaching onto the road reserve. However, this appeared to be based on a lack of understanding of the status of public land and the formal land tenure rules rather than a deliberate intention to grab land that they were not entitled to. One respondent believed that road reserve belonged to her and the other two believed that it did not belong to anyone and therefore they were entitled to occupy it and fence it off.

The interview data in Imizamo Yethu do not conclusively support hypothesis 3 above. The pins (12mm iron pegs) were the primary evidence of the extent of a parcel of land. In only two of the 25 interview and group discussion sessions (less than 10%) were respondents unaware of the positions of their boundary monuments. Two respondents showed the author lines that had been painted on the kerbstones by CPA officials indicating where the monuments were. However, there is some empirical evidence to suggest that hypothesis 3 may underlie some of the encroachment behaviour. Most of the monuments had been removed by the time the research was completed though. In August 1999, in a sample of three parcels the boundary monuments could no longer be found when respondents attempted to point them out to the author.

The data support hypothesis 4. In one reported instance where an encroacher refused to move an offending structure, the structure was a spaza shop. In another instance the structure was used as a shebeen. The issue of spaza shops encroaching onto the street was not explored although site inspections in 1997 and thereafter showed that there were a number of shops that encroached on the road reserve.

The data in Imizamo Yethu conclusively support hypothesis 5 above, and confirm the discussion in chapter 7 regarding contractual encroachment. In approximately half the sessions where the issue was raised, respondents indicated that encroachment was permissible in the event that there was an agreement to encroach. However, respondents believed that this land was borrowed and could be returned to the owner at any time. The *de jure* surveyed boundaries were held to demarcate the *de facto* extent of a landholder's ownership rights. This confirms the testimony of Ngeze in chapter 6 and Du Toit in chapter 7 that the notion of contractual encroachment or borrowed land exists. However in the other half of the interviews where the issue was raised, attitudes were strongly negative to the notion of contractual encroachment. The concept of borrowed land was not explored in Marconi Beam as the issue did not arise in any of the interviews.

The evidence of dominant parties refusing to remove an encroaching structure when boundary disputes were adjudicated supports hypothesis 6 above. These appeared to be powerful individuals and there was little the servient parties could do to defend their rights. However there is little to suggest that this was due to an overriding group bias in the tenure system. In the author's understanding of the situation, especially the behaviour and attitudes of the group who asked him to assist in enforcing the removal

of an encroaching structure, the general attitude to such behaviour was strongly negative. The servient parties lacked the resources to defend their rights against a non-compliant individual who may have enjoyed the support of a powerful group in the community, but this could not be established.

Suitable data to support or negate hypotheses 7 and 8 was not collected.

9.5.3 Land Policy and Land Administration

The Imizamo Yethu case study adds little to the discussion in chapters 6, 7 and 8 concerning land policy and the cadastral system relating to the issues of social change and equitable distribution of land ownership. As was the situation in the other case studies reported thus far, the Imizamo Yethu data show that in a volatile, rapidly changing situation social stability was foremost in the strategies adopted by the land administration authorities. As Lawrence noted, “these goals cannot be addressed in a single step” (see section 7.3.3).

Oelofse observed that Imizamo Yethu developed in a policy vacuum and a legislation vacuum wherein it was difficult to make decisions. Moreover at certain stages the residents of Imizamo Yethu had a lot of power in relation to the power of the land administration authorities (Oelofse pers. com. 1998). In the author’s view, this was exacerbated by the continual changes in the land administration authority responsible for Imizamo Yethu. The result was that in 1998 the South Peninsula Municipality did not have faith in the accuracy of the record of landholders who were entitled to have ownership of a parcel bestowed on them. This lack of reliable land information inhibited the authority’s ability to perform day to day tasks such as the supply of municipal services and fiscal administration.

The Imizamo Yethu experience does emphasise that in the urban context, any local level system of records designed to record existing land rights and record entitlements to permanent rights in future needs to be integrated with other land information systems. In the study of Brown’s Farm and the eastern metropole, it was concluded that non-usage of the local level system that records expectative rights in land will affect the quality of the land information required by other land administration sub-systems. In Imizamo Yethu, information that was intended to uphold the expectative rights of ownership was also used to administer the supply of services, fiscal administration and other services depicted in figure 2.3. When the record of expectative rights became inaccurate, the local authority found that it was impossible to invoice residents of the settlement for municipal services.

The experience was similar in Marconi Beam where the information system used to administer national housing fund (NHF) applications used the original register of entitlements to verify that people were entitled to a parcel in Joe Slovo Park. Eventually the NHF database superseded the original register when decisions were made concerning who should be allocated a parcel in Joe Slovo Park.

An additional phenomenon that is relevant from a land administration perspective that occurred in Imizamo Yethu that was also similar to the Marconi Beam experience was that when residents were moved from the transit area in Imizamo Yethu to their

formal parcels, the lodgers were left behind in the transit area thus perpetuating the existence of the informal settlement. The authorities had believed that the lodgers would move to the surveyed sites with the persons who expected to own those sites in future. In practice this did not happen.

9.6 SUMMARY AND CONCLUSIONS

The Imizamo Yethu case yields results that are consistent with the findings in Brown's Farm, the eastern metropole and Marconi Beam. There are no findings that are substantively in conflict with those of the earlier case studies. As with the other studies reported so far, in Imizamo Yethu land tenure existed on a continuum of formal and not formal concepts and practices and the emphasis on formal and not formal practices changed over time (see section 1.3.6.1). Conflict was inherent in the settlement. The settlement contained a number of different sub-groups, each competing for power and resources. Initially the authorities could not enforce rules or agreements with the community leadership during the early 1990's but later this became possible as the authorities enjoyed more legitimate power. As with Brown's Farm, encroachments over boundaries and informal land transactions existed in Imizamo Yethu. Imizamo Yethu also had an influx of additional people during the early stages of development of the settlement.

As with the other studies reported thus far, the communal and individual biases in tenure were evident in Imizamo Yethu. However, the evidence suggests that in land related matters, by 1997 the bias toward individual tenure was stronger in the formal areas of this settlement than Brown's Farm or Marconi Beam. Unlike Brown's Farm and Marconi Beam, street committees had little influence in the community when interviews were conducted in June 1997. The local office handled day to day administration such as land transactions. This office also handled disputes over boundaries and informal sales of land. In terms of the theory of reasoned action, the norms in terms of beliefs, attitudes and behavioural intention toward the local level cadastral system can be extrapolated to indicate that the instruments and processes of the existing cadastral system are appropriate to the wants of the community. That is surveyed boundaries and title deeds registered in the Deeds Office are appropriate. Therefore, based on this theory the existing cadastral system should effectively uphold land tenure security for the majority of people in this community.

Specifically, in terms of the elements of the theory of reasoned action described in chapter 3, the system of individual tenure based on individual parcels appears to be appropriate. As with Marconi Beam, there are divergent beliefs concerning whether a house is owned by a family where individuals have partial rights of occupation as opposed to full and free ownership vesting in the person whose name appears on the title deed. Beliefs, attitudes and intentions indicate that the system of fixed monumented boundaries is in general appropriate. In general the data show that if residents had sufficient power and resources to evict an offender, encroachment would not be tolerated, unless there was an agreement. This latter belief expressed by members of the community confirms the findings in Brown's Farm and the eastern metropole studies (see chapters 6 and 7) that many encroachments in Xhosa-speaking site-and-service schemes are contractual. This is a key finding in this research and the

phenomenon has not been reported elsewhere in relation to urban site-and-service schemes where the communities are predominantly Xhosa-speaking.

Most cadastral matters were administered by formal institutions at a local level. Even though residents did not have their own documents indicating that they had a right to a registered parcel, the interviews showed that they had confidence in the records in the local office files as the primary evidence in affirming their rights in land. Dispute resolution was also handled by the office, although officials had little power to enforce their decisions.

The actual behaviour that was measured in Imizamo Yethu was substantially different to what the social surveys indicated in terms of the theory of reasoned action. The aerial survey of 1994 showed that more than 13% of Imizamo Yethu households in the area where data were considered reliable were encroaching over the *de jure* surveyed boundaries. Moreover in a sample of 300 parcels where readjudication had been completed in 1999, approximately 50% of the register was inaccurate and there were five objections to the register that arose out of the readjudication.

In spite of non-usage of the local level register and encroachments over *de jure* surveyed boundaries, individualised tenure incorporating ownership of an individual parcel is appropriate. No evidence emerged in Imizamo Yethu to suggest a want for system of group ownership. Boundary encroachments in Imizamo Yethu are due to land grabbing and contractual arrangements that permit encroachment. Encroachment was not a result of negative attitudes to the system of fixed boundaries.

Imizamo Yethu is slightly different to other study areas in that the institutional record, maintained in the site office and backed up on a computer in another location, was the only official evidence used to affirm expectative rights in land. Landholders did not have a document of their own that mirrored the information in the official record. In Marconi Beam, respondents in the group workshops placed a strong emphasis on the rent card in the *de facto* situation and the deed in their desired future state as instruments to affirm their land rights in the event of conflict. In Imizamo Yethu, parcel holders did not possess any documents themselves. Notwithstanding, the data gathered from the majority of respondents indicated that the formal record of expectative rights in the local office was the most reliable means of affirming their expectative rights in the event of a dispute.

In reality, the official record was inaccurate for a variety of reasons as informal transactions took place. As was the case in Marconi Beam, in Imizamo Yethu institutional factors may have contributed significantly to this situation due to the frequent changes in the land administration authority.

In terms of the research design, which is discussed in section 1.5 and section 5.2, the Imizamo Yethu study completes the data required to analyse informal settlements and site-and service schemes. The studies of Marconi Beam, Brown's Farm, Cape Town's eastern metropole and Imizamo Yethu have provided data relating to landholders' beliefs, attitudes and behavioural intentions relating to land tenure and cadastral instruments and processes in existing situations and the situations that various landholders envisaged in future. In addition data relating to actual behaviour in

different informal settlement and site-and-service scheme situations have been collected.

At this stage, there are two theoretical postulations relating to cadastral system effectiveness in chapter 3 that warrant a preliminary discussion. More detailed analysis is contained in the conclusions drawn in chapter 11. The first issue relates to the validity of the theory of reasoned action and the theory of planned behaviour as a predictor of cadastral system usage in future. The second relates to the assumption that a cadastral system is effective only if it is used in the manner that authorities intend it to be used.

The research thus far shows that the theory of reasoned action is inadequate as a model to predict usage of a cadastral system. The interviews and group workshops in Marconi Beam and Imizamo Yethu show that in terms of the recorded beliefs, attitudes and behavioural intentions, the local level systems of records of expectative rights and surveyed cadastral boundaries should have been used in the manner intended by the authorities. However, actual behaviour reveals that this did not happen to a significant degree in the case studies. As discussed in section 3.3, in terms of the theory of planned behaviour, the difference between intended behaviour and actual behaviour is often due to a number of factors affecting an individual's volitional control over his or her actions. The situations in all the studies reported thus far have been volatile and rapidly changing. There is persuasive evidence to suggest that these controls, perceived or actual, emanate from the behaviour of factions and individuals within the community and the actions of the land administration authorities. Therefore, the Imizamo Yethu findings and those of the other case studies indicate that social surveys based on the theory of reasoned action alone are inadequate as instruments to predict the effectiveness of a cadastral system in a volatile, changing situation. This analysis accords with the discussion on the validity of the theory of reasoned action and the theory of planned behaviour in section 3.3.

The second issue points to the assumption that if a cadastral system is not used in the manner intended in terms of its design objectives, then it can be regarded as ineffective. What the studies reported thus far suggest is that the systems of surveyed boundaries and the local registration systems of expectative rights^{xiv} have not been used exclusively as the systems to affirm rights in land. Informal transactions in land have been conducted and surveyed cadastral boundaries have not been adhered to. A multitude of factors have been shown to be causal to these patterns of behaviour.

In the author's analysis, cadastral instruments and processes have not been ineffective in these situations. Although they have not been used in the manner intended, the local registration systems and surveyed cadastral boundaries have been the most effective systems to uphold rights in land in the conditions that prevailed in the case studies during the 1990's. In the various study areas, a range of instruments and processes have been used to affirm rights in land. However, the systems of records and the surveyed boundaries have formed the core foundation upon which the tenure system in each of these case studies was based. In the majority of instances in all the studies reported thus far, the legality and legitimacy of the surveyed boundaries has not been challenged in cases of conflict. Moreover, in the majority of instances, the validity of the official record has not been challenged where the *de facto* occupant of a parcel

was the person whose name appeared on the official record. In cases where there was a mismatch between the official record and the *de facto* claimant of an expectative right, the official record has formed the basis of negotiation. In Imizamo Yethu, expectative rights were readjudicated based on *de facto* occupation in 1999. The onus was on other claimants to challenge this readjudication. In the other study areas, the onus has been on the *de facto* claimant to prove to the relevant authority that they were the legitimate holders of these expectative rights in land. It is concluded that cadastral instruments and processes have been the most effective system to administer such a situation, in spite of there being significant non-usage of the system. This issue is discussed further in chapter 11.

The issue of prior experience was not explored in Imizamo Yethu, but it can be assumed that as with Marconi Beam, most residents had prior experience of processes and instruments that are similar to those of the formal cadastral system. Therefore, their stated intentions to use the cadastral system should be reliable, as they should have a sound understanding of control factors. However, in spite of these stated intentions, actual behaviour regarding usage of the rental registration system and surveyed boundaries suggests that the cadastral system to support ownership may not be fully utilised in the manner that the law requires.

In conclusion the findings in Imizamo Yethu do not differ substantively from those of Brown's Farm, Marconi Beam and the informal settlement and site-and-service parts of the eastern metropole. The legitimacy of cadastral instruments and processes was not challenged in any of these areas, and residents indicated that they intended to use the cadastral system when ownership was granted. Yet there was non-usage of cadastral instruments and processes and the local registration system. This non-usage was due in no small part to conflicts involving powerful individuals intent on controlling the tenure system and adopting tenure practices that contravened rules that had been agreed within the community and agreed with external authorities during a particular phase in the history of Imizamo Yethu. There were also legitimate transactions that did not use the formal instruments and processes, e.g. contractual agreements to encroach and possibly intra-family transfers. As with Brown's Farm, Marconi Beam and parts of the eastern metropole, in the volatile state the formal rental registration system and the surveyed cadastral boundary system constituted the core of a range of instruments and processes that were used to uphold the tenure system. However, the interview data suggest that in a stable state where residents have volitional control over their behaviour, instruments and processes such as those embodied in the existing cadastral system are appropriate to support the wants of the residents of Imizamo Yethu.

In terms of the research design in section 5.2, the Imizamo Yethu case study completes the requirements for a site-and-service scheme that commenced with the Brown's Farm study. Moreover, as it had proceeded to the point of registration by the time the research had been completed, the Imizamo Yethu study adds to the quality of the data collected in this research. The main contribution of the Imizamo Yethu case is that it has filled the gap in the Brown's Farm study where it was not possible to interview residents of the settlement and the eastern metropole study where interviews of residents were limited to recording a life history and interviewing a street committee member. A comparison of the three studies shows that, at the time the

interviews were conducted in Imizamo Yethu, group influences in the tenure system, specifically the influence of street committees, were not as clearly apparent in Imizamo Yethu as in Brown's Farm and parts of the eastern metropole described to the author. Otherwise the findings from the three areas relating to site-and-service schemes are generally in harmony.

What remains to be reported in terms of the research design in section 5.2 is a study of a settlement where land has been registered in individual ownership, or in near ownership rights (long-term leasehold), for a long period. The Khulani Park study reported in chapter 10 completes these requirements.

ENDNOTES

ⁱ Cited by Gawith and Sowman 1992.

ⁱⁱ Cited by Gawith and Sowman 1992.

ⁱⁱⁱ Phase I is on GP9847/1993 and Phase III is on GP5367/1994.

^{iv} Catherine Oelofse, 4 September 1998. Academic researcher and former liaison committee member (1993-1995).

^v One respondent in the interviews showed this document to the author.

^{vi} According to a number of key-informants, his office had been burned down at least once.

^{vii} Cedric Nathan, 5 November 1997. Academic researcher and former member of liaison committee.

^{viii} Anine Trumpelman, 31 October 1997. Town planner and former CPA employee who worked with Imizamo Yethu settlement. She had had a copy of the register of Imizamo Residents on her computer when in the employ of the CPA.

^{ix} Swart, 5 November 1997. Senior staff member, Communicare.

^x Hugh Paton, 11 November 1998. Director of Housing South Peninsula Municipality. Group discussion at SPM offices with Brian Shelton and Eddie Thomas.

^{xi} Mabhai 3 June 1997. Imizamo Yethu representative on liaison committee, SANCO representative. Mabhai had been employed by CPA when allocation of formal parcels was carried out and also had assisted in adjudicating boundary disputes as a CPA employee and as a community leader.

^{xii} It was not possible to determine what had happened to the records after the fire(s), as the CPA employee who was in charge of the office at that time refused to be interviewed.

^{xiii} Charles Crozer, 1 October 1999. Development Action Group employee.

^{xiv} In all the studies, these systems of records were meant to administer rentals of land that was owned by the local authority and the payment of service fees. Ultimately, very few rentals or service fees were actually paid and the primary purpose of these systems became limited to being a record of expectative rights.

CHAPTER 10

KHULANI PARK: KHAYELITSHA

10.0 INTRODUCTION

Khulani Park, Khayelitsha, comprises a mixture of registered, owned property and parcels with permanent dwellings that are rented from the local authority. The majority of the parcels are registered in ownership. As a settlement where land has been registered, it is the third and last case study type identified for the purposes of this research in sections 1.5 and 5.2.3. In this study of Khulani Park, aerial surveys were again used to measure actual patterns of land occupation behaviour against the surveyed *de jure* boundaries. In addition, interviews were conducted in July 1997 with a sample of 68 registered owners and municipal lessees and two key-informants.

In terms of the research objectives of developing and testing theory of defining and evaluating cadastral system effectiveness stated in section 1.2, and as discussed in section 1.5 and section 5.2.3, ideally a secondary market in land should have been in existence in Khulani Park. This would have permitted measurement of actual behaviour as well as beliefs, attitudes and intentions relating to land markets. However, as discussed in section 1.3.2.3, in recent history black Africans have been permitted to hold property in a form of permanent tenure in Cape Town for a short time (i.e. since 1984)ⁱ after ownership rights were statutorily removed in terms of the Development Trust and Land Act 18 of 1936. Consequently, an extensive formal secondary land market has not yet evolved in Khulani Park.

In 1983, the Minister of Cooperation and Development, Dr Piet Koornhof announced Khayelitsha (“Our New Home”) as a major new township for black Africans in Cape Town. Khayelitsha was intended to house 300 000 people and replace the existing black African townships of Langa, Nyanga, Guguletu, New Crossroads, Mfuleni, and possibly Khaya Mandi (de Tolley and Nash 1984:2). Coloureds were to be moved into Langa, Nyanga and Guguletu (de Tolley and Nash 1984:4). A number of residents in Cape Town’s black African communities strongly resisted being forced to move to Khayelitsha, resulting in the squatter wars in the mid 1980’s. However, this major political turmoil surrounding the occupation of Khayelitsha has passed and in terms of the original plans for the area, Khayelitsha is currently fully occupiedⁱⁱ (see sections 1.3.2.3, 6.1 and 7.0).

Khayelitsha contains formal middle class housing, site-and-service schemes and informal settlements. Lourens *et al* (1992) note that the greater percentage of Khayelitsha’s population consists of people who have “... recently located themselves in the urban environment and are in a state of transition and acculturation. Strong traditional elements of community life are still evident and are manifested in the numerous social support systems...particularly in the site-and-service areas with

(their) mushrooming informal housing.” Lourens *et al* (1992) add that at that time the formal areas (such as Khulani Park) were inhabited by persons who had moved from the older residential areas of Langa, Nyanga and Guguletu and in most instances are third and fourth generation Capetonians.

Khayelitsha is administered by the City of Tygerberg, which has an office in Khayelitsha. Prior to the local government restructuring in 1996, Khayelitsha had its own municipality, Lingeletu West City Council (see section 7.0).



Figure 10.1 Khayelitsha including Khulani Park

Source of base map: Cape Metropolitan Council GIS Section

Khulani Park is the first formal housing estate in Khayelitsha to be occupied. It consists of 398 surveyed parcels. Development companies such as Bellandia (Pty) Ltd

and Besterecta (Pty) Ltd built the original houses in Khulani Park as private developments. The Lingeletu Council later built additional houses that were rented with the intention of transferring ownership to the lessees at a later dateⁱⁱⁱ. The inhabitants are primarily professional people and civil servants such as teachers, health inspectors, nurses and white-collar municipal workers (Koen pers. com. 1998^{iv}, Xolani pers. com. 1998^v). The township was demarcated and surveyed in 1985^{vi}. The first registrations took place in May 1986 and the bulk of the original registration of ownership took place between 1987 and 1989^{vii}.

There were collectively organised mortgage bond boycotts during the early 1990's where residents in a number of Xhosa-speaking areas in Cape Town's eastern metropole refused to pay mortgage bond annuities on registered property. Khulani Park residents also joined these boycotts (Koen pers. com. 1998, Xolani pers. com. 1998). According to Koen, in 1993 the banks renegotiated repayments with homeowners after the boycott ended (Koen pers. com. 1998). However, an inspection of municipal records in 1996 by the author revealed that 16 homes were recorded as having been attached by financial institutions^{viii}. These attachments may be related to the bond boycotts, but this matter was not investigated as it falls outside the scope of this research. The municipal records showed that few sales had taken place in Khulani Park and with a few exceptions the original owners were still in occupation when interviews were held in July 1997.

The houses built by private development companies had vibracrete fences^{ix} constructed prior to delivery. A number of other municipal owned homes and privately acquired parcels in the suburb had been fenced by the occupants using wire fencing. A number of landholders had not fenced their boundaries at all.

10.1 DATA COLLECTION

As with Imizamo Yethu, the data collected in Khulani Park consisted of aerial mapping overlaid on the *de jure* surveyed cadastral layout, a set of structured interviews with landholders and key-informant interviews. The municipal record of property registrations in Khulani Park dated October 1996, which was conflated from deeds registry data and other municipal data, was also examined.

Black and white aerial photographs were flown at a scale of 1:5000 on 13 March 1997. Mapping was done on a single stereo model using diapositives by a research assistant, Binedell, using the Zeiss Topocarte/Adams analytical plotter. Mapping from this large-scale 1:5000 photography complies with the 0.5 metre precision filter adopted for this research (see section 6.2). Ground control was established using the Ashtech Z12 dual frequency differential GPS receivers based on surrounding town survey marks on the national geodetic control system (Cape system, Clarke 1880 ellipsoid) projected onto Lo19⁰ system using the gauss conform projection. The *de jure* cadastral boundaries were derived from general plan L475/1985 and the coordinates calculated using Alice surveying software. The map of buildings and

fences was overlain on the *de jure* cadastral layout using ArcView 3 GIS software (see appendix E2).

A total of 68 structured interviews using the sheet in appendix E1 were held with landowners and lessees in August 1997. In Khulani Park individual interviews were conducted as opposed to group sessions. The rationale was that firstly it was difficult to assemble groups for interviews in Khulani Park. Secondly in the authors view it was better to ask registered landowners to describe their experience of property ownership and transactions as well as their beliefs concerning land tenure and the cadastral system. People who were not landowners or lessees were excluded from the sample.

Given that most of the residents of Khulani Park are employed, the interviews had to be held at night to ensure that the registered owner of a particular parcel was interviewed. A research assistant conducted these interviews. A total of 68 residents, 44 registered owners and 24 lessees were interviewed and the sample statistics are tabulated in table 10.1.

For the interviews, Khulani Park was divided up into 9 sections, each section consisting of a street block or part of a block (see appendix E2). Interviews with at least 6 people were held in each of these sections to reduce spatial bias in the sample. In selecting people to be interviewed, the first priority was that respondents should be the homeowner or the lessee. It was therefore not possible to ensure that there were an equal number of males and females in the sample. Females constituted approximately a quarter of the respondents. However, the respondents were all the primary decision-makers in their households. Moreover, no discernible differences between male and female responses were identified in the data.

Table 10.1 Structured Interview Sample Statistics

Overall Statistics		M	F	Registered		M	F
Total Resp.	68	52	16	Total Reg.	44	32	12
AVG AGE	44.6	45.7	41.4	AVG AGE	44.3	45.9	40.3
STDEV (AGE)	5.0	4.4	5.7	STDEV	5.1	4.6	4.2

The interview sample (see table 10.1) accords with the observation by Lourens *et al* (1992) that most formal property owners in Khayelitsha were third generation and sometimes fourth generation Capetonians. Thirty-seven percent (25 of 68) of the Khulani interview sample were not born in Cape Town and 63% were born in the City. The newcomers had lived in Cape Town for an average of 10.3 years ($\sigma=3.4$). Most had migrated to Cape Town from the Transkei and Ciskei, but newcomers had also migrated from other areas of the Western and Eastern Cape Provinces, such as historically black African townships in Beaufort West and Port Elizabeth. Of the newcomers to Cape Town, 17 of the 25 were registered owners of their parcels, the other 8 were lessees. In analysing the data, no clear differences in the patterns of responses could be identified between the newcomers and those who were born in

Cape Town. This applied to both respondents who rented land and respondents who owned their land.

The reliability of the responses relating to questions that explored if respondents owned their homes was tested against the municipal records of registered properties. Overall there was consistency in the responses. There were, however, four mismatches between responses and the entry on the municipal record of registered property owners. In these cases respondents had indicated that they owned their houses, which is not what was recorded on the municipal record.

Names of respondents were not recorded in the interviews, so the name of the respondent was not matched against the list of registered owners. However, the parcel identifier, the erf number, was recorded and the information given by respondents was checked against the municipal records relating to each parcel.

In the four cases where there were mismatches, an examination of the municipal records^x revealed that the mortgage bondholders, the financial institutions, had attached two of the parcels. Another parcel was registered in the name of a private company, and the United Bank owned the fourth. These details did not emerge in the interviews and all four of these respondents indicated that they owned their land. No mention was made of the bank threatening to evict the owner in the interviews. It is possible that the situation may have changed between October 1996 when the municipal record was created and the time the interviews took place in August 1997.

The key-informants consisted of two senior municipal officials, one of whom had been working in Khayelitsha at the time that Khulani Park was built and had worked directly with the settlement ever since. The other official lived in Khulani Park and had worked for the Lingeletu West City Council and continued to work there after the Lingeletu Council was absorbed into the City of Tygerberg.

10.2 RESULTS

10.2.1 Adjudication and Tenure

Adjudication of rights, usage of the *de jure* tenure system, and identification of *de facto* tenure practices were investigated using questions 1, 9 and 11 in appendix E1. Respondents were asked to describe how they had acquired their home (Q1). Their experiences and intentions concerning inheritance were investigated (Q9), and question 11 investigated if there were overriding community rights that had resulted in people being evicted by the community and if respondents believed that the community should have such powers.

10.2.1.1 Acquiring rights in land

All respondents who held land in registered ownership indicated that they had used the formal cadastral system to acquire ownership. The role of financial institutions

featured prominently in these responses. Forty (91%) of the 44 registered respondents indicated that a bank had been involved in some way. They had either acquired the house directly from the bank (“I bought this house through the bank”) or they had been shown the house by an estate agent and perhaps visited an attorney to finalise the transfer (e.g. “I went to an agent and the Standard Bank for a loan.” “I went to an agent, then to the bank for a loan, then to an attorney who transferred it to me.”). Six (14%) respondents indicated that they had been shown the house by an estate agent. Four (9%) mentioned that the transaction had involved an attorney. Four (9%) other respondents indicated that they had a housing subsidy from their employer. One respondent indicated that she had purchased the house from the municipality. All of the respondents who were registered owners mentioned that the boundaries had been pointed out to them when they took delivery of their houses.

Twenty-three of the 24 lessees (20 male, 4 female) indicated that they had acquired their house from the municipality and that their boundaries had been pointed out to them. One respondent indicated that he had inherited the house from his father and the municipality transferred the lease into his name.

The above results point universally to effective usage of the *de jure* land registration system. There is no evidence of usage of extra-legal mechanisms or evidence of an intention to use an extra-legal mechanism to acquire rights in land. To add to the above, a senior official who lived in Khulani Park, remarked that although there had been informal sales of land rights in other areas of Khayelitsha, such transactions were unlikely to occur in Khulani Park as most of the houses are mortgaged. If a mortgaged house was sold informally, it would soon be repossessed by the financial institution if the mortgage repayments ceased (Xolani pers. com. 1998).

10.2.1.2 Inheritance

Only one respondent related an experience of inheriting rights in land. This has been described in section 10.2.1.1 above. The remaining 67 respondents all indicated that formal legal processes were likely to be used to deal with their estate in the event of the registered landholder’s (owner or lessee) death.

In response to question 9 in appendix E1, fifty (96%) of the fifty-two male respondents indicated that in the event of their death, their spouse would inherit the house. Of the 32 male respondents who owned their houses, 31 (97%) indicated that their wife could sell the house without the permission of their children. The other respondent indicated that his wife would be bequeathed a usufruct or similar right: “If I die, the house goes to my wife. However, she cannot sell it as the house is for my children.”

Of the 20 male lessee respondents, 19 (95%) indicated that their wife would not need to obtain the permission of the children to sell the (lease to the) house. One male lessee responded that he intended to bequeath usufructuary rights to his wife.

The female responses differed slightly from the male responses. However, a number of the female landholders were unmarried and this is the more likely cause underlying some of the responses that are different to male responses. Marital status was not determined in the interviews. However, the municipal record reflected the marital status of most registered owners but not lessees. Of the 12 registered female owners, six were married in community of property (see section 4.2.1.1) and they all indicated that their husbands would inherit the house. Three of these married women indicated that their husband could only sell the house if he accommodated the children suitably. The other three indicated that their spouse could deal with the house as he saw fit without taking their children into account.

The six unmarried women owners indicated that their children would inherit their home. Two of these indicated that one particular child in their family would inherit the house in full and free ownership. The other four indicated that their children would inherit the house as a group and they believed that even if it was registered in the name of one child, all the children would have to agree if the house was to be sold.

The marital status of the four women lessees who were interviewed was not determined. One woman indicated that her spouse would inherit the house and he could deal with the property without consulting the family. Two others indicated that their eldest child would inherit the home and he or she could sell the (lease to the) house because "it belonged to them". The remaining woman said that the house would be left to her children and they could sell the (lease to the) house if they all agreed.

The above responses do not differ substantially from the results of the interviews and group sessions in Marconi Beam or Imizamo Yethu. However, the paradigm of individual tenure where land is believed to be tradable and transferable out of the family prevails in Khulani Park. There was no concept of land being held in perpetual usufruct by the family such that the family may never sell it. There was a prevailing belief that the heir in whose name the land is to be registered should be able to manage and perhaps alienate the land without consultation with other members of the nuclear family. Other beliefs vary from being cognisant of the need for the registered heir to consult and perhaps accommodate the needs of other family members, to the land being owned by the children as a group who manage it jointly. In this latter case, if the current owner is married the belief is that the spouse may inherit the land and hold it as a personal servitude *par excellence* (e.g. usufruct, *usus* or *habitatio*) or a *fidei commissum*.

The concept of the family including people outside of the nuclear unit, father, mother and children, (e.g. the family includes cousins, aunts, uncles and in-laws) was strongly rejected.

Analysing the above, the responses reveal that in terms of the belief system(s) concerning inheritance of property in Khulani Park, land registration performed in

terms of the Deeds Registries Act 47 of 1937 can effectively mirror the set of social relationships envisaged in the responses to the interviews. Furthermore, because the land is perceived to be both tradable and transferable out of the family, it is argued that there is a need for the cadastral system to manage this process. In a system of perpetual usufruct, as the term is loosely used in this dissertation, it may be argued that there is no need for family members to register a transfer of ownership in the case of the death of the registered owner as the land will never be transferred out of the family. However, if land is to be transferred, and retain its collateral value, then there is a need and a want for the formal cadastral system. The fact that 91% of registered owners mentioned the bank as being involved in their acquiring rights in land provides strong support for the argument that Khulani Park landowners believe their land to be transferable and to have collateral value.

10.2.1.3 Evictions

None of the respondents mentioned that evictions had occurred in Khulani Park. All 68 respondents believed that the community has no right to evict anyone.

An inspection of the municipality's database of registered owners^{xi} indicated that 16 properties had been attached by mortgage bondholders, including two occupied by respondents. These evictions by a land administration institution were not mentioned in the interviews.

10.2.1.4 Summary: adjudication and tenure

The data show that there is a universal want for a tenure system using individual parcels. There was no evidence to indicate a want for any form of group based tenure. Furthermore, the existing cadastral system processes used to acquire and affirm rights in land appear to meet the needs of the community. There was no evidence that alternative, extra-legal mechanisms have been used to acquire land rights in Khulani Park.

The fact that 91% of owners mentioned the bank as opposed to 9% mentioning attorneys and 14% mentioning estate agents in the process of acquiring rights in land highlights the importance of financial institutions in the cadastral processes in delivering formal ownership. Furthermore it suggests that Khulani Park residents believe that land has collateral value.

The results from the interviews concerning inheritance infer that land is believed to be both transferable and tradable. The record of responses from married respondents shows that 86% believed in a strong form of individual tenure that land would be inherited by their spouse in full and free ownership. Other respondents (5%) believe that the registered owner (heir) possesses substantial power in the management of the land parcel, but that major actions such as the process of alienating the land should be consultative and accommodating of the needs of other family members. A minority (3%) believed that ownership of the property vests in the children and any alienation

of the land should be agreed to by all of them and that they should all benefit from the transaction. If applicable, this latter tenure form bequeaths a partial right of occupation (usufruct, *usus*, *habitatio*, or *fidei commissum*) on the surviving spouse. There was no instance of a belief in a tenure system of perpetual usufruct where land vests in the family in perpetuity and is neither tradable nor transferable. The concept of the family was limited to the nuclear unit, father, mother and children.

The notion of overriding community rights in land was strongly rejected by all respondents. Formal institutions of government such as the police or the municipality were regarded as appropriate to handle situations of crime or non-compliance with local municipal by laws. No mention was made of evicting a person from the community for holding particular political beliefs.

There was mention of street committees being involved in dispute resolution in the greater Khayelitsha and this issue is discussed in section 10.2.4. However, when respondents in Khulani Park were asked what they would do if faced with a conflict over land rights, they stated an intention to use formal institutions, land professionals or the police to resolve the issue.

10.2.2 Boundaries

Khulani Park is the only sample area in this study where a large proportion of the houses were first occupied when boundary fences were already in place. There was no distinction between responses from registered and unregistered landholders to questions regarding encroachment. However, there is a clear distinction between responses concerning boundaries and tolerance of encroachment between respondents who had fences pointed out as the boundaries and those who had iron pegs pointed out as corner monuments to their boundaries.

10.2.2.1 Aerial survey

In terms of actual behaviour, the aerial survey of the 398 parcels overlaid on the *de jure* cadastral layout revealed two identifiable encroachments by buildings, one of which was a spaza shop. There were four instances where a vibracrete fence bounding on a main road encroached into the road reserve, but an inspection of the overlay map and a site inspection pointed to these being errors made by the fencing sub-contractor to the original developer. Other than this, one fence was identified as encroaching (see appendices E2 and E3).

It is concluded that the encroachment patterns identified in Brown's Farm and Imizamo Yethu do not exist in Khulani Park. Actual behaviour demonstrates that the *de jure* cadastral boundaries are adhered to in Khulani Park.

10.2.2.2 Encroachment: non spatial data

Boundary systems were investigated using questions 5,6,7 and 8 in appendix E1. A total of 67 responses relating to boundary issues were recorded. Twenty one people (9 registered, 12 lessees, 31% of the sample) responded to question 5 that they believed that the pins that were pointed out to them when they originally occupied their sites demarcated the boundaries. Forty-six people (33 registered, 13 lessees, 69% of the sample) responded that they believed the vibracrete fences that were in place and were pointed out to them when they occupied the land were the boundaries.

The issue of whether boundary disputes had occurred in Khulani Park was explored in question 6. If such disputes had occurred, how had they been addressed? If the respondent was unaware of boundary disputes, if faced with such a situation, how would they deal with it? There were no such cases that respondents could recall in Khulani Park. The aerial survey overlaid on the cadastral layout confirms this result. The responses as to how people intended to deal with such a situation should it arise are reported in section 10.2.4 below.

How much encroachment people stated that they intended to tolerate before instigating action to remove the encroachment was explored in question 7. The major pattern in the data is the difference in stated intentions between respondents to whom a vibracrete fence was pointed out as the boundary and those to whom 12mm iron pegs ("pins") were pointed out as boundary monuments.

The responses from the 21 respondents (9 registered owners, 12 lessees) to whom pegs were pointed out is consistent with the findings from the interviews in Marconi Beam and Imizamo Yethu. That is, in general the pegs are believed to absolutely define the boundary apices. Attitudes to even a 1cm encroachment over the lines between these monuments were strongly negative. All respondents in this class were translated as having said: "A person is not allowed to build over another's land at all". Contractual encroachment was not explored with this sample of respondents in Khulani Park.

The responses from those to whom vibracrete fences were pointed out as the boundaries indicate a greater tolerance to a zone of uncertainty in the position of the boundary. Thirty one (67%) of the 46 respondents who indicated that the fence being rebuilt in a slightly different position would not raise their objection if the position of a fence shifted between 10 and 30cm upon it being rebuilt. Four (9%) indicated that half a metre was tolerable and two (4.5%) indicated that only 5 cm was tolerable. Six (13%) indicated that no encroachment at all was tolerable. A total of 27 respondents held this attitude that no encroachment was tolerable. This constitutes 40% of the sample of 67 people.

In the set of responses to questions 6 and 7 one female respondent stated that if there was an agreement between neighbours then an encroachment of approximately 10cm would be permissible, but if there was no agreement then no encroachment at all

would be allowed. Another respondent indicated that he would allow a 5cm encroachment, but that he would report the matter to the bank or the municipality so that measurements could be taken again.

How owners of fenced properties, who had had the fences pointed out to them as the boundary when they occupied the land, would act if their neighbour claimed that their fence was encroaching on his or her land was explored in question 8. Six (13%) of these 46 respondents said they would go to their bank or the municipality to take measurements (to establish the true position of the boundary). One respondent stated that he would approach the municipality to call in a surveyor. All the other respondents stated that they would not move the fence until they had had the matter adjudicated by the municipality or the bank. There was however, no stated resistance to the idea that the fence might have to be moved to comply with the *de jure* surveyed boundary.

When asked what would happen if her fence was destroyed or removed, one respondent who believed the vibracrete fence to be the boundary, noted that it would be difficult to know where the boundary was. She would have to get the municipality to re-establish it.

In exploring beliefs about the vibracrete fences, respondents were asked who owns the fence in question 5. The results are set out in table 10.2.

Table 10.2 Ownership of Vibracrete Fences

		m	f	
Total	40	31	8	
Registered	28	23	5	26 (21m, 5f) indicated fences are not owned by anyone 1 (male) indicated that the council owns the vibracrete fence 1(male) indicated that fences are owned by the development company that built them
Unregistered	12	9	3	8 (6m,2f) indicated fences are owned by the municipality 4 (3m, 1f) indicated that fences are not owned.

What is significant about these responses is that none of the respondents believed that they or their neighbours owned the vibracrete fences, jointly or severally. Thirty of the forty respondents (75%) indicated that the vibracrete fences are not owned by anyone. In the rented houses eight of the 12 respondents (66%) believed that the municipality owned the vibracrete fences.

10.2.2.3 Summary: boundaries

The responses to the section on boundaries are in harmony with the findings in Marconi Beam and Imizamo Yethu that there is a want for individual parcels. No evidence to support the notion of ambulatory topological boundaries or dwellings surrounded by common property was forthcoming. The responses do indicate that fixed boundaries are preferred, but they also hint that general boundaries may be acceptable if fences are constructed prior to occupation and defined as the boundary.

Respondents to whom pegs were pointed out as boundary monuments held strong negative attitudes to the idea of encroachment taking place. No responses supporting the notion of contractual encroachment were recorded as was the case in Imizamo Yethu, Brown's Farm and described to the author as applying in site-and-service schemes in other parts of Khayelitsha.

Building on the notion of non-ambulatory general boundaries, what is firstly important is that the fences themselves were pointed out as the boundaries. It would appear that there was no mention of corner monuments at all. What was not established was if residents believed that the boundary would move with the fence if the fence was reconstructed. The evidence from the interviews does indicate that in general people believed the boundary to be stationary. The importance of measurements of parcel dimensions being important evidence in resolving boundary disputes is significant. In spite of the fences being regarded as the boundary, six (13%) of the 46 respondents are on record as noting the need for measurements and a further respondent specifically stated the need for a surveyor in the event of a dispute.

Overall, the evidence is conclusive that if corner monuments ("pins") are pointed out as boundaries, then the position of the boundary between these monuments is believed to be static. In all such cases the stated intention is that encroachment will not be tolerated. The evidence is persuasive that if fences are pointed out as the boundary, then the position of the boundary is believed to remain static but the physical barrier, i.e. the fence, between neighbours may be constructed in a slightly different position. This does point inconclusively to a system of general boundaries being effective in a settlement such as Khulani Park.

The evidence also points to the type of boundary pointed out determining landholders' attitudes to boundaries. In Khulani Park two different sets of attitudes have been obtained in relation to an object on the boundary moving by up to 30cm. The social, political and economic conditions were the same for both samples^{xii}. Where corner monuments were pointed out to landholders, the attitude was strongly negative to encroachment. Where fences were pointed out the attitude is not as strong.

The generally accepted 10 to 30cm tolerable encroachment in reconstructing a fence in Khulani Park does compare with data collected in Imizamo Yethu. A SANCO representative had worked for the CPA in handing over sites in Imizamo Yethu and had also worked with site foremen to reconstruct the position of boundaries by

measuring up plan dimensions from existing pegs when there were problems. When asked how accurately corner pins should be replaced in Imizamo Yethu, he indicated that people on the ground would probably accept between 10 – 25cm without raising serious objections (Mabhai pers. com. 1997).

10.2.3 Registration

A registered title deed was the only instrument that respondents indicated that they would use to affirm ownership. Instruments and processes to support tenure security are explored in questions 2, 4, and 10 in appendix E1. All respondents, both lessees and registered owners,, fully understood the importance of land registration and the registered title deed as the primary evidence in affirming a claim to a person's rights in land. No other instrument or process was mentioned, nor were institutions other than those contributing to the formal cadastral and land administration systems, with the exception of street committees, mentioned in the responses to any of the questions. The institutions and people mentioned were banks, attorneys, surveyors, estate agents and the municipality. Question 10 in appendix E1 explored how a new owner would prove that he or she owns a particular parcel. All 68 (100%) respondents indicated that the title deed is proof of ownership. No other response was forthcoming.

10.2.4 Dispute Resolution

Disputes over land rights were investigated using questions 2, 4, and 10. In general the evidence is conclusive that residents believe that the formal cadastral system institutions and processes are the most appropriate. Some respondents mentioned street committees, but the institution most commonly mentioned by registered owners was their financial institution from which they had obtained a mortgage. To unregistered lessees, the institution most commonly mentioned was the municipality.

The first issue to be explored was if there had been any disputes over land rights and how a person would prove their claim to land if they were faced with such a situation (see Q2). In the registered properties, all 44 (100%) respondents indicated that they were unaware of disputes over the abstract run of property rights. If they were faced with such a situation, 11 (25%) respondents indicated that they would rely on their title deed. One indicated that she would get the bank to resolve the problem. Two other respondents indicated that disputes did not happen in Khulani Park, only in the "small plot house areas" (site-and-service schemes) and the "squatter areas" (of Khayelitsha). Similar responses to those obtained from the registered owners were obtained from the lessees. However, the lessees mentioned the municipality, street committees and perhaps the police.

How disputes over land and family rights are solved in the broader Khayelitsha, not necessarily Khulani Park only, were explored using question 4 in appendix E1. The responses tie in with key-informant interviews from officials working in Khayelitsha. A combination of street committees, the municipality and the police were mentioned,

with respondents regarding the municipality and the street committees being equally important.

Table 10.3 Dispute Resolution Institutions used in Khayelitsha

Total Sample	68	Registered Owners 44	Unregistered Lessees 24
Municipality.	60	38	22
Street Committees	50	26	24
Police	15	4	11

A number of respondents said that people: “Approach the municipality and the street committees because the street committees work together with the municipality. One approaches the police if it is a criminal matter.” One registered owner said: “Here in Khulani Park there are no disputes over land and family rights. I have only experienced this in other areas of Khayelitsha such as squatter camps and they resolve those through the street committees.”

As discussed earlier in section 10.2.3, in response to question 10, which explored how the buyer of a parcel would prove that he or she is the owner, all 68 respondents indicated that the new owner would “prove ownership by means of a title deed”.

10.2.4.1 Boundary disputes

Question 6 explored if boundary disputes had occurred in Khulani Park. If so, how had these been addressed? If not, how would the respondent deal with such a situation? There were no cases that people could recall in Khulani Park.

All 24 (100%) of the lessees on the unregistered land indicated that in the event that they were faced with such a neighbour encroaching over their boundary, they would report the matter to the municipality. Of the 12 lessees who had had vibracrete fences pointed out to them as the boundary, four of them, including one who said she would tolerate a 50cm uncertainty in the position of the fence, indicated that they would report the matter to the municipality to re-measure the relevant parcels.

The 44 (100%) registered owners who were interviewed all indicated that in the event of a dispute they would use formal cadastral system or land administration system mechanisms to resolve it. Three respondents indicated that they were aware of encroachment cases in the squatter areas of Khayelitsha, but not in formal housing. Two indicated that such a thing could not happen in their section of Khulani Park as the fences had been constructed by the developer (and therefore they believed that the developer had constructed the fence in the correct position). Most of the registered respondents indicated that they would approach their bank to resolve the issue. Others mentioned the bank or the municipality or both institutions. One male respondent indicated that he would approach the original developer and a female respondent indicated that street committees might resolve problems such as this. Thirty-five

respondents (80%) indicated that they would refer the matter to their bank and 11 (25%) indicated that they would refer the matter to the municipality. One male respondent indicated that he would refer the matter to the bank and the municipality so that the site could be measured again.

10.2.4.2 Summary: dispute resolution

In terms of the abstract run of property rights, both landowners and lessees relied on formal processes and institutions to resolve disputes. All 68 respondents indicated that a new owner would use a title deed to prove their claim to ownership of their land in the event that their rights were challenged.

The fact that 35 out of 44 (80%) of the registered owners indicated that in the event of a dispute over boundaries the matter would be referred to a bank, before an attorney or other professional or the municipality or a street committee is unexpected. Financial institutions had not been mentioned in the interviews and group workshops in the earlier case studies. Given that the municipal abstract of the register for this township indicated that 16 houses had been attached, an explanation for this common set of behavioural intentions may be due to an awareness of the power of financial institutions to repossess a home. Koen (pers. com. 1998) did indicate that after the bond boycotts in the early 1990's that a great deal of education had taken place when homes were registered in Khayelitsha^{xiii}. One respondent indicated that he had bought a repossessed house from the bank.

Koen (pers. com. 1998) pointed out that, for the same reasons that Marconi Beam and Imizamo Yethu could not be managed by the local authorities during the early part of South Africa's transition, it was difficult for banks to repossess homes in Xhosa-speaking townships at that time. The banks lacked the power to enforce such an action and anyone purchasing a house that a bank had repossessed might have been evicted by the broader community. This is in harmony with experience reported in other areas of the eastern metropole in section 7.2.1.2.

The responses in Khulani Park point to a general belief that land has value as loan collateral. Unlike Marconi Beam and Imizamo Yethu where in all the interviews and group discussions, only one respondent mentioned the bank, in Khulani Park where a substantial number of the properties are registered, the data show that most residents would approach the bank first in the event of a dispute.

There was also a general belief that land is marketable and transferable out of the family. In the responses concerning inheritance, none of the respondents indicated that land was not transferable or tradable. In Marconi Beam and Imizamo Yethu, there was a minority in each settlement who indicated that land should be held by the family in perpetual usufruct and that the land could never be transferred out of the hands of the family.

10.3 CADASTRAL SYSTEM EFFECTIVENESS ANALYSIS

10.3.1 Land Tenure and the Hypothesis

Unlike the other cases studied in this research, the Khulani Park case study does not support the hypothesis that:

The land tenure system in Cape Town's Xhosa-speaking communities comprises elements of both individualised tenure and group tenure rights. In these communities, some of the existing cadastral system's processes, and the instruments generated as part of these processes, are used to support claims to rights in land. Others are substituted by extra-legal mechanisms more suited to de facto tenure in a particular situation. Consequently, due to non-usage of parts of the cadastral system, the system does not effectively support land tenure security in the manner that government intends thus often rendering the cadastral system ineffective.

Unlike Brown's Farm, Marconi Beam and Imizamo Yethu, the data do not show that the social change model applied in Khulani Park. An internal dialectic where there is internal competition and inter-dependence between various power levels and sub-groups within the community was not evident. There was no evidence of struggles for land, resources and power, nor was there evidence of the processes of fission and integration in competition between individual and group land tenure rights.

Respondents in Khulani Park believed in a strong form of individual tenure, that land is held in full and free ownership or long term leasehold, and they had behaved accordingly up to the time that this research had been completed. No evidence emerged to suggest that extra-legal mechanisms were being used to uphold rights in land or that the *de facto* tenure system differed from the *de jure* system. Furthermore, the aerial surveys showed overwhelmingly that structures such as fences and houses adhered to the *de jure* surveyed boundaries.

During the early stages of the country's transition, it was not possible for the authorities and other institutions to exert their legal rights in the land tenure system, but by the time this research was conducted in 1997 the situation had changed. The evidence of Koen (pers. com. 1998) suggests that during the bond boycotts, group biases in tenure existed prior to 1993. However, the evidence from the interviews suggested that this was no longer the case. Residents were aware of street committees having a powerful influence in areas close to Khulani Park and a large part of other areas of Khayelitsha, but they played no role in Khulani Park itself. This is in harmony with the situation in Imizamo Yethu, where once people were settled on the land the role of the street committees was diminished substantially.

In conclusion, there were strong forms of individual tenure in Khulani Park when the interviews were conducted, which were both legal and legitimate. The social change model did not apply and there was no evidence of conflicts over land rights between

different individuals and factions within the community and between members of the community and the authorities or financial institutions. Unlike in the other case studies reported thus far, there was no evidence to support the main hypothesis posited in section 1.4 at all. With respect to question (a) in section 1.4, which explores in whom *de facto* ownership of land resides and the group interests in a particular parcel, in general *de facto* ownership vests in the formally registered owner or the officially recorded lessee. The issue of inheritance incorporated in question (a) is addressed in section 10.3.2.2 below.

10.3.2 Cadastral System and Land Tenure

10.3.2.1 Registration

The system of land registration, including the registration of mortgage bonds, was found to be universally effective in Khulani Park. All respondents indicated that they were using the registration system and they held positive attitudes to the system. No evidence emerged of an intention not to use the land registration system in future. The interview study in Khulani Park confirms the experience of senior officials described in chapter 7 that the cadastral system was being used in parts of Khayelitsha where the land was registered ($\pm 12\ 000$ parcels).

Unlike the other case studies and other parts of the eastern metropole, there was no evidence of informal transfers or incorrect adjudication of persons entitled to own land in Khulani Park. Although not explicitly explored, no evidence emerged to suggest that residents do not intend to use the cadastral system because it is too expensive or for any other reason. There had been non-usage of the cadastral system during the era of bond boycotts but at the time the research was conducted, residents recognised the role of financial institutions in the system of land tenure. Overriding community rights did not prevail within Khulani Park itself when this research was conducted. People indicated that they would approach formal land administration institutions, a land professional or the police in the event of a dispute, not a street committee. No mention was made of evicting a person from the community for holding particular political beliefs.

10.3.2.2 Family ownership

Overall the residents of Khulani Park showed a strong bias toward individual ownership and in the event of death of the owner the land would be inherited by the spouse in allodial ownership. The concept of the nuclear family was strong. Responses to the interviews suggest that in the event of death of the registered owner, existing instruments and processes incorporated in the Deeds Registries Act such as a usufruct, *usus*, *habitatio* or *fidei commissum* cater for the system of tenure desired by residents of Khulani Park.

A tenure system of perpetual usufruct where land vests in the family in perpetuity and is neither tradable nor transferable did not emerge on any of the interviews.

10.3.2.3 Boundaries

In harmony with the findings from Brown's Farm, Marconi Beam and Imizamo Yethu, the Khulani park case study supports the hypothesis that:

A system of monumented fixed boundaries or stationary general boundaries as opposed to a topological boundary system is appropriate to the tenure system wanted by residents of Cape Town's Xhosa-speaking communities.

In contrast to Brown's Farm and Imizamo Yethu, actual behaviour matched the results of the interviews. There was no evidence of land grabbing nor the notion of borrowed land. The number of encroachments measured from the overlay analysis was insignificant (see section 10.2.2). The interview study showed that people who had had 12 mm iron pegs pointed out to them as the boundary monuments were intolerant of any encroachment taking place. This accords with the findings from the interview studies in Marconi Beam and Imizamo Yethu.

In contrast to the other case studies, the majority of respondents in Khulani Park occupied their parcels when vibracrete fences were already in place. People who had had a vibracrete fence pointed out to them as a boundary were more tolerant of a minor movement in the position of the boundary fence in the event that the fence had to be reconstructed. Thirty-one (67%) of 46 respondents indicated that they would permit a movement of between 10cm and 30cm between the original position and a new position of a fence. A further four (9%) respondents indicated that they would allow a shift in the position of such a fence of up to half a metre.

This indicates that general boundaries may be an acceptable form of boundary in a settlement such as Khulani Park. To recap, according to Dale (1976) one definition of a general boundary may be a situation where the ownership of the boundary feature is not established and the boundary lies perhaps down either side of the boundary feature or perhaps the middle. A second alternative definition of a general boundary is where the position of the boundary is regarded as approximate so that the register may be kept free from boundary disputes. The monument, such as a hedge is paramount evidence and if the law allows it, the *de jure* boundary can be defined sufficiently flexibly to coincide with the *de facto* position of the monument (see section 2.4.2.2).

In a situation where the boundary is defined to be within a zone of uncertainty of approximately 30cm of the original position of a boundary fence then this would accord with Dale's second definition above. The data from the interviews also show that respondents' beliefs were in harmony with the first definition of a general boundary. In the results in table 10.2, none of the 28 respondents who were registered as owners believed that they owned the vibracrete fence. Moreover, twenty-six (93%) of these respondents believed that the fence was not owned by anyone.

The Khulani Park case study does suggest that where fences were built prior to occupation and the fences were pointed out as the boundaries, that general boundaries could be an effective system. These respondents indicated that they would tolerate some movement of the position of the fence upon it being rebuilt. However, in situations where the monuments demarcating the apices of fixed boundaries were pointed out, there were contrasting beliefs, attitudes and intentions concerning to encroachment that respondents intended to tolerate from their neighbours. Where iron pegs were pointed out and the boundaries were unfenced when the land was occupied, respondents stated an intention to tolerate no encroachment at all. The Khulani park data show that even under the same social, economic and political conditions, attitudes and beliefs to encroachment depending on what is originally pointed out to landholders as the boundary. The notion of a topological boundary system was not supported.

Given that all the Khulani Park respondents were unaware of encroachment related disputes and the aerial surveys support this, the hypotheses that have been posited to explain the patterns of encroachments in the other study areas could not be tested in Khulani Park. There is no data to test the hypotheses numbered 2 – 7 in section 7.3.2.3.

In conclusion, research question (b) in section 1.4 explores which *de facto* systems, the processes, structures and instruments, currently underpin tenure security in Xhosa-speaking communities. In Khulani Park the *de jure* cadastral instruments and processes have been shown to fulfil this function. The systems of land registration and surveyed cadastral boundaries were shown to be both legal and legitimate. No evidence was gathered to suggest that informal or extra-legal processes play a role in affirming rights in land.

10.3.3 Land Policy and Land Administration

An evaluation of the cadastral system in the context of land policy issues has been conducted in the in the studies of Brown's Farm, the eastern metropole, Marconi Beam and Imizamo Yethu in chapters 6, 7, 8 and 9. To recap, the relevant policy objectives are security of tenure for all and facilitation of social change in providing more equitable distribution of land ownership and deal with the injustices of racially based land dispossession of the past (see sections 1.3.4, 2.2.4 and 6.4.3). The Khulani Park case study has shown that the cadastral system can be effective and used in the manner intended by land administration authorities under stable conditions. When the study was carried out in 1997, the situation in Khulani Park was stable and conditions encouraged landholders to use the cadastral system. The fact that landholders did use the cadastral system indicates that it is possible to facilitate social change in providing more equitable distribution of ownership of land using the existing cadastral system to uphold ownership in urban Xhosa-speaking communities.

In terms of the discussion on systems theory in section 2.1, Khulani Park was not undergoing the substantial change that was occurring in the other case studies when

the interviews were conducted in 1997. To recap, a system may exist in a stable state for long periods where change is incremental followed by periods of rapid, substantial change which may radically alter the nature of the system itself. During a paradigm shift, it is difficult for an observer to construct a reliable systems hierarchy as an operational model of the world. In Khulani Park the situation was not volatile whereas in the other case studies the situation was volatile when interviews were carried out. To recap, in a period of substantial change, an analysis of the effectiveness of a cadastral system should examine if the cadastral system is currently effective and if it is likely to be effective when the land management system reaches a desired future state (see section 3.1).

In Khulani Park, the existing cadastral system's instruments and processes were found to effectively uphold the system of land tenure and meet the requirements of other higher level systems in the land management hierarchy such as land administration. The situation was in a desired state and this study shows that *de jure* claims to ownership and rights of occupation were not being challenged or manipulated by factions within the community. There had been periods of volatility, but at the time the interviews were conducted, the situation was stable and the top down systems hierarchy of land administration, land tenure and the cadastral system was clear.

In volatile periods in the early 1990's, the settlement had been affected by bond boycotts and service boycotts during South Africa's transformation. Based on the evidence given by Koen (pers. com. 1998), the land administration authority and the financial institutions had waited until the situation had stabilised before intervening. At one stage, Koen posited, it would not have been practically possible for the financial institutions to evict a homeowner as it would probably not have been possible for a new owner to move into the home. When the situation stabilised, the financial institutions renegotiated the mortgages with existing homeowners and the municipal record indicates that defaulters on bond repayments were evicted and houses repossessed (Koen pers. com. 1998). This observation by Koen that a local community might override formal cadastral and land administration processes by supplanting the legally entitled owner of a property (in this case the bank) with a person of the community's choice is supported by experience in other Xhosa-speaking areas of Cape Town detailed in section 7.2.1.2. The fact that at the time that this research was undertaken in 1997, 16 mortgage bond defaulters had been evicted in Khulani Park points to the tenure system moving on the continuum between formal and informal concepts (see section 1.3.6.1) to a situation where there was a strong bias toward formal, legal individual ownership.

The situation in Khulani Park fits the model of land administration in a stable environment depicted in figure 2.3. The City of Tygerberg was involved in administering the adjudication of ownership rights and the information from the Deeds Office was being fed back to the local authority. This information was being used for fiscal administration and other land administration activities.

10.4 SUMMARY OF ANALYSIS AND CONCLUSIONS

The results from the interviews of residents, key-informant interviews and the aerial surveys conclusively support the finding that the existing cadastral system's processes and instruments are an effective system to support land tenure security in Khulani Park. The results point universally to effective usage of the *de jure* cadastral system. There was no evidence of usage of extra-legal mechanisms or evidence of an intention to use an extra-legal mechanism to acquire, hold or transfer rights in land. Registration and a title deed respectively were regarded as the appropriate process and instrument to affirm an owner's rights. Landowners had used registration to acquire and uphold their rights of ownership and no evidence emerged to indicate that informal transfers had taken place. The fact that most properties are mortgaged may be a major factor underlying this behaviour.

Beliefs about inheritance are generally consistent with the findings from the other sample areas, except that no evidence of a tenure system of perpetual usufruct emerged in Khulani Park. In general the prevailing belief is that upon the death of the landholder, the *de jure* heir is empowered to manage the property and perhaps alienate it. As with the other sample areas, in Khulani Park in most instances the belief is that the heir should take cognisance of the other members of the nuclear family and consult with them. However, some Khulani Park respondents felt that this was not necessary and that allodial ownership is believed to vest in the registered owner without the limitation of needing to consult other family members in the management of land or the alienation thereof. This contrasted with some respondents in Marconi Beam and Imizamo Yethu who intended to leave the house to their spouse but the intention was that the spouse's occupation right should be limited to a personal servitude *par excellence* or a *fidei commissum*. These respondents intended to exclude the right to alienate the property from their spouse's bundle of rights. The belief that land should be held in perpetual usufruct (see sections 8.5.1.2 and 9.4.1) by the family was not expressed by any of the respondents, nor was the belief that the notion of family rights in land extends beyond the nuclear family.

The investigation into boundaries yielded two contrasting sets of results concerning attitudes and intentions toward encroachment. The phenomenon of a substantial proportion of dwellings encroaching over surveyed *de jure* boundaries that was measured elsewhere in Cape Town's Xhosa-speaking communities was not encountered in Khulani Park. Usage of the boundary system, that is adherence to the *de jure* boundaries delivered by the previous owner or the local authority, is universal barring one instance of non-compliance with the surveyed boundary that was identified from the overlay map. Encroachment is insignificant in Khulani Park. However, attitudes and stated intentions between areas that had been fenced prior to occupation and those where the 12 mm iron peg monuments were pointed out as the boundaries were different.

Where monuments ("pins") demarcating parcel apices were pointed out as the boundary, there was an intention not to tolerate the construction of a structure that

encroached over the boundary, even by a centimetre. This is consistent with the findings in Marconi Beam and Imizamo Yethu and infers that fixed boundaries are appropriate.

Where fences were pointed out as the boundary, or perhaps landholders assumed these to be the boundaries, the results were slightly different. Thirteen percent of these respondents expressed beliefs that were the same as those who had iron pegs demarcating their boundaries and also stated an intention to behave in the same manner as those who had monuments (“pins”) pointed out to them as boundaries. No encroachment at all would be tolerated. The remainder of this sample (87%) indicated that some encroachment was tolerable. This tolerant attitude toward encroachment may be an indication that general boundaries may be effective in Cape Town's Xhosa-speaking communities. However, this theory is speculative, and more detailed investigation is necessary. However, the evidence is conclusive from this sample area and the preceding ones that fixed boundaries that have monuments demarcating the corners of the parcel apices are believed to be an effective system in Cape Town's Xhosa-speaking communities. Moreover, even if general boundaries are appropriate to the wants of Cape Town's Xhosa communities, there is strong evidence that people believe that a system of cadastral surveying is needed to re-establish boundaries, arguably to a precision of no greater than 10cm – 25cm.

The responses concerning the cadastral system institutions yielded unexpected results. Both the registered property owners and lessees emphasise the role of the local authority as a source of expert advice and as an institution that will assist in dispute resolution. An unexpected common belief concerning the role of providing advice among registered property owners is the prominence of financial institutions, specifically banks. As the discussion in section 7.2.1.2 shows, although street committees enjoyed recognition by the City of Tygerberg in some areas of Khayelitsha, they did not play a role in Khulani Park. The majority of respondents mentioned that they would first approach the municipality or the bank in the event of a dispute over land rights. A minority mentioned the need for an attorney or a land surveyor. However, respondents were aware of street committees' role in other parts of Khayelitsha.

The findings in Khulani Park match the situation that respondents in Marconi Beam and Imizamo Yethu stated that they would like in future. Unlike the other case studies, the social change model did not apply in Khulani Park and the *de facto* tenure practices were substantially different in Khulani Park to Brown's Farm, Marconi Beam, Imizamo Yethu and other parts of Cape Town's eastern metropole. Khulani Park was stable and characterised what has been termed the desired future state in section 3.1. Unlike the other case studies, there were no overriding community rights in land that were being enforced in Khulani Park that might encourage landholders not to use formal cadastral instruments and processes.

Overall the existing cadastral system appears to effectively support land tenure in Khulani Park. Moreover, it supports the collateral value of land and, what little

evidence there is of it, a land market. The cadastral system is being used in the manner that land administrators intend it to be used. Khulani Park contrasts with the other case studies in that in those cases non-usage of processes and instruments that are similar to those of the formal cadastral system occurred in volatile situations. In those situations, the cadastral instruments and processes formed the foundation of a range of instruments and processes that were used to affirm rights in land. The behaviour in Khulani Park matched the type of behaviour that respondents in the other case studies envisaged would occur in their ideal future.

ENDNOTES

ⁱ Black Africans were able to hold property in Cape Town as 99-year leases in 1984 in terms of the Black Communities Development Act 4 of 1984.

ⁱⁱ In 1995 the population was estimated at 325 000 people (van Zyl 1995). A number of key-informants believed that the population number was substantially higher in 1998. A new census was underway at the time and had not been published by the time this research was completed.

ⁱⁱⁱ Registration of 28 000 council-owned parcels in Khayelitsha was in process at the time that this research took place. Approximately 12 000 houses had been built by private developers. See section 7.2.2.

^{iv} Koen 15 May 1997, 4 November 1997, 23 February 1998. An official in the City of Tygerberg, Khayelitsha Office, Town Planning Section.

^v Xolani 12 October 1998. An official in the City of Tygerberg, Khayelitsha Office, Housing Section.

^{vi} General plan L475/1985 surveyed in terms of the Black Communities Development Act 4 of 1984.

^{vii} City of Tygerberg records 13.10.1996. These records were created from the Deeds office records of registered owners and municipal data.

^{viii} City of Tygerberg records 13.10.1996.

^{ix} "Vibracrete" is a generic name, derived from a brand name originally, for a particular type of fencing used extensively in South Africa. The fencing is constructed of 50mm concrete slabs slotted upright between slotted concrete pillars.

^x City of Tygerberg records 13.10.1996.

^{xi} City of Tygerberg records 13.10.1996.

^{xii} The sample of 21 respondents to whom pegs were pointed out comprised 12 lessees and 9 registered owners. Of the sample of 46 respondents to whom fences were pointed out, 33 were owners and 13 were lessees.

^{xiii} City of Tygerberg records "Khayelitsha-Transfer of State Funded Properties: progress report as at the end of November 1997". Item 4.4 indicated that a total of 19 556 of a potential 27 250 households had been exposed to the "home ownership and information campaign".

CHAPTER 11

CONCLUSIONS

11.0 INTRODUCTION

This thesis has formulated theory to evaluate the effectiveness of a cadastral system during a period of substantial social, political and economic change. Development and testing of this theory was done in a study of a sample of Cape Town's Xhosa-speaking communities. Many of the members of these communities are recent arrivals in the City. The study took place in the context of substantial change in the macro-environment during South Africa's transition in the 1990's, and substantial change in the micro-environment in some of the study areas as they progressed on a path toward formal *de jure* individual tenure based on allodial ownership. By the time the data collection for this study had been completed, registration of ownership in the Deeds Office had taken place in Brown's Farm, Marconi Beam and in most of Khayelitsha's site-and-service schemes. Registration was in process in Imizamo Yethu when the data collection had been completed.

In the first stage of formulating theory, a conceptual framework was developed to enable an analyst to understand a cadastral system in the context of its broader environment during a period of substantial change using soft systems theory, strategic management theory and existing cadastral theory (see chapter 2). This conceptual framework enables an analyst to establish which sub-systems of land management should be evaluated during a cycle of change. In concept, the cadastral system and its sub-systems may be excluded from evaluation in a given situation, even if an analyst has originally set out to analyse a cadastral system (see sections 1.8 and 2.1.5).

Building on this conceptual framework, in the second stage of formulating theory, an evaluative framework germane to situations such as those encountered in this research was developed (see chapter 3). In addition to the theories applied in developing the conceptual framework, the evaluative framework incorporates social psychology theory that has formed the basis of a number of instruments that have been developed to evaluate management information systems. This is the theory of planned behaviour and the theory upon which it is developed; the theory of reasoned action. The evaluative framework firstly facilitates where the focus of analysis should be in a given situation in evaluating a cadastral system and its various sub-systems, and systems above the cadastral system in the land management systems' hierarchy. Secondly the evaluative framework facilitates assessing the effectiveness of a cadastral system in an existing, changing situation, and assessing the cadastral system in a system of land management that is desired in a stable environment in future (see section 3.1).

The cadastral sub-systems of adjudication, boundary definition, registration and dispute resolution have been used as a structure to describe the data collected. However, the

primary experimental focus has been on evaluating how effectively two fundamental sub-systems of South Africa's cadastral system are being applied, or are likely to be applied, by Cape Town's Xhosa-speaking communities in upholding *de facto* tenure systems in a particular situation. These sub-systems are the system of cadastral boundaries and the land registration system (see section 3.4.1).

In using the evaluative framework, Ajzen's (1991) theory of planned behaviour (which incorporates the theory of reasoned action) and Fourie's (1993) social change model have been the main instruments used in describing and analysing the data. The social change model was assumed to describe the dynamics in Cape Town's informal settlements and site-and-service schemes as it has been tested elsewhere in other urban land tenure related research (see sections 1.3.7 and 3.4.1). This assumption has been shown to be valid. Evidence of usage of the theory of planned behaviour in cadastral research was not found in the literature. Usage of this theory to structure and analyse the data collected in this research is a new application of this theory. Moreover, in using the evaluative framework, Miller's (1989) and Mathieson's (1991) argument that (information) system effectiveness should be measured on the basis of whether a system is being used or likely to be used has been adopted as a fundamental premise. Because the environment in which a cadastral system exists is multi-various, the analysis has also examined if the manner in which the system is being used not only serves the needs of primary users, the landholders, but also the requirements of other higher level systems. In this thesis, these other higher level systems have been identified as the system of land administration and the system of land policy development portrayed in figures 2.1, 2.2, 2.3 and 3.4.

The analysis has been structured (see section 3.4.1.2) so that the first issue to be examined in a particular case was the *de facto* land tenure system and, if applicable, the system of tenure wanted in some desired future state. The interrelationship between land tenure and the cadastral system is the crux of each situation investigated. If the cadastral system does not, or cannot, adequately model the relationship between people and the land and the social relationships that are intrinsic to this relationship, then it can be assumed that the cadastral system will not be used and it will be ineffective. The second issue focuses on actual usage of land registration, or similar systems of records of rights in land, and surveyed cadastral boundaries in an existing situation and the likelihood that these cadastral sub-systems will be used in future. The third issue relates to higher systems of land policy formulation and land administration and the effectiveness of the cadastral system in meeting the requirements of these systems.

This chapter consists of two parts. The first part is a synthesis of the analyses of the case material and the study of the eastern metropole using the structure summarised in the paragraph above. It examines the validity of the main hypothesis and addresses the issues raised in research question 1) and research questions (a) to (d) in section 1.4, and it analyses the usage and predicted usage of land registration and cadastral boundaries in the study areas. Thereafter the chapter addresses the case study material in the context of higher systems in the hierarchy, land policy formulation and land administration. The second part of the discussion relates to the primary research objective. This objective was to formulate and test theory about ways of defining and evaluating the effectiveness of a

cadastral system during a period of substantial social, political and economic change (see research question 2) in section 1.4). In this second part conclusions are drawn regarding the applicability of the evaluative framework (see chapter 3), the conceptual framework (see chapter 2) and the validity of the theories used in developing and applying these frameworks.

11.1 LAND TENURE AND CADASTRAL SYSTEMS

11.1.1 Land Tenure and the Hypothesis

Outside of Khulani Park, the data acquired in this research support the main hypothesis posited in section 1.4 that the tenure system in Cape Town's Xhosa-speaking communities comprises elements of both individual tenure and group tenure rights. It was found that a range of formal and informal structures and processes were used to administer the land tenure system in different situations in these settlements. These structures changed over time as each settlement proceeded to registration of private allodial ownership and changes took place in the legal milieu (changes in legislation) and political milieu (changes in institutions, structure, policies and personnel of government). Moreover, the emphasis on particular processes in addressing particular land tenure issues also changed. For example the prominence of the role of warlords and street committees and social processes in dispute resolution in Brown's Farm changed substantially during the course of this research. At the same time there was a rise in prominence of local government's role and a rise in prominence in the usage of formal instruments and processes in dispute resolution in this settlement.

The research in the informal settlement(s) and site-and-service schemes supports Doebele's (1994:48) thesis of complex mixtures of formal and informal systems and the thesis of Davies and Fourie (1998:240) of a continuum model of legal, illegal, spontaneous, planned, formal and informal concepts (see section 1.3.6.1). At certain times, and in certain situations, the formal cadastral system's instruments and processes and/or those of a locally operated rental registration system, which was similar to the deeds registration system, were foremost in upholding rights to land. At other times informal, extra-legal processes and structures were used and cadastral instruments and processes were not used at all or were ancillary to these informal processes.

The data support Fourie's (1993:438) and Davies (1998:81) thesis that the rules relating to tenure and land administration are not static but are subject to manipulation by sub-groups competing for land, resources and power. In terms of this thesis, such conflict and competition leads to the rules being changed. Moreover, the research shows that the author's analysis of Fourie's social change model is valid (see section 1.3.7) as is the assumption that the model applies to informal settlements and site-and-service schemes in Cape Town (see section 3.4.1.2). Settlements such as Marconi Beam, Brown's Farm and Imizamo Yethu comprised a plurality of individuals, groups and sub-groups, each having different interests and goals and conflict was inherent in a number of social relationships. The data show that there was continual conflict between different individuals, groups and sub-groups within a settlement and between these entities and

external actors such as the local authority. There were continually changing group and individual emphases in land tenure. As circumstances changed, the prevailing bias of the tenure system in a settlement oscillated between individualisation (fission) and overriding group rights (integration) at various stages in the life cycle of a particular settlement. However, the overall trend was toward individualisation as settlements progressed through a number of phases from being informal to site-and-service rental schemes to suburbs where residents enjoyed private, individual ownership in *allodium* (e.g. see sections 6.3.3, 6.4.1 and 9.5.1). For example, in Brown's Farm the approval of a particular warlord was required before a transaction in a rental agreement could be formally recognised prior to the local government elections in 1996. After the local government elections in 1996, community based structures played no formal role in the execution of such transactions (see sections 6.1 and 6.3.3.1). As the Marconi Beam case shows, communities did not necessarily endure each of these three main phases whilst progressing to being granted ownership. In Marconi Beam, residents progressed directly from living under informal settlement conditions in Marconi Beam to moving into formal housing in Joe Slovo Park.

In the eastern metropole there was evidence of group biases emerging in the tenure system after parcels had been registered in private ownership in the Deeds Office, especially in cases of inheritance. Formally, landholders enjoyed legal rights of allodial ownership, but *de facto* they did not have the power to exercise all their legal ownership rights. The overall trend was toward individualisation but there were still oscillations in the system (see section 2.1.2.3) where group biases were prominent in certain situations. As the events reported in Langa and Guguletu in section 7.2.1.2 show, the *de facto* powers of the owner were not entirely allodial. Conflicts arose when local groups asserted a right to decide who should inherit a parcel, thus removing this power to manage the land from a testator or testatrix. Street committees had removed the power to bequeath the land from the registered owner and also retained a right to screen newcomers to a particular area. Moreover, people could be evicted from a community for having different political affiliations to those of the prevailing power structures or for anti-social behaviour.

In certain case study areas, group structures played a prominent role up to the point of registration. When the time came to register ownership in Khayelitsha and Marconi Beam, group structures played a prominent role in the tenure system where there was conflict regarding the accuracy of the rental systems' registers. Street committees played a major role in the conflict resolution tribunals in Khayelitsha, and they played a role in adjudicating disputes over the rental scheme register in Marconi Beam. In other jurisdictions the authorities did not abrogate the responsibility for resolving these disputes to community structures. In Brown' Farm, where there was inaccuracy in the register, the onus was on the current claimant to prove his or her claim to ownership of the parcel they occupied to the City of Cape Town. This process could have involved evidence provided by street committees but the process was managed by the local authority and the primary evidence in resolving cases of informal transfer was the testimony of the person whose name appeared on the register of rental agreements. Such a dispute was not handed over to community based tribunals, as was the case in

Khayelitsha. Street committees played no role in resolving such conflicts between the official record and *de facto* occupation in Imizamo Yethu. In Imizamo Yethu, external agencies readjudicated entitlements to ownership and assigned these rights to the current occupants of a parcel. The agents, DAG, used public meetings and openly displayed the register of entitlements to generate publicity and called for objections to the readjudication. In terms of the evidence available to the author, street committees had not played a role in resolving these disputes in Imizamo Yethu by the time the study ended.

There were therefore a range of different instruments and processes that were used in different case studies to resolve conflicts where the official register of expectative rights in land did not reflect the *de facto* claimant(s) of these rights. All of these processes were generally legitimate, although two court cases did arise out of such conflicts in Khayelitsha (see section 7.2.4). The notion of individual ownership was not challenged in any of the case studies though.

Ownership in *allodium* did not exist in three of the four case studies when this research commenced, but formal individual tenure in the form of a right of occupation with an expectation of ownership based on clearly defined surveyed parcels existed in Brown's Farm and Imizamo Yethu. The results of the interviews conducted in three of the case studies, Marconi Beam, Imizamo Yethu and Khulani Park, showed that there was no resistance to the notion of ownership in *allodium*. However, with the exception of Khulani Park, overriding group rights still existed in the study areas at the time that this research was undertaken. Prior to ownership being registered in the Deeds Office, group structures played a prominent role in the land tenure system in the study areas outside of Khulani Park. Moreover in Marconi Beam and Brown's Farm, in the short period after registration of ownership had taken place and in parts of the eastern metropole where land had recently been registered in the Deeds Office, group structures continued to play a role in the tenure system.

It was mooted that analysis of cadastral system effectiveness should examine if the cadastral system is currently effective and if it is likely to be effective when the land management system reaches what has been labelled a desired future state (see section 3.1). Outside of Khulani Park, the complex mix of formal and informal processes in the tenure system was found to apply when data were collected at various stages of this research. This complex mix also existed in the relevant case studies prior to this research commencing. When the interviews were conducted, the environment in the case studies was volatile and varying degrees of conflict existed between individuals and factions within a community (internal dialectic) and between the community and outside institutions such as the local authority (external dialectic).

The volatile state of the tenure system that existed in the case studies prior to registration of ownership in the Deeds Office, Khulani Park excepted, is not what the majority of landholders desired in the long term. The interviews in Marconi Beam, Imizamo Yethu and the information from the life history in Khayelitsha show that the tenure system wanted in an ideal future state is one based on individual tenure. In this ideal future state, land is registered, boundaries are stationary and institutions of government and other

agencies external to the community are the main actors involved in administering the tenure system. A number of respondents in Marconi Beam held strong negative attitudes to institutions such as street committees playing a role in this land tenure system wanted in future (see section 8.5.1.1). They also intended to rely on formal cadastral instruments, processes and institutions to affirm and defend their land rights. They stated an intention to vigorously defend their surveyed legal boundaries against encroachment and they emphasised the importance of written documentation to affirm their rights to their land in the event of a dispute.

The results obtained in Khulani Park indicate that the tenure system that respondents in Marconi Beam and Imizamo Yethu wanted in future can be realised. The part of the main hypothesis posited in section 1.4 relating to overriding group rights in the tenure system did not hold in Khulani Park at the time it was studied in 1997. In Khulani Park, a tenure system of individual allodial ownership prevailed and the formal cadastral instruments and processes that support it were being used in the manner that land administration authorities intended. In Khulani Park, land had been registered in either 99-year leasehold or allodial ownership tenure for up to ten years when interviews were carried out in July 1997. At that time there did not appear to be any group influences in the tenure system other than family tenure issues. The interview study in July 1997 showed that community based structures played no role in the tenure system in Khulani Park (see section 10.2.1). Whereas there was a suggestion of attributes of group tenure existing when the bond boycotts took place in the late 1980's and early 1990's, there was no suggestion of these influences when this research took place. In addition, financial institutions had repossessed 16 properties and there was no evidence to suggest that the legitimacy of such actions had been challenged on the basis of being in conflict with the prevailing *de facto* tenure system.

11.1.1.1 Family rights

The interviews three case studies in 1996 and 1997 showed that the beliefs about the nature of ownership and the beliefs about the nature of the bundle of rights differed substantially, particularly relating to the definition of family rights. Figure 11.1 illustrates the continuum on which this set of beliefs was found to exist in three of the sample areas, Marconi Beam, Imizamo Yethu and Khulani Park when interviews were conducted in 1996 and 1997. There was the belief at the one extreme that the residuary ownership right vested in the registered owner. He or she should not have to consult any other family members in the event that a major decision is taken relating to land such as alienation. At the other pole of this continuum, is the belief that ownership vests in the family in perpetuity. The land may never be sold, not even in 100 years. In this paradigm, household heads have a partial right in land such as a usufruct, *usus* or *habitatio*, which is passed down to other family members in perpetuity. In between these two poles, some respondents believed that the registered owner has an obligation to consult the rest of the family should the owner wish to alienate the land, but ultimately the right and the power to deal in the land vests in the registered owner. This belief was encountered in Marconi Beam and Imizamo Yethu, but not in Khulani Park. However, the most commonly held belief about family ownership was that land could be alienated if there was general

consensus among family members. Overall the prevailing set of beliefs is that land is ownable and alienable. In this way the land tenure system does not display traditional customary influences. The perpetual usufruct model may be influenced by traditional values, but in the author's observation this belief may also prevail in non-traditional societies, particularly rural areas where there are family farms.

The family tenure system of perpetual usufruct is a tenure system for which the existing deeds registration system caters. It is possible to register a personal servitude *par excellence*, such as a usufruct, *usus* or *habitatio*, or a *fidei commissum* on a title deed.

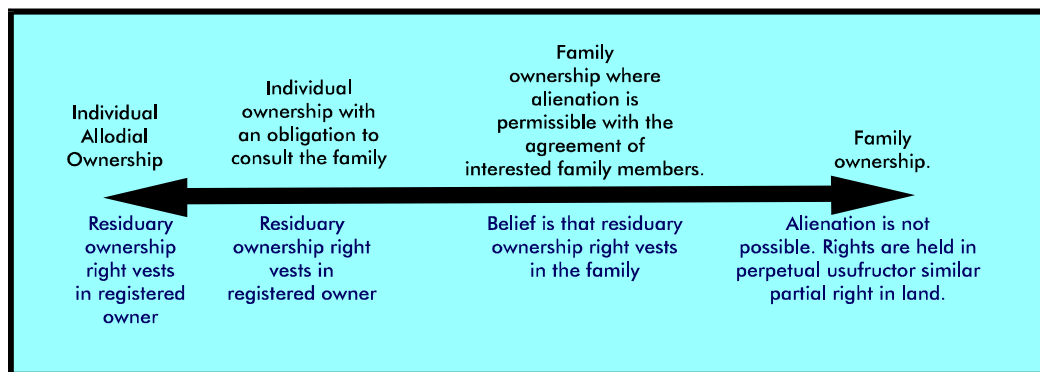


Figure 11.1 Family Ownership

What also emerged in the study was that the concept of the family is not clearly defined. In Marconi Beam and Imizamo Yethu some respondents, who held the view that land is owned by the family, believed that the family was defined as the extended family. That is *inter alia*, cousins, aunts, uncles and in-laws have an interest in the land. This is in contrast to the concept that the family interest in land is limited to members of the nuclear family. This latter concept was found to exist to some extent in Khulani Park as well as Imizamo Yethu and Marconi Beam.

11.1.1.2 Summary

In summary, in terms of research question (a) posited in section 1.4 which explores in whom *de facto* ownership of land resides or should reside, there is homogeneity in the set of beliefs that a form of individual tenure is the most appropriate in Cape Town's Xhosa communities. This want for individual tenure was expressed, even though people were not necessarily living under such a tenure form when they were interviewed. There is heterogeneity in the set of beliefs that the residuary right of ownership should vest either in the registered owner, the nuclear family or some form of extended family. In certain stages along the continuum from dominant group biases in tenure to allodial individual ownership, group structures have been shown to hold a *de facto* right to evict landholders and reallocate land to people whom the group deems more suitable to them. In these stages group structures have retained certain powers over leaseholders rights in the case of rented land. In privately registered land, group structures have retained certain powers

over the residuary right of ownership and the legal owner does not enjoy the full extent of the *de jure* allodial powers vested in him or her.

In this study, there has been a trend toward individualisation as settlements progressed from informal status to registered ownership, but there were oscillations between group and individual biases in this general trend. The extent of dominant group behaviour tended to diminish as rights became formalised and individualised, policy vacuums and legislation vacuums were filled (see section 9.5.1), and the land administration authorities consolidated sufficient legitimate power to administer the various settlements as the situation stabilised. However, there is evidence that people have been evicted from registered parcels and their land and houses reallocated by street committees. However, outside of Khulani Park and what has been conceptualised as an ideal future state in the other case study areas, individual ownership of an individual parcel with minimal local group influences is the system that respondents and key-informants indicated is what is wanted. Such a tenure system existed in Khulani Park, which in a stable environment was effectively supported by the *de jure* cadastral system.

11.1.2 Cadastral System And Land Tenure

This section reports on the effectiveness of land registration and the system of cadastral boundaries in the existing situations in the case studies when they were studied and the situation that residents indicated that they wanted. The issues discussed here were investigated using research questions (b), (c) and (d) in section 1.4. In summary these questions are:

- (b) What *de facto* systems underpin tenure security in an existing situation;
- (c) To what extent are landholders using the existing cadastral system; and
- (d) To what extent are *de facto* systems in conflict with the *de jure* system?

11.1.2.1 Registration

There are three facets to the study of registration in this research that influence cadastral system effectiveness. The first issue is the measure of actual usage of the formal system of deeds registration where it has been implemented. The second issue is the probability that the land registration system will be used by people who are scheduled to be granted ownership, and if they will continue to use the registration system. The third issue is whether the level of usage or non-usage of systems that register a right to rent a parcel, which carried an expectation of being granted ownership, is a reliable indicator of usage of the deeds registration system in future.

In the Khulani Park case study the land registration system was effective. All the respondents who believed that they held land in ownership had used the land registration system to acquire their ownership. No evidence was uncovered to indicate that informal transfers had taken place in this suburb. Moreover, informal transfers were discouraged in Khulani Park because most of the houses were mortgaged. Consequently if a house was sold informally and mortgage bond repayments stopped, the house would be repossessed

by the financial institution. Sixteen such repossessions were observed to have taken place.

The Khulani case points to the assignment of a particular right in the bundle of rights that constitute ownership to a third party being a key-factor that encourages landholders to use the system. Failure to use the cadastral system in such cases results in loss of ownership, providing that the social-political environment is sufficiently stable to allow this. During the period of the bond boycotts, it was physically impossible for financial institutions to repossess land. At that time the balance of power between the general community and the financial institutions and the land administration authorities favoured the community and mortgage agreements had to be renegotiated. When the environment had stabilised and the balance of power had swung to the financial institutions, it was possible to repossess homes held as collateral against a mortgage bond.

There was evidence of informal transactions taking place, or at least an intention to enter into an informal transaction, to transfer newly registered parcels in other parts of Cape Town. One key-informant described instances of formal registered properties being sold informally in Langa and Guguletu, but such cases could not be confirmed from other sources (see sections 7.2.1.3 and 7.3.2.1). Another key-informant believed that informal sales had taken place in Joe Slovo Park but these also could not be verified. However, there is reliable evidence that the MBDT had bought a house from an owner who had intended to sell it informally (see section 8.4.3).

In Guguletu, there were experiences where family issues overrode legally registered land rights, such as in the case where the stepchildren were recognised as the *de facto* owners by community structures and the registered legal heir could not take occupation of a particular house (see section 7.2.1.2). However, the manner in which this particular case was resolved where the stepchildren purchased the parcel suggests that the community's attitude to the land registration system was not negative. The community structures believed that the stepchildren's claim to occupancy of the house was regarded as stronger than that of the legal heir. The rights of the owner to decide on to whom the land may be alienated or who may succeed him or her were challenged, not the registration system itself. This is a case of the *de jure* definition of the tenure type not matching the *de facto* tenure system. *De facto*, the full powers of legal ownership as defined in section 2.2.6.1 did not vest in the registered owner.

The interviews in Marconi Beam and Imizamo Yethu in 1996 and 1997, and the evidence from the life history in Khayelitsha, show that people believed land registration to be an appropriate system to affirm their rights in land in future. People held positive attitudes to land registration and they stated an intention to use it. Moreover, there were strong negative attitudes to group influences in the tenure system. In terms of the theory of reasoned action, which assumes that people have volitional control over their behaviour, these positive attitudes toward land registration and stated intentions to use the system should result in people using the land registration system. Therefore, in terms of this theory, it can be concluded that the land registration system is likely to be effective. However, in terms of the theory of planned behaviour there may be control factors that

inhibit people's volitional control over their behaviour and may motivate them to behave differently to the manner in which they stated that they intended to behave.

In terms of Taylor and Todd's (1995) research, which is grounded upon the theory of planned behaviour, what strengthens the reliability of the interview data is that most of the respondents had prior experience of using a system that is similar to deeds registration to affirm their rights in land (see section 3.3.3). This prior experience emanated from using similar systems in the Transkei or Ciskei, in townships around South Africa and in the study areas in Cape Town. Overall, the interviews of landholders in an informal settlement and a site-and-service scheme point to the land registration system being effective in future with certain provisos (see chapters 8 and 9). The main proviso that has come to light in this research is the social-political environment. The land administration authorities have to enjoy legitimate, legal power to carry out the governance functions that fall within their mandates. If the environment encourages people to use registration, then they are likely to use it.

Economic factors were not the focus of this research, but previous work by Manona and others suggests that costs may be a major factor in encouraging or dissuading people to use or not use the *de jure* cadastral system to affirm rights in land. Extrapolating from the incidence of non-usage of rental registration systems of expectative rights, what this research has shown is that even when costs of using cadastral instruments and processes are minimal, the system may still not be used.

It has been assumed that usage of the rental registration systems in Brown's Farm, Marconi Beam, Imizamo Yethu and Khayelitsha should be a reliable predictor of usage of the deeds registration system. These local systems' processes were similar to those of the deeds registration system. Furthermore, they were important to people who wanted to be granted ownership of their land in that they formalised an expectative right of ownership in addition to affirming a formal right of occupation. In addition, the monetary costs and other impedances in using them were minimal and so this control variable was effectively removed from the range of factors that might discourage landholders from using the system. Interviews of residents in Marconi Beam and Imizamo Yethu indicated that these rental registration systems were legitimate and formed a fundamental, essential process in transferring and affirming claims to land rights.

In Marconi Beam and Brown's Farm, it was shown that documentary evidence was believed to be of primary importance in affirming the expectative right of ownership, but that a range of other instruments and processes also played a significant role. For example, the power to veto the sale of a land right to a particular person vested in a street committee or a warlord. Moreover, witnessing was regarded as integral to the execution of transferring a land right. In Marconi, the symbolic delivery of the rent card had to take place in front of street committee members. In Brown's Farm prior to 1996, symbolic delivery took place in the presence of a warlord and an official and the approval of the warlord was required for the transferor and transferee of a parcel to enter into such a contract. When the register turned out to be inaccurate, the knowledge of the street committees was used to affirm the claims of people whose names had supposedly been

omitted from the register or to negate fraudulent claims of others. However, in Marconi Beam the majority of respondents expressed a belief that street committees should play no such role once they had received registered ownership in Joe Slovo Park. They expressed confidence in a government-administered registration system as opposed to one administered by the community themselves.

In a similar situation to Marconi Beam and Brown's Farm, in Imizamo Yethu the majority of residents on formally defined parcels expressed confidence in the record kept on file in the local office, although there was some dissatisfaction that as individuals they did not have a document or some icon to support their claims to rights in land. In this case study, outcopies of the documents entitling landholders to receive registered ownership were not created. The object being to discourage informal sales through private conveyancing using the outcopy of the document. However, attitudes to the local rental registration system were positive and there were no stated intentions to use an alternative system. Street committees played no role, or at best a minor role, in the land tenure system when interviews were conducted in 1997.

In contrast to the results of the interviews in Marconi Beam and Imizamo Yethu, actual behaviour showed that in practice there were significant levels of non-usage of the rental registration systems. In Brown's Farm in 1997, non-usage was estimated to be approximately 10%. In Imizamo Yethu in 1998, 50% of the *de facto* occupants did not match the names on the register in a sample of 300. In Marconi Beam in 1998, there were far more people claiming rights of ownership than appeared on the register. In a sample of more than 20 000 parcels in Khayelitsha that were scheduled to be registered in 1997, 20% (± 4000) of the entries in the register were inaccurate. Explanations given for non-usage of these rental systems were informal transfers to strangers and extended family members and incorrect original adjudication, but the causes of residents using informal transfers are complex and multi-various.

The case studies indicate that a significant proportion of this "non-usage" can be assigned to inadequate design, implementation and operations management of the rental registration systems themselves. In Marconi Beam, a single institution failed to take ownership of the process of adjudication and maintenance of the record of people who were entitled to a parcel of land in Joe Slovo Park. There was also evidence of incorrect adjudication in Brown's Farm, but the evidence suggests that the rental registration system was efficiently managed in partnership with community power structures. In Imizamo Yethu there had been a moratorium on transfers of land and this rule was officially implemented by denying access to the formal processes of transferring rights in land. Moreover, the CPA office in the settlement had been burnt down at least once in the history of the settlement. It is probable that residents continued to conduct land transactions using informal processes and structures. The quality of the rental registration system in Khayelitsha was not investigated.

Conclusive explanations for non-usage of the rental registration systems could not be easily ascertained. The cost and impedance factor argued in section 1.3.9 did not apply in Marconi Beam, Brown's Farm and Imizamo Yethu. There is evidence to support the

hypothesis that landholders regarded the rental registration systems as both legal and legitimate, but the need to keep the record up to date and to use cadastral system processes was not fully understood. For example, this is supported by the evidence of street committees rearranging the allocation of land in a part of Khayelitsha after the authorities had allocated land parcels according to their information system. The result of this was that the municipal register of lessees did not reflect the name of the correct occupant against a particular parcel identifier (see section 7.2.3.1). There is conclusive evidence to show that street committees, political organisations or gangs controlled aspects of the land tenure system at various times in all the study areas except Khulani Park and have evicted people and allocated the land to others. There was also evidence of landlordism in Imizamo Yethu, which was in contravention of the rules agreed with the authorities and consequently these transactions were unrecorded. The evidence of a key-informant in Imizamo Yethu suggests that during these volatile times of conflicts between factions, very few transactions in land were recorded. It was not in the interests of certain parties who were controlling the allocation of land rights to use the formal system to record certain transactions as they were in conflict with the rules agreed with the authorities.

There is conclusive evidence to show that family rights issues were also a cause of the rental registers being inaccurate. For example in Brown's Farm the niece of the person whose name was recorded as the official tenant in Brown's Farm applied to be granted ownership of a parcel. In Khayelitsha a significant number of the disputes that had to be resolved involved family issues. In particular these related to divorce or separation.

Two further hypotheses that may explain non-usage of rental registration systems are:

Residents may not have used the system as they saw no benefit in using it;

and

Residents may have avoided using the system to hide the transaction from factions within the community such as street committees and warlords for a variety of reasons.

However these hypotheses remain speculative and could not be conclusively supported or negated by the data. However, referring to the first hypothesis above, all respondents in the interviews of landholders mentioned the rental registration systems as being central to the process of affirming and transferring rights in land. No negative attitudes to such a system nor intentions to use an alternative process to transfer rights in land were recorded.

This research has shown that it is naïve theory to suggest that non-usage of a cadastral system is dependent on costs alone. This research has shown that non-usage of rental scheme registers and non-adherence to cadastral boundaries can occur even if costs and other impedances in using these systems are minimal. The motivation to use or not use a cadastral system is multi-various. Cost is one of a number of control factors that may discourage landholders from using a cadastral system.

Overall, a range of data show that beliefs, attitudes, intentions and behaviour, and the controls on behaviour, point to land registration being the most effective cadastral sub-system to affirm the abstract run of rights in land. Informal or extra-legal transfers may take place, but overall land registration addresses the wants of Cape Town's Xhosa-speaking communities. Referring to question (b) in section 1.4, a range of instruments and processes may be used to administer the system of land tenure, which includes the registration system. The data show that if there are influences of group tenure practices in a particular area, then under certain circumstances the formal land registration system may not be used to transfer rights in land. Furthermore, non-usage of formal registration is likely to take place in a volatile, changing situation where the *de facto* power of the authorities to administer the land tenure system is limited.

In a stable environment which is conducive to landholders using the land registration system, such as that which existed in Khulani Park, then land registration is likely to be used and the system will be effective. In volatile situations where the tenure system does not fully support the notion of full and free private ownership and the power of the authorities to govern effectively is limited, then a range of instruments and processes, which include registration, may be used to uphold land tenure. In such situations land registration may not be utilised to execute every transaction in land.

11.1.2.2 Boundaries

In chapter 2, two alternative definitions of space around a dwelling were posited. The one notion is that of common property similar to that used in sectional title schemes, where the dwelling unit is owned or designated for exclusive use by a household, but the space between dwellings is regarded as commonage. In contrast to this is the notion of a land parcel where a geometric unit of space around a dwelling is capable of being owned and designated for the exclusive use of the landholder. Within this concept of the parcel, three different boundary alternatives were described. Firstly, there are topological boundary systems where the relative positions of adjacent parcels are maintained, but boundaries are movable by negotiation. This concept is abductively conceived and there is no reported empirical experience of such a system. Secondly, general boundaries are regarded as being defined by a boundary feature such as fence lines. Adapting Dale's (1976) taxonomy, for the specific purpose of urban landscapes, general boundaries are regarded as non-ambulatory boundaries and their positions are regarded as approximate. Thirdly the option of fixed boundaries where the apices of the polygon defining a land parcel are demarcated by corner monuments was explored.

Beliefs and attitudes to space surrounding a dwelling in an informal settlement and formal property were found to be vastly different. In the Marconi Beam informal settlement, early residents who were interviewed had fenced off parcels according to the monuments laid out by the municipality for their exclusive use. They were found to be fiercely protective of this space. Later arrivals held the belief that the space between shacks was not for their exclusive use, it was common property, and that people could move freely between the shacks. The latter belief was premised on an expectation that

occupation of Marconi Beam was temporary and the respondents believed that they would move to a new site later. The interviews of key-informants in the eastern metropole and a life history relating to land outside of Marconi Beam supported this belief that occupation of land in an informal settlement is temporary and that in such circumstances space between shacks is common property (see chapter 7).

The beliefs, attitudes and intentions of respondents concerning boundaries in formal registered property were universally in favour of individual parcels with clearly defined boundaries. Where residents were aware that the apices of parcel boundaries had been monumented (e.g. Imizamo Yethu, Khulani Park, Khayelitsha) or believed that this means of boundary demarcation would take place (e.g. Joe Slovo Park), the evidence is conclusive that there is a want for fixed boundaries. Attitudes to encroachment by neighbours over legal boundaries were strongly negative and respondents indicated that they would evict the encroacher. In general, the attitude of zero tolerance to encroachment prevailed in that respondents indicated that they would evict the encroacher, even if the encroachment was only 1cm. A number of respondents stated that "If you allow one centimetre today, tomorrow it will be more" (e.g. see section 8.5.2).

The aerial surveys showed that actual behaviour differed to the results of the interviews in site-and-service schemes but not in Khulani Park. In Brown's Farm the aerial survey revealed that 10% of the buildings, which were shacks, and substantially more fences (42%) were found to encroach. In Imizamo Yethu, in what was considered a reliable sample (Phase I), 13% of the buildings were found to encroach. In what was considered an unreliable sample (Phase III), 28% of the buildings were found to encroach. In Khulani Park, one or two isolated instances of encroachment were identified, otherwise structures adhered to the surveyed boundaries. By processing the evidence of officials who had worked on boundary disputes, encroachment disputes affecting 10-15% of the total number of parcels were estimated to have come to the notice of the authorities in greater Khayelitsha and in Brown's Farm (see chapters 6 and 7). However there is some uncertainty in this estimate for Brown's Farm as two officials gave different estimates of the number of cases with which they had had to deal.

As with non-usage of rental registration, the causes underlying these encroachment patterns, and therefore non-usage of the cadastral boundary system, are multi-various. There is conclusive evidence to support the hypothesis that many of these encroachments are due to land grabbing, especially of public land, or lack of knowledge of the boundary position in cases where monuments had been removed or destroyed. Some of the land grabbing is economically motivated when landholders have erected spaza shops in the road reserve or grabbed some of a neighbour's land because their parcel is too small to house their extended family. There is persuasive evidence to suggest that some encroachment is due to lack of awareness of the position of surveyed cadastral monuments, as a number of key-informants in Khayelitsha, Brown's Farm and Imizamo Yethu indicated that many monuments had been stolen or destroyed. Moreover, when residents in three sites in Imizamo Yethu were asked to point out their monuments in 1999, the monuments were missing.

There is conclusive evidence of personal contracts between neighbours permitting encroachment in what a senior official referred to as “gentleman’s agreements” (see sections 6.3.2.2, 7.2.2 and 9.4.2). This practice is analogous to what Letsoala (1987) refers to as borrowed land (see section 7.3.2.3). The practice of contractual encroachment in urban settlements is a key finding in this research. The author did not come across this in the literature.

There is persuasive evidence to support the hypothesis derived from the aerial surveys of Brown’s Farm that if one fence is built out of position, then a number of neighbours extend this fence across the front or rear of their parcels so that the pattern of encroachment is continued. Two key-informants described situations in Khayelitsha’s site-and-service settlements where they could not defend or reassert their rights to the spatial extent of their parcels as shacks had encroached into their space from neighbouring parcels and they could not get the shack occupants to move.

However, in general there was no challenge to the legitimacy and legality of the surveyed cadastral boundaries. When legal boundaries and monuments were re-established in the field, only isolated experiences of residents contesting the judgements were reported.

The concept of personal encroachment contracts or borrowed land between neighbours is in some ways similar to the principles embodied in the Fencing Act 31 of 1963 (see sections 2.4.2 and 4.3.2), but also substantially different. The practice is similar in that the statute permits fences to be constructed along a give and take line along a fixed boundary. The legal fixed boundary position remains as originally defined without giving rise to adverse possession claims. However, topological occupation is permitted by give-and-take agreements between neighbours concerning the positions of fences such that the relative positions of the parcels are maintained but boundaries of *de facto* occupation are not fixed. However, the objective of the Fencing Act is that fences should adhere as closely as possible to the legal boundary and the fence may be moved off the boundary where the topography, the physical environment, makes this difficult. The encroachment contracts in Cape Town’s Xhosa-speaking communities are founded upon social rather than physical or legal forces. For example a neighbour needs more space to construct a second shack for lodgers or extended family members and boundaries of occupation may be moved to accommodate this need. However, as one respondent indicated: “That person is like my lodger, I can ask him to move at any time.” (And therefore enforce occupation according to the *de jure* boundary). This is similar to the Fencing Act in that the underlying boundary is not challenged and is not believed to be subject to adverse possession claims. However, the object of the Fencing Act is that the fence should follow the boundary as closely as possible, whereas in Cape Town’s Xhosa-speaking communities, the deliberate action to construct a building that does not conform to the legal boundary. Both cases accommodate the notion of topological occupation patterns that do not adhere to the underlying geometrically defined *de jure* boundaries. In both cases, the residuary right of ownership attaches to the *de jure* boundaries of the parcel and occupation patterns have no bearing on this. The exception, in terms of South Africa’s Prescription Act 68 of 1969 is in the case of contractual encroachment where the

servient party fails to notify the dominant party of his or her underlying ownership rights for an uninterrupted period of thirty years (see section 4.3.2).

In Khulani Park, where fences had been pointed out to respondents as the boundaries, or respondents had assumed these to be the boundaries, attitudes to encroachment were not as strong as in Marconi Beam or Imizamo Yethu. The evidence is persuasive that the boundary is believed to be static, or non-ambulatory. However, a fence that is supposed to be constructed on the boundary but in reality is constructed so that it encroaches by up to 30cm will probably be tolerated.

Where iron pegs had been pointed out as boundary markers of the *de jure* fixed boundaries in Khulani Park, the results were in harmony with those obtained in Marconi Beam and Imizamo Yethu. Encroachment, would not be tolerated, even though the situation in Khulani Park was stable and conflicts over boundaries were not apparent. The notion of contractual encroachment did not emerge in the interviews.

One way of interpreting the set of beliefs, attitudes and behavioural intentions of respondents in Khulani Park to whom fences were pointed out as the boundary is that a system of general boundaries effectively addresses the wants of a Xhosa community in the local social and economic environment enjoyed by the residents of Khulani Park. Attitudes to a slight movement in the position of the physical object that delineates the boundary were not strongly negative. However, this hypothesis is speculative. What the Khulani Park data point towards is that where corner monuments are pointed out, attitudes to encroachment are strongly negative, even in a stable environment where conflict between neighbours is minimal. Where physical structures such as a fence are pointed out as the boundary, attitudes are not as strongly negative (see section 3.3.1) to the position of the physical object moving slightly. These results were obtained in a case study where the social, political and economic environment was the same for the two different samples (see sections 10.2.2.3 and 10.3.2.3). Comparative data were not collected from areas outside of Khulani Park. The issue is an area for further research.

Cadastral surveying was found to constitute an important process in supporting the spatial component of land tenure security in Cape Town's Xhosa-speaking communities. What did emerge in responses where both monuments and fences were believed to demarcate the boundaries, was the need for sites to be mapped so that boundaries can be re-established from measurements if necessary.

In summary, as with land registration, this research has shown that a system of stationary, fixed boundaries will be effective if the environment is conducive to it. Where there were encroachments, in general the legitimacy and legality of the surveyed cadastral boundaries was not challenged. A system of non-ambulatory general boundaries where fences are constructed prior to occupation may also be effective, but this hypothesis has not been conclusively established. The encroachments observed in site-and-service schemes were mainly due to land grabbing and personal contracts permitting encroachment in a rapidly changing, unstable social, political and economic environment. A significant proportion of the encroachments identified in the aerial surveys of Brown's

Farm was on public land. There was no evidence to indicate a want for a topological boundary system.

The case studies indicate that active, ongoing management of boundaries by the authorities should ensure that landholders adhere to them. The processes and structures for this already exist in that building inspectors check that permanent structures adhere to the surveyed *de jure* boundaries. This practice should be extended to checking that non-permanent structures such as fences also adhere to the cadastral boundaries.

11.1.2.3 Prior Experience

Previous work related to the theory of planned behaviour theorised that knowledge gained from prior experience should help to shape intention and result in a stronger, more stable behavioural intention-behavioural relationship (see section 3.3.3). It has not been possible to test this theory in this study, however, the data indicate that most Xhosa-speaking landholders in Cape Town do have prior experience of monumented fixed boundaries demarcating residential parcels and a system of records documenting who has rights to a particular parcel. With the exception of Khulani Park, this study has shown that residents believe that the system of boundaries about which they have gained knowledge from experience of a similar system is the system wanted. Generally, the system of fixed, monumented boundaries is not a new or foreign concept to Cape Town's Xhosa-speakers and in concept it is an effective system. In volatile situations, it is suggested that non-usage of the system of cadastral boundaries and local systems to register expectative rights and rental contracts may be related to management and manipulation of the tenure system rather than the legitimacy of the boundary system and local registration system.

11.1.2.4 Summary

Addressing questions (b), (c) and (d) in section 1.4, which explore the *de facto* and *de jure* systems that uphold land tenure security, in favourable circumstances such as those in Khulani Park, the system of land registration or similar systems to affirm rights to occupy land, and the system of fixed cadastral boundaries demarcating individual parcels is effective. In Khulani Park the cadastral system was used in the manner intended. In Khulani Park the ideal tenure system existed that respondents in the other case studies indicated that they wanted in future. The formal cadastral system was universally found to effectively address the wants of these respondents. Negative attitudes to the cadastral system were not recorded, nor was there any evidence of intentions to use alternative systems.

In volatile, changing situations in the other study areas, a range of instruments and processes were used to underpin the land tenure system. Moreover, the power of the authorities was diminished to the extent that the system could be manipulated by powerful individuals and factions who took advantage of the situation by indulging in land grabbing, controlling an informal land market and indulging in landlordism. Such *de facto* processes undermined the *de jure* system and they were neither official nor legal,

and in the scant evidence available from observation of events in Imizamo Yethu, they did not enjoy universal support in the relevant communities. They were often a result of powerful opportunists taking advantage of a volatile situation wherein the authorities enjoyed little power to intervene without the risk of setting in motion a period of social and political unrest.

11.1.3 Land Policy

Current South African land policy (Rep. of S. Africa 1997a) has as its primary objectives for land administration and the cadastral system the provision of tenure security for all; equitable, just patterns of land ownership and sustainable land use. In this research, the focus of analysis of the cadastral system in the context of land policy has been on tenure security and equitable, just patterns of land ownership and not sustainable land use (see sections 1.3.4, 2.2.4, 6.4.3, 7.3.3, 8.7.3, 9.5.3 and 10.3.3). As Lawrence (pers. com. 1999) was quoted as saying in section 7.3.3, these policy objectives cannot be achieved in a single step. Moreover, the above objectives had only been finally formalised and published in the White Paper in 1997 (Rep. of S. Africa 1997a). Building on Oelofse's analysis of Imizamo Yethu, there was a phase in the 1990's where land administration operated in a policy vacuum and a legislative vacuum wherein it was difficult for the authorities to make long term decisions. However, in the author's observation these objectives were implicit in the behaviour of the government of national unity between 1990 and 1994 and thereafter in the behaviour of the ANC government, which came to power in 1994. In the author's analysis, the first objective was to achieve social stability and as the case studies show, the strategies to achieve this were generally not in harmony with South Africa's Bill of Rights in terms of the Constitution (Act 108 of 1996) (e.g. see sections 6.4.3 and 7.3.3).

This research has shown that during the initial part of South Africa's transition, between the late 1980's to the time when interviews were carried out in 1996 and 1997 as part of this research, local government institutions lacked the legitimate power and authority to govern the study areas effectively. The local authorities could not intervene in the land tenure system to ensure that all individuals have tenure security and that access to land ownership is just and equitable. During these times, residents of informal settlements and site-and-service schemes held the balance of power in relation to the power of the land administration authorities. By 1999, this balance of power had changed substantially and it was possible to deliver ownership to individuals. However, in certain areas, there were still group influences in the tenure system even though land was registered in ownership in the Deeds Office (e.g. see sections 7.2.1.2 and 7.3.3)

In terms of equitable access to ownership, or land rights in general, this research has shown that at certain times during the progression toward registered ownership, the individual's tenure security had more to do with the power of certain groups and individuals in particular areas than the actions and the power and authority of government. Consequently, many practices were in conflict with the principles embodied in the Bill of Rights (see appendix F).

Group biases in land tenure ranged from strong to weak. In the strong form, access to land depended on allegiance and affiliation to a particular group. In the weaker form new entrants to an area were screened on criteria such as rights of citizenship of South Africa and lack of a criminal record, without the demand being made of allegiance and affiliation. In extreme cases gangsters and warlords took over the situation and evicted people who were legally entitled to new homes and allocated these homes to people to whom they had illegally sold the houses.

The group influences in tenure were challenged periodically by individuals within communities and land administration officials. The data also show that conflict between group and individual biases in land tenure occurred in disputes relating to both rented and privately owned land parcels. At times this conflict was violent and resulted in criminal cases for assault.

In volatile situations, the authorities recognised the weakness of the local government's legitimacy, power and control in managing a rapidly changing situation. When it was not possible for the authorities to legitimately assert their power without upsetting social stability, officials in the field co-opted community power structures as part of the land administration process and used these structures to enforce land administration processes that had been agreed upon with community representatives. In this manner the authorities had set social stability at the top of their hierarchy of objectives. As social, political and legal conditions in the macro-environment stabilised over time, so social conditions at the micro-level stabilised as NHF subsidies and the opportunity to own a parcel of land with a formal house became an incentive for groups and individuals to co-operate with the authorities. As the situation stabilised, the authorities progressively asserted their powers to manage and administer land tenure and the other functions of local government. In so doing the authorities attached greater emphasis in the objective of equitable, just patterns of land ownership than they had during volatile periods when the authorities enjoyed little legitimate power to intervene in the land tenure system.

In conclusion, the objectives of tenure security and equitable, just patterns of land ownership have yet to be achieved. These are long term objectives, which may take considerable time to address adequately. The cadastral system is one of a number of land administration sub-systems that should facilitate the achievement of these objectives. Prior to and during the period that this research was conducted, the authorities implicit objectives appeared to be firstly the maintenance of social stability and the delivery of land when they had sufficient power to do this.

11.1.4 Land Administration

South African land policy established an objective for land administration that it should be affordable and accessible (see section 1.3.4). The case material shows that in reality, the cadastral system and the land administration system are not easily separable and they share a symbiotic interrelationship. In terms of Checkland's (1981) notion of soft systems theory, in reality systems are difficult to identify, as they are models of reality, not reality itself. In creating a conceptual model, the analyst may choose to exclude parts of

particular systems as a means to conceptualise a situation. The cases studied in this research support this theory in that it is difficult to separate the contribution of land administration institutions and cadastral system institutions in managing and administering the land tenure system (see sections 2.1.5, 6.4.4, 7.3.4 and 8.3.4).

In the South African context, effective land administration is crucial to a sustainable, effective cadastral system and visa versa. In the case studies, up to the execution of registration, local authorities administered the planning, adjudication and dispute resolution functions based on the requirements of the cadastral system in a form of partnership with community based institutions. Local authorities, except in the case of Marconi Beam, maintained a rental register that was similar in nature to the deeds registration system, except that this system did not confer legal ownership or rights of long-term occupancy on the landholders. It conferred an expectative right of ownership. Once the land had been registered in the Deeds Office, the local land administration authority's mandate in administering the tenure system was greatly diminished. This function was now the role of cadastral system institutions. However, local government's role of managing public land, fiscal management, supplying municipal services and ensuring that structures complied with the building regulations ensured that usage of the formal juridical cadastral system processes was encouraged.

The case studies also show that any system of records designed to record existing land rights and record entitlements to permanent rights in future needs to be integrated with other land information systems. Information that was intended to uphold land tenure, that is juridical cadastral information, was also used to administer the supply of services, fiscal administration and other services such as those depicted in figure 2.3. In Imizamo Yethu, by 1998 the local rental registration system had become so inaccurate that it was not possible for the local authority to supply services or deliver invoices for services rendered. Conversely, in the Marconi Beam case, an information system that was implemented for another purpose became a primary source of evidence in allocating land parcels.

11.1.4.1 Collateral value and land markets

The wider interviews revealed that an extensive formal secondary land market has yet to develop in Cape Town's Xhosa-speaking communities. However, the Khulani Park study indicates that land as collateral is important. Moreover, the respondents in this community where most households had at least one employed family member, all regarded land as transferable although not necessarily a commodity. There is evidence, based on the evidence of two key-informants, of informal sales of land taking place in Joe Slovo Park and parts of the former Ikapa Municipality. However, for these informal sales to take place and informal ownership to be sustainable, the property can not be encumbered by a mortgage.

The Khulani Park results do indicate that maintaining the formal instruments that underpin land as having collateral value and being marketable or transferable is important as a long term of objective in the urban environment. The spectre of the ownership

register becoming inaccurate, as in Mfengu Township described in section 1.3.9, is not desirable. In such a scenario, land values for an entire area are likely to be suppressed due to the insecurity of tenure and the possible problems that financial institutions may encounter in attaching a property to secure unserviced mortgage debt.

In conclusion, a fledgling secondary land market in Cape Town's Xhosa-speaking communities is supported by the existing cadastral system. However, how effectively the cadastral system supports this market is difficult to establish at this time. The attitudes to the relative processes, instruments and institutions are positive. No negative sentiment was expressed toward any of them. The study of landholders' beliefs, attitudes and intentions indicate that the cadastral system is an appropriate system to underpin a land market.

11.1.5 Summary

In general the land tenure system wanted by individuals in what has been labelled a desired future state (see section 3.1) in Cape Town's Xhosa-speaking communities is individualised. All the existing cadastral system instruments and processes have been shown to be appropriate in addressing this want.

There are areas, particularly informal settlements, where there are strong group biases in tenure and powerful individuals and sub-groups such as warlords or gangs or political groups hold a number of overriding rights. These overriding rights have been exercised in the form of evictions, even where property is held in registered ownership. Where group influences remain in the tenure system, then a range of formal and informal instruments, processes and structures may be used to manage and administer the land tenure system. In such cases cadastral instruments and processes that support permanent land rights or occupation rights may constitute the primary evidence to affirm rights in land. However, this research has shown that where there are group influences in the tenure system, then cadastral processes and structures may not be used to effect a transfer of land rights in certain situations. In volatile, changing situations where there is a high level of conflict between factions and individuals in the community and between the community as a whole and the authorities, then non-usage of cadastral processes is likely to increase.

Where such volatile situations had occurred in this study, the authorities recognised their inability to control such situations and opted for strategies that emphasised maintaining social stability as opposed to adherence to formal rules and procedures. As land policy was formulated, legislation was promulgated to support this policy and local government institutions settled down after major restructuring, so the authorities increasingly emphasised adherence to formal rules and procedures that are forms of cadastral processes. Although there was substantial non-usage of rental registration systems and non-adherence to cadastral boundaries, and a range of processes and contracts were used in land transactions, the legitimacy of the official records and the surveyed boundaries was not challenged. These systems constituted the primary means of affirming rights in land, and the status of surveyed boundaries as the legal definition of the spatial extent of a land parcel was regarded as ineluctable. In cases where the records did not reflect *de*

facto occupancy, the onus was on the current occupant to prove that he or she was entitled to be granted ownership of the parcel. The official register constituted the primary evidence in such disputes as the *de facto* occupant was first required to obtain an affidavit from the person whose name was on the register to affirm that a legitimate contract had been executed. If this could not be obtained, then other issues such as the testimony of street committees was used to resolve the matter.

Although there was non-usage of what have been defined as cadastral instruments and processes in these volatile, changing situations, a form of cadastral system (rental registration and surveyed boundaries) provided an effective foundation for the system of tenure and for long term land administration. The cadastral instruments formed the basis of any negotiation over land rights when the situation stabilised and the system itself was not challenged. Most of the non-usage of this form of cadastral system was due to practices in the tenure systems that can not be generalised into a formal cadastral model. However, in most instances where non-usage had occurred, it was up to the *de facto* claimant to rights of ownership to unravel the lineage of transactions in land that had taken place since the official occupant had originally transferred his or her rights in a particular parcel. Imizamo Yethu was an exception where readjudication was based on current occupancy and other claimants of rights to a particular parcel had to prove their claims over those of the *de facto* occupant.

It is concluded that non-usage of a cadastral system or similar processes is not a reliable indicator of cadastral system effectiveness in certain situations. In volatile, changing situations, non-usage of the rental registration system and cadastral boundaries does not necessarily mean that these systems should be deemed to be ineffective. In this research, they have been found to form an essential part of the structure and processes that deliver permanent rights in land over a period of time, and land administration would be ineffective without them.

In practice, the usage of the rental registration system and the adjudication of disputes where the rental register did not accurately record the name(s) of the *de facto* landholder was similar to a deeds registration system where it is not essential to register a deed, and a transaction in land rights can take place by private conveyancing. However, proof of rights in land was then incumbent on the landholder to provide reasonable evidence of the lineage of transactions that had taken place since the last rental agreement was recorded. Deeds systems that are similar to this exist in a number of developed countries such as Singapore. In such a deeds system it is legal to engage in private transactions in land rights, but in the event of a dispute, the registered deed is held as the primary evidence in court. It is incumbent on the *de facto* landholder to prove that they are the legitimate landholder by showing evidence of the lineage of transactions that took place since the last deed was registered (Low Lye Fong pers. com. 1995¹).

A formal, legal system of land registration and stationary surveyed boundaries is the most effective system to uphold the tenure system that respondents envisaged in an ideal future state. This ideal future state is epitomised by what was observed in Khulani Park where

the land registration system was being used to affirm rights in land and cadastral boundaries were being adhered to.

11.2 VALIDITY OF UNDERLYING THEORY AND EVALUATIVE FRAMEWORK

The research objectives outlined in section 1.2 are concerned with developing substantive theory and methodological theory concerning evaluating the effectiveness of a cadastral system during a period of substantial change. Substantive theory concerning the tenure system wanted in Cape Town's Xhosa communities has already been developed and analysed. This section evaluates the validity of the theories that were applied in analysing the data collected in this study and the validity of the conceptual frameworks and theories developed to conceptualise the research problem and evaluate the cadastral system.

This section first draws conclusions about the validity of the assumption that Fourie's (1993) social change model describes the social conditions in informal settlements and site-and-service schemes. The section then analyses the theory of planned behaviour as a research instrument. Thereafter conclusions are drawn as to the validity of the conceptual and evaluative frameworks developed in chapters 2 and 3.

11.2.1 The Social Change Model

The social change model, described in section 1.3.7, has been shown to validly explain land tenure behaviour in other Xhosa-speaking and Zulu communities in informal and formal urban settlements in South Africa (Davies 1998, Fourie 1993). While it was not an objective of this research to test the social change model, this model incorporating the dialectic approach, the forces of fission and integration, and transactional behaviour was found to validly describe conditions in three of the case studies.

The social change model accurately describes the patterns of behaviour in Marconi Beam, Brown's Farm, Imizamo Yethu and other Xhosa-speaking areas of the eastern metropole. It was not found to apply in Khulani Park. The dialectic approach aptly describes the internal competition and inter-dependence between various power levels and sub-groups within the case study communities in competition for land, resources and power. The relevant settlements were found to comprise a plurality of individuals, groups and sub-groups, which had conflicting interests and goals. Conflict was inherent in the relationships between different individuals, groups and sub-groups in three of the case studies and between these entities and external forces, such as the local authority or an external hostile interest group such as a local ratepayers association. While not directly observed, it is probable that the changes in the nature of the tenure rules and practices were a result of different entities striving to maximise their own goals and interests in competing for power, land and resources. The forces of fission and integration were also observed. Davies (1998:75) and Fourie's (1993) paradigm of the apparent contradictory tendency of fission and integration was observed in all the study areas except Khulani Park. In the affected areas, there was the allocation of a secure land right for an individual's exclusive use (fission), yet communities insisted on approving any person to

whom this land right could be transferred (integration). Key-informants in all the study areas except Khulani Park described the phenomenon of a faction severing ties with one sub-group (fission) and seeking alignment with another faction within a community (integration).

Transactional behaviour describes the negotiations and deals associated with land and land tenure within a community. Land tenure rules are important and required by groups at settlement level for land administration, such as land allocation and dispute resolution (Davies 1998:81). However, the tenure rules tend to be manipulated by sub-groups as they compete for land, resources and power. Therefore, internal rules are not static but are subject to change due to the effect of tension and conflict within the local system (internal dialectic) and between the local system and external factors (external dialectic) (Davies 1998:81, Fourie 1994). This behaviour was shown to take place in Imizamo Yethu and Marconi Beam in particular. In these settlements it was difficult for community representatives to strike agreements to which their constituency would adhere. Consequently, a number of officials and people external to communities referred to them as “devious communities” as agreements were not respected. Under such conditions, it was difficult for the authorities to plan their urban environments and make progress toward a lasting stable social environment in these settlements.

In conclusion, the social change model was found to aptly describe the situation in three of the four case studies and in the eastern metropole. In the fourth, Khulani Park, land tenure was strongly individualised and the forces of integration appeared to be absent.

The social change model provided an important tool in understanding the dynamics of each situation. At the micro-level, in volatile, changing situations, cadastral instruments and processes were not being used in the manner intended. They formed part of a range of instruments and processes to underpin land tenure security. *De facto* usage of the rental registration systems was similar to a system of deeds registration where it is not compulsory to register a deed to reflect a transaction in land. Non adherence to surveyed cadastral boundaries was due to a number of factors such as land grabbing and contractual arrangements. The social change model provided a theoretical basis with which to understand and explain why a rental registration system and the surveyed boundary system were not being used in the manner intended by the authorities.

11.2.2 Theory of Planned Behaviour

The theory of planned behaviour provided a useful theoretical basis for classifying, understanding and analysing the data collected. At the outset of this study, the theory of reasoned action was selected as a model to evaluate the effectiveness of a cadastral system. There is a wealth of research using this theory in management information systems (MIS) and quantitative survey instruments based on questionnaires have been developed to evaluate the effectiveness of MIS (e.g. Miller 1989, Mathieson 1991). Whereas the theory of reasoned action may apply in evaluating MIS, it soon became apparent that this theory is inadequate for assessing the effectiveness of a cadastral system in volatile, changing situations such as those encountered in this research outside

of Khulani Park. It was found that respondents do not have volitional control over their actions and this research has shown that reliance on a survey of beliefs, attitudes and intentions to usage of cadastral system instruments and processes will not yield accurate results in a volatile, unstable situation.

The theory of reasoned action proved to be a useful methodological tool in collecting, classifying and understanding the data acquired from different sources in this research. In the initial group workshop sessions in Marconi Beam, the first step was to establish a pattern of beliefs about an element of a cadastral system. For example it was soon established that there was a general belief that fixed boundaries would be appropriate in Joe Slovo Park because respondents indicated that monuments demarcate parcel boundaries. In terms of this theory, attitudes and intentions are better predictors of behaviour than beliefs. The negative attitudes expressed about encroachment and the intentions stated to evict an encroacher indicated that respondents intended to use the surveyed, legal cadastral boundaries. The components of the theory of reasoned action constitute a useful structure to the data collection process in that certain types of data are more reliable predictors of actual behaviour than others.

However, measurement of actual behaviour and comparison with beliefs, attitudes and intentions showed that outside of Khulani Park, there are other factors influencing behaviour and it has been concluded that residents in these areas did not have complete volitional control over their behaviour. In the Khulani Park case, the measures of actual behaviour such as adherence to boundaries matched the beliefs, attitudes and behavioural intentions recorded in the interviews. The Khulani Park case points to the theory of reasoned action being applicable as a predictor of usage of a cadastral system in stable situations where an analyst can reasonably assume that landholders have volitional control over their behaviour.

In the areas outside of Khulani Park, there was a mismatch between measurements of actual behaviour and the predictions of behaviour based on elements of the theory of reasoned action. Predictions of usage of cadastral instruments and processes were extrapolated from attitudes and stated intentions recorded in the interviews of landholders. In the volatile, unstable areas, the theory of planned behaviour provides a more useful model to understand a particular situation than the theory of reasoned action. In volatile, changing situations, there are controls on the behaviour of the individual arising out of a number of factors.

The challenge for the cadastral system analyst is to identify and understand these controls. The theory of planned behaviour does not identify these controls, it recognises that they exist. Further theory is required to understand what these controls are and how they change as different forces internal and external to a community change over time. Fourie's (1993) social change model, Checkland's (1981) soft systems theory, strategic management theory and existing cadastral theory have been found to validly constitute this further theory in this research and have been integrated into a general conceptual framework and an evaluative framework that is germane to this research. The validity of the framework and these underlying theories are analysed in section 11.2.3 below.

11.2.3 The Conceptual and Evaluative Frameworks

In the conceptual framework it has been assumed that in a changing, unstable situation the cadastral system analyst may have difficulty in constructing a land management systems hierarchy in which a cadastral system should function effectively. Checkland's (1981) soft systems thinking was used as the basis for a framework for formulating operational definitions, modelling the structural relations between different systems, developing systems hierarchies and establishing the situational analysis.

A fundamental premise of soft systems theory is in harmony with Fourie's (1993) social change model of a continually changing system of tenure rules where conflict is inherent between actors within a community and between the community and actors external to it. In summary of what was stated in section 2.1.3, according to soft systems theory, history always changes the agenda, the systems are multi-various and the influences to which they are subject so numerous that the passage of time always modifies the perception of the problem Checkland (1981:155). Systems are difficult to identify in reality. The intellectual constructs are themselves simpler than reality, and systems thinking is a way of trying to understand the world's complexity: it is a way of ordering our thoughts to make intellectual constructs pertaining to complex reality (Checkland 1981). Systems are operational models of the world, not the world itself; they are imperfect predictions of human behaviour. In support of this statement, Cook (1994:20) notes that: "A fundamental starting point in modern general systems theory is that a system can have a number of representations, depending on the 'frames of orientation' or (the) paradigms of different observers."

In a changing situation, soft systems theory underlies the conceptual framework portrayed in figure 2.2. In this model of reality, a cadastral system analyst constructs a land management systems' hierarchy that incorporates the systems of land tenure, land administration and land policy development. In concept, the order in which these systems fit into this hierarchy depends in a particular situation and the order can change with the passage of time.

A part of this conceptual framework draws on strategic management theory to understand and classify the type of forces that influence a particular situation. The nature of the forces that apply in a particular situation determines the criteria that should be used to analyse a cadastral system. In section 2.2.3, these forces were defined as macro-environmental forces and have been categorised as the social, political, legal, physical, technological and economic milieu.

The conceptual framework has been used to create an operational model of the world, a frame of orientation germane to this research in the evaluative framework portrayed in figure 3.4. This evaluative framework uses the cadastral processes or sub-systems, defined in section 2.4, as the core structure of the data collection and analysis. Elements of the theory of reasoned action that could be measured in this research were used to structure the data collection and analysis within this core structure.

In this research, the systems' hierarchy has land tenure as the first system above the cadastral system in the land management systems' hierarchy. The two systems above land tenure in this intellectual model of the system of land management, land administration and land policy were conceptualised to be on the same level and the order of these two systems in the hierarchy was to be determined according to each situation studied. It was conceptualised that at certain times and in different case studies, land administration and land policy development would occupy different positions in the systems' hierarchy.

The evaluative framework has been found to be a useful structure to collect, describe, integrate and analyse data from a number of different sources. It facilitated a synthesis of qualitative and quantitative analysis of the different data. Elements of the theory of reasoned action that could be recorded; these being beliefs, attitudes, intentions and actual behaviour, have been incorporated into the evaluative framework to structure and analyse data relating to land tenure and the various cadastral processes.

In terms of systems theory, there were some difficulties in applying the evaluative framework. Intellectually ordering the systems of land policy development and land administration in a clearly defined hierarchy was not achieved. This research has been primarily case study based, which implies a longitudinal analysis of events over time. In a changing macro-environment, there were a number of policy, legislative and administrative vacuums during the 1990's. Current South African land policy was only published in 1997. Between 1994 and 1998, local land administration authorities involved in all the study areas were undergoing fundamental change themselves as first local government restructuring was planned and then implemented. Implementation involved a substantial change in the spatial extent of these authorities, changes in personnel and changes in the physical and financial resources available to them. Furthermore, during the 1990's there was ongoing change in legislation relating to land management and administration. Consequently in describing and analysing cadastral system effectiveness in each case study, no attempt has been made to order the systems of land administration or land policy above one another. From the viewpoint of the cadastral system analyst, the changing environment makes it impossible to order them in any of the case studies during the period that this research was conducted. They have been conceptualised as being on the same level in the systems hierarchy for this research. However, in a stable environment, the system of land policy development and land administration can be expected to occupy the positions in a systems hierarchy depicted in figure 2.3.

A further difficulty encountered was separating the system of land administration and the cadastral system into two clearly defined systems. This proved to be impossible. The relationship between what in South Africa is normally regarded as part of the land administration system and the cadastral system was found to be symbiotic in this research. This is in harmony with Checkland's theory stated above. Consequently the cadastral system's processes have been used in the structure of the description and analysis irrespective of whether they have been performed by institutions that are

normally classified as cadastral system institutions (e.g. Deeds Office) or land administration institutions (e.g. local authority).

Overall, the descriptive and analytical system of integrating elements of the theory of planned behaviour and the model of land management in a structure based on the cadastral system processes was found to be effective. Attempts to create a more focused methodology or a quantitative survey instrument similar to ones used in MIS analysis (e.g. Miller 1989) were unsuccessful. The evaluative framework was effective as a system of conceptualising the research questions, as a means of guiding data collection, and as a structure to describe and analyse the data collected in each case study area and the eastern metropole.

11.3 SUMMARY AND CONCLUSIONS

This research has been based on four case studies in different stages on the path to individualised ownership between 1996 and 1999, augmented by interviews of key-informants and a life history in Xhosa-speaking communities in Cape Town's eastern metropole. To conduct this research, the first step was to develop a conceptual and an evaluative framework to understand and analyse the situations that were researched. The conceptual and evaluative frameworks and the methodology adopted to conduct this research have drawn on a synthesis of the theory of planned behaviour, a social change model, cadastral system theory and soft systems theory for describing and analysing a variety of data. These have been found to be effective theoretical foundations for the research.

The research was conducted during substantial social, political and economic change in the macro-environment and substantial change in the land tenure systems in the micro-environment in the respective settlements studied. In the Khulani Park case where the situation was stable, land had value as loan collateral and a fledgling land market existed, land registration and the cadastral boundary system were being used in the manner the authorities' intended. In this case, the cadastral system effectively addresses the needs of landowners and the cadastral system serves the current South African land policy objectives and serves the requirements of the land administration authorities to provide municipal services and collect rates to pay for them. In this case the legal cadastral system is deemed to be effective.

In volatile situations, landholders living in two of the case study communities where interviews were conducted envisaged an ideal future state similar to that encountered in the Khulani Park case. In such an ideal stable situation, respondents intimated that they intended to use the cadastral system in the same manner that it is currently being used in Khulani Park. Therefore if the environment in which these people live encourages usage of the legal cadastral system, then it can be expected that they will use it and the cadastral system will be effective.

However, in the volatile, unstable situations that existed when these other areas were studied, processes that were similar to land registration in maintaining a register of rental

contracts with an expectation of ownership and the system of surveyed cadastral boundaries were not used in the manner that the authorities intended. In the largest sample of $\pm 20\,000$ rental contracts, approximately 20% of the names on the municipal register did not reflect the names of the *de facto* occupants. There are numerous explanations for this non-usage of the rental registration system. In part this was due to poor operations management of the registers. In the Brown's Farm site-and-service case study where fences were mapped using aerial surveys, 42% of the fences were encroaching and 10% of the buildings were encroaching. In Imizamo Yethu, 13% of the buildings were found to be encroaching in what was considered a reliable sample. Much of this encroachment was due to land grabbing, the theft or destruction of surveyed monuments, and contractual encroachment. However, in an apparent contradiction of actual behaviour, there were no challenges raised to the formal systems used to register rental contracts and the system of surveyed cadastral boundaries.

It is concluded that in such volatile situations, cadastral instruments and processes may not be used in the manner intended. However, this does not mean that a cadastral system is ineffective in such situations. Cadastral instruments and processes formed the core basis of land tenure security in these case studies wherein a range of formal and informal instruments and processes were used in upholding land tenure security. They formed an essential system to support tenure security when ownership was bestowed on landholders. The rental registration system *de facto* operated in much the same way that a deeds registration system that permits unregistered transactions to take place operates. In cases of dispute, the official records formed the basis of negotiations. Negotiations with claimants to ownership were grounded upon the claimant proving that they had entered into legitimate contracts with the person whom the records showed as the person officially entitled to be granted ownership. With the exception of Imizamo Yethu, when the time came for ownership to be delivered, if the register was inaccurate, it was incumbent on the *de facto* claimant of ownership of an affected parcel to prove that they were legitimate holders of that right. The first course of action was for that claimant to unravel the lineage of transactions that had taken place since the last rental contract had been recorded.

The main findings of this research are that in a stable situation where the environment encouraged it, the cadastral system was found to effectively support a system of individual allodial ownership in a Xhosa-speaking community. In volatile cases, cadastral instruments and processes formed an effective core of a range of instruments and processes that underpinned land tenure. Given the difficulty of unravelling such situations when land is registered in ownership, a recommendation that emanates from this research is that land should only be registered in allodial ownership when the environment encourages owners to use land registration and the cadastral boundaries in the manner intended. In volatile situations, cadastral instruments and processes may not be utilised in certain situations. However, the cadastral system itself was found to be legitimate, landholders were positive toward it and stated an intention to use it. However, under certain circumstances it will not be used. It is therefore imperative that ownership is used as a model of land tenure when conditions are such that the cadastral system will be used. Instead, different tenure forms (e.g. leasehold) where the local authority has the power to

intervene and actively manage a situation, as they did in Cape Town, should be used on a path toward individual ownership.

In summary, the cadastral system was used in a stable situation in the manner intended. In this case it was effective and the interviews showed that given the right environment, it would effectively support the land tenure system wanted by Xhosa-speakers. In volatile, unstable situations, the cadastral system was not fully utilised for a variety of reasons. In these situations, cadastral instruments and processes were an effective, essential core of a range of systems that were used to uphold land tenure security. These instruments and processes formed the basis of all negotiations in cases of dispute and their validity was not challenged.

ENDNOTES

ⁱ Kathryn Low Lye Fong, 16 March 1995. Senior Deputy Registrar of Titles, Registry of Land Titles & Deeds, Singapore. Note that most of Singapore's land is registered under a title registration system.

REFERENCES

Acquaye B and Crocombe R (eds) 1984. *Land Tenure and Rural Productivity in the Pacific Islands*. Institute of Pacific Studies, University of the South Pacific, Food and Agriculture Organisation of the United Nations (FAO), Rome.

Aguilar F J 1967. *Scanning the Business Environment*. New York: The Macmillan Company.

Ajzen I 1988. *Attitudes, Personality and Behaviour*, Open University Press, Milton Keynes.

Ajzen I 1991. *The Theory of Planned Behaviour*, Organizational Behaviour and Human Decision Processes (50) 179-211.

Ajzen I and Fishbein M 1980. *Understanding Attitudes and Predicting Behaviour*, Prentice-Hall, Englewood Cliffs.

Alberts R, Fourie C, Latsky J, Palmer D 1995. *Discussion Paper on Options for Parallel Interchangeable Property Registration Systems*. Republic of Namibia, Ministry of Lands, Resettlement and Rehabilitation.

Bagozzi R P 1981. *Attitudes, Intentions and Behaviour: A Test of Some Key Hypotheses*. Journal of Personality and Social Psychology, October 1981, 41(4) 607-627.

Barnes G 1990. *A Comparative Evaluation Framework for Cadastre Based Land Information Systems (CLIS) in Developing Countries*. PhD thesis, LTC Research Paper 102, Land Tenure Center, University of Wisconsin-Madison.

Barnes G 1994. *Current Cadastral System Issues and Challenges in Developing Countries*. South African Journal of Surveying and Mapping, August, 22(5) 279-286.

Barnes M 1990. *Have Project will Manage*, BBC Enterprises Ltd, London.

Barry M 1995. *Conceptual Design of a Communal Land Registration System for South Africa*, South African Journal of Surveying and Mapping, 23(3)(139) 153 – 162.

Barry M (ed.) 1998a. *Proceedings of the International Conference on Land Tenure in the Developing World with a focus on Southern Africa*, 27-29 January 1998, Dept of Geomatics, University of Cape Town.

Barry M 1998b, *Family Title/Ownership: International Models Investigation*, Unpublished internal report for the Family Titles Working Group, Department of Land Affairs Pretoria, 16 June 1998.

- Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>
- Barry M and Mason S 1997. *Analysing Spatial Components of Land Tenure Systems in Urban Settlements*. Proceedings iKusasa/CONSAS '97, Durban, CDROM\GIS\BARRY\Barry.Htm, 14 pages.
- Benbasat I, Goldstein D K and Mead M 1987. *The Case Strategy in Studies of Information Systems*. MIS Quarterly, September, 11(3) 369-386.
- Bennett T W, Huchison D B, Leeman I (eds) 1986. *Land Ownership - Changing Concepts (a series of articles first published in Acta Juridica 1985)*. Juta and Company, Cape Town.
- Bentler P M and Speckart G 1979. *Models of Attitude Behaviour Relations*. Psychological Review, September 1979, 86(5) 452-464.
- Beuthin and Luiz 1992. *Beuthin's Basic Company Law*. 2nd edition, Butterworths, Durban.
- Biebuyk D (ed) 1963. *African Agrarian Systems*, International African Institute, London, Oxford University Press.
- Bohannan P 1963. 'Land', 'Tenure' and 'Land-Tenure', in Biebuyk D (ed) 1963, *African Agrarian Systems*. International African Institute, London, Oxford University Press. 101-111.
- Bohannan P 1973. 'Land', 'Tenure' and Land-Tenure, Land Tenure Center. University of Wisconsin-Madison, Reprint No 105.
- Brooke D I 1992. *Notes on an Urbanisation Experience in Milnerton*. Unpublished report, Town Engineer, Milnerton Municipality.
- Bruce J W 1983. *Family Land Tenure and Agricultural Development in St Lucia*, LTC Research Paper 79, Land Tenure Center, University of Wisconsin-Madison.
- Bruce J W and Migot-Adholla, S E (eds) 1994. *Searching for Tenure Security in Africa*. Kendall/Hunt, Dubuque, Iowa.
- Bruce J W, Migot-Adholla, S E, and Atherton J 1994. *The Findings and their Implementation: Institutional Adaptation or Replacement?* in Bruce J W and Migot-Adholla, S E (eds). *Searching for Tenure Security in Africa*. Kendall/Hunt, Dubuque, Iowa. 251-265.
- Burman J 1992. *The Unofficial History of the Cape*, Human & Rousseau, Cape Town.
- Byerley M and McIntosh A 1994. *Administration of Informal Settlements*, in Hindson H and McCarthy J (eds), *Here to Stay: Informal Settlements in KwaZulu Natal*, Indicator, Durban. 167-176.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

Checkland P 1981. *Systems Thinking, Systems Practice*, John Wiley, Chichester.

City of Tygerberg 1997. *Khayelitsha-Transfer of State Funded Properties. Progress Report as at end of November 1997*. Internal document.

Cole J 1986. *Crossroads: From Popular Resistance to mini-Bantustan*, Centre for African Studies, University of Cape Town.

Cole J 1987. *Crossroads: the Politics of Reform and Repression 1976-1986*, Ravan Press, Johannesburg.

Collins E G C and Devanna M A (eds) 1990. *The Portable MBA*. John Wiley, New York.

Collins E G C and Devanna M A (eds) 1994. *The New Portable MBA*. John Wiley, New York.

Colony of Cape of Good Hope 1865. *Cape Land Beacons Act 10/1859*. (repealed).

Colony of Cape of Good Hope 1865. *Cape Land Beacons Consolidation Act 7/1865*. (repealed).

Comaroff J L 1982. *Dialectical systems, history and anthropology: units of study and questions of theory*. *Journal of Southern African Studies*, (8) 143-172.

Cook G P 1991. *Cape Town*, in Lemon A (ed), *Homes Apart: South Africa's Segregated Cities*. David Philip, Cape Town. 26-47.

Cook J S 1994. *A Cybernetic Approach to Land Management Issues*, Unpublished PhD thesis, Queensland University of Technology, Brisbane, Australia.

Crocombe R 1984. *Registration, Security and Productivity in the Pacific Islands: Experiences and Potentials*, in Acquaye B and Crocombe R (eds) 1984. *Land Tenure and Rural Productivity in the Pacific Islands*. Institute of Pacific Studies, University of the South Pacific, Food and Agriculture Organisation of the United Nations (FAO), Rome. 26-46.

Crone S 1997. *Application of Information Systems in Irregular Settlement Management and Low-Cost Housing Provision*, Unpublished MSc Thesis, Department of Geomatics, University of Cape Town.

Cross C R 1993. *Informal Tenure in South Africa: Systems of Transfer and Succession*. Rural Urban Studies Unit, Centre for Social and Development Studies, University of Natal.

Cross, C R 1994. *Shack Tenure in Durban*, in Hindson H and McCarthy J (eds). *Here to Stay: Informal Settlements in KwaZulu Natal*. Indicator, Durban.

Dale P F 1976. *Cadastral Surveys within the Commonwealth*. HMSO, London.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

Dale P F 1992. *Cadastral Reform '92 – Let the Users Speak*, in Hunter G J and Williamson I P (eds). *Proceedings of the International Conference on Cadastral Reform '92*. Department of Surveying and Land Information, University of Melbourne.

Dale P F and McLachlan J D 1988. *Land Information Management*. Clarendon Press, Oxford.

Dale, P F 1979. *A Systems View of the Cadastre*, Survey Review XXV, 191, 28-32.

Davies C J 1998. *Land Management of an Informal Settlement in East London*. Unpublished MSc thesis, Department of Surveying and Mapping, University of Natal, Durban.

Davies C J and Fourie C F 1998. *A Land Management Approach for Informal Settlement in South Africa*, South African Journal of Surveying and Mapping, 24(5&6) 239-246.

Davis F D 1989. *Perceived Usefulness, Perceived Ease of Use and User Acceptance in Information Technology*," MIS Quarterly, September 1989, 13(3) 319-339.

Davis, F D, Bagozzi R P and Warshaw P R 1989. *User acceptance of Computer Technology: A Comparison of Two Theoretical Models*. Management Science. August 1989, 35(8) 982-1003.

de Soto, H 1989. *The Other Path: The Invisible Revolution in the Third World*. Harper and Row. New York.

De Tolley J and Nash M 1984. *The Road to Khayelitsha and Beyond*, Black Sash National Conference, Cape Town.

de Wet F 1995. *A Methodology for the Capture and Retrieval of Cadastral and Engineering Services Data for Geographic Information Systems*, Unpublished MSc thesis, Department of Geomatics, University of Cape Town.

Denman D R 1978. *The Place of Property: A New Recognition of the function and form of Property rights in Land*, Geographical, Berkhamstead.

Denman D R and Prodano S 1972. *Land Use, An Introduction to Proprietary Land Use Analysis*. George Allen and Unwin, London.

Dewar D and Uitenbogaardt R S 1991. *South African Cities: A Manifesto for Change*, Urban Studies Research Unit, University of Cape Town.

Dictionary of Behavioural Science 1973, Wolman, P B (ed), Macmillan, London.

Dictionary of Philosophy 1984. International Publishers, New York.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

Dill W. R. 1957. *Environment as an Influence on Management Autonomy*, Administrative Science Quarterly, 2(4) 409-443.

Doebele W A 1994. *Urban Land and Macro Economic Development: Moving from "access for the poor" to urban productivity*, in Jones G and Ward P M (eds), *Methodology for Land and Housing Market Analysis*, London University College Press.

Dowson E and Sheppard V L O 1952. *Land Registration*. Colonial Research Publications, No 13, HMSO, London.

Drucker, P F 1966. *The Effective Executive*, Pan, London.

du Plessis I 1996. *The Adherence to Cadastral Layouts in Sub-economic Site and Service Schemes: A Case Study*. Unpublished 4th Year Undergraduate Thesis, Department of Geomatics, University of Cape Town.

Durand-Lasserve A and Clerc V 1996. *Regularization and Integration of Irregular Settlements: Lessons from Experience*. UNDP/UNCHS(Habitat)/World Bank, Urban Management and Land Working Paper No 6.

Eagley A H and Chaiken S 1993. *The Psychology of Attitudes*, Harcourt Brace Jovanovich Inc, Orlando.

Eastman J R 1992. *IDRISI User's guide*, Clarke University, School of Geography, Worcester, Massachusetts.

Ezibalike I C and Benwell G L 1994. *Cadastral "Reform" – At What Cultural Costs to Developing Countries?* Australian Surveyor, September 1994, Vol 39(3) 177-186.

Fahey L 1994. *Strategic Management: The Challenge and the Opportunity*, in Collins E G C and Devanna M A (eds) 1994. *The New Portable MBA*. John Wiley, New York. 303-352.

Fishbein M and Ajzen I 1975. *Belief, Attitude, Intention and Behaviour. An Introduction to Theory and Research*. Addison-Wesley, Phillipines.

Fortescue-Brickdale C 1913. *Methods of Land Transfer*. London, Stevens & Sons.

Fourie C D 1993. *A New Approach to the Zulu land Tenure System: An Historical Anthropological Explanation of the Development of an Informal Settlement*. Unpublished PhD thesis, Rhodes University, Grahamstown.

Fourie C D 1994. *Options for the Cadastre in the New South Africa*. Report to the South African Council for Professional and Technical Surveyors.

Gawith M 1996. *Towards a Framework for Integrating Environmental and Community*

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

concerns into the Planning and Development of Informal Settlements: A Case Study of Hout Bay, Western Cape. Unpublished MSc thesis, Department of Environmental and Geographical Science, University of Cape Town.

Gawith M and Sowman M 1992. *Informal Settlements in Hout Bay: A brief History and Review of Social Demographic Trends, (1989-1991)*, EEU Report 10/92/92, Department of Environmental and Geographic Science, University of Cape Town.

Gibson J T R 1970. *Wille's Principles of South African Law*, 6th edition, Juta, Cape Town.

Gildenhuis 1997. *The Effectiveness of Cadastral Layouts in Imizamo Yethu Settlement, Hout Bay*. Unpublished 4th year undergraduate thesis, Department of Geomatics, University of Cape Town.

Greene O 1994. *A Breakdown of the South African Land Tenure System*. South African Journal of Surveying and Mapping, 22(4) 250 – 252.

Haldrup, N O 1996. *Adjudication-A Way of Coping with Incomplete Information in Developing Countries*, Survey Review, 33(262) 504-517.

Hamermesh RG 1990. *Strategic Management*, in Collins E G C and Devanna M A (eds) 1990. *The Portable MBA*. John Wiley, New York, 292-331.

Hammond-Tooke W D (ed) 1974. *The Bantu Speaking People of Southern Africa*, 2nd edition, Routledge and Kegan, London.

Hammond-Tooke W D 1965. *Segmentation and Fission in Cape Nguni Political Units*. Africa, 35(2) 143-166.

Hartebeeshoek 94 The New South African Datum 1998. Department of Land Affairs, Chief Directorate: Surveys and Mapping, Mowbray.

Hindson and McCarthy 1994. *Here to Stay. Informal Settlements in KwaZulu-Natal*. Indicator Press, University of Natal.

Holstein L, McLaughlin J and Nichols S 1985. *Check List for Evaluating Cadastral Systems*. Occasional paper, University of New Brunswick.

Home R and Jackson J 1997. *Land Rights for Informal Settlements: Community Control and the Single Point Cadastre in South Africa*. Royal Institution of Chartered Surveyors, London.

Hoogsteden C C and van Zyl C A 1992a. *Privatizing the Cadastre: Four Sound Reasons Why!* in Hunter G J and Williamson I P (eds) 1992. *Proceedings of the International Conference on Cadastral Reform '92*, Department of Surveying and Land Information,

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

University of Melbourne, 412-430.

Hoogsteden C C, van Zyl C A and Kearsley G W 1992b. *Public Perception of Cadastral Boundary Accuracy and Costs*. New Zealand Surveyor 33(280) 193 – 203.

Hunter G J and Williamson I P (eds) 1992. *Proceedings of the International Conference on Cadastral Reform '92*, Department of Surveying and Land Information, University of Melbourne.

Jeppe W J O 1980. *Bophutatswana Land Tenure and Development*. Maskew Miller, Cape Town.

Jeyanandan D and Williamson I P 1990. *A Cadastral Model for Developing Countries*, Proceedings National Conference on Cadastral Reform 90, University of Melbourne, Victoria.

Jones B M 1964 *Land Tenure in South Africa – Past, Present and Future being The Apportionment, Tenure, Registration and Survey of Land in Southern Africa for the Establishment of a Cadastral system for the Bantu Areas of South Africa*. Unpublished PhD thesis, University of Natal, Durban.

Jones R J M 1976. *The Law and Practise of Conveyancing in South Africa*. 2nd edition, Juta, Cape Town.

Jones R J M 1991. *Conveyancing in South Africa*. 4th edition, Juta, Cape Town.

Kahn E (Senior Consulting Legal Editor and Chief Contributor) 1984. *Family Guide to the Law in South Africa*, Reader's Digest, Cape Town.

Kauffman D R (ed) 1980. *Systems: An Introduction to Systems Thinking*, in Carlton, S A (ed). *The Innovative Learning Series*. Minneapolis.

Kinthead-Weekes B 1985. *Africans in Cape Town: The Origins and Development of State Policy and Popular Resistance to 1936*. Unpublished MA Thesis, Department of Sociology, University of Cape Town.

Kleyn D G and Boraine A 1992. *Silberberg and Schoeman's The Law of Property*, 3rd edition, Butterworths, Durban.

Kotler P 1984. *Marketing Management*, 4th edition, Prentice Hall International.

Kraus K 1993. *Photogrammetry, Volume 1*, Wichmann Verlag, Karlsruhe.

Kraus K 1994. *Photogrammetrie, Grundlagen und Standardverfahren, Band 1*, Dümmler, Bonn.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

Kuhn T 1970, *The Structure of Scientific Revolutions*, University of Chicago Press, 2nd Edition.

Larsson G 1991. *Land Registration and Cadastral Systems: Tools for Land Information and Management*. Longman, Harlow, United Kingdom.

Latu S T and Grenfell R I 1994. *The Evolution of Land Tenure in the Kingdom of Tonga*, The Australian Surveyor, December 1994, Vol39(4),241 – 253

Laurini R and Thompson D 1992. *Fundamentals of Spatial Information Systems*, Academic Press, London. Reprinted 1996.

Lawrance J C D 1985. *Land Adjudication*. Paper presented at World Bank seminar on land information systems.

Lee A S 1989. *A Scientific Method for MIS Case Studies*. MIS Quarterly, 13(1) 33-50.

Leedy P D 1985. *Practical research: Planning and design*. 3rd edition, Macmillan. New York.

Lemon A (ed) 1991. *Homes Apart: South Africa's Segregated Cities*, Indiana University Press, Bloomington.

Lester K J and Teversham J 1995. *An overview of the Cadastral System in South Africa*. South African Journal of Surveying and Mapping 23(2),103-114.

Letsoalo E 1987. *Land Reform in South Africa: A Black Perspective*. Skotaville Publishers, Johannesburg.

Lewis C 1986. *The Modern Concept of Ownership of Land*, in Bennett T W, Huchison D B, Leeman I (eds). *Land Ownership - Changing Concepts (a series of articles first published in Acta Juridica 1985)*. Juta, Cape Town. 241-266.

Liebenberg B J 1993. *Part 5: 1996-1991*, in Liebenberg B J and Spies S B (eds). *South Africa in the 20th Century*, J L van Schalk, Pretoria. 488-533.

Liebenberg B J and Spies S B (eds) 1993. *South Africa in the 20th Century*. J L van Schalk, Pretoria.

Lohnert B 1998. *Rural Urban Migration and Land Tenure: Three Case Studies from Cape Town, South Africa*, in Barry M (ed) 1998. *Proceedings of the International Conference on Land Tenure in the Developing World with a focus on Southern Africa*, 27-29 January 1998, Dept of Geomatics, University of Cape Town.

Lourens A, Mahanjana M and Marubelela C 1992. *Lingeletu West City Council, Demographic Development Profile*. City of Tygerberg, Khayelitsha Office.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

MacMillan's Dictionary of Anthropological Terms 1986, MacMillan, London.

Manona C W 1987. *Land Tenure in an Urban Area*. Development Southern Africa, August, 4(3) 569-581.

Marconi Beam Civic Association (SANO), Milnerton Municipality, The Urban Foundation 1993. Joint Press Release: Marconi Beam Socio-Economic Survey.

Mason S 1997. *Managing Informal Settlements Spatially*, CONSAS '97, Durban.

Mason S, R  ther H, Smit J 1997. *Investigation of the Kodak DCS460 for Low Cost Local Area Mapping*, ISPRS Journal of Photogrammetry and Remote Sensing, 52, 202-214.

Mathiesen K 1991. *Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behaviour*. Information Systems Research, September 1991, 2(3) 173-191.

Mazur R E and Qangule V N 1995. *African Migration and Appropriate Housing Responses in Metropolitan Cape Town*. Western Cape Community-based Housing Trust, Draft Report.

McLachlan N 1997, *Unpublished Lecture Notes*, Masters Course in Management Issues in Geographic Information Systems, Department of Geomatics, University of Cape Town.

McLaughlin J D 1976. *Notes and Materials on Cadastral Surveying*. University of New Brunswick, Department of Surveying Engineering, Lecture Notes No 44.

McLaughlin J D and Clapp J L 1978. *Toward the Development of Multipurpose Cadastres*. Institute for Environmental Studies, IES Report 97, University of Wisconsin-Madison.

McLaughlin J D and de Soto H 1994. *Property Formalisation : the PROFORM Solution*. South African Journal of Surveying and Mapping, August, 22(5), 321-327.

Migot-Adholla S E and Bruce J W 1994. *Introduction: Are Indigenous African Tenure Systems Secure?* in Bruce J W and Migot-Adholla S E (eds). *Searching for Tenure Security in Africa*. Kendall/Hunt, Dubuque, Iowa. 1-13.

Miller J M 1985, *Information Systems Planning - Principles and Practice*, South African Journal of Library Information Science, 53(4) 183-190.

Miller J M 1989. *The Effectiveness of Computer Based Information Systems: Definition and Measurement*. Unpublished PhD Thesis, University of Cape Town.

Milnerton Municipality 1991. *Squatters Milnerton*, Information Pamphlet, 29 January 1991.

Milnerton Municipality 1992. *Minutes of meeting between Negotiating Panel and members*

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

of the Marconi Beam Transit Area, Thursday 27 August 1992.

Moffatts Improved Table of Transfer and Bond Costs, 1995, Horters, Cape Town.

Mostert W P and Hofmeyr 1990, *Projections of the Population of the Cape Metropolitan Area*. Unpublished report.

MSDF 1995. *Metropolitan Spatial Development Framework: A Guide for Spatial Development in the Cape Metropolitan Region*. Draft for Discussion. Western Cape Economic Development Forum, Urban Development Commission.

MSDF 1996. *Metropolitan Spatial Development Framework: A Guide for Spatial Development in the Cape Metropolitan Functional Region*. Cape Metropolitan Council.

Nathan C D and Spindler Z A 1997, *Squatting as Spontaneous Privatisation and "Government Failure" in South Africa*. Department of Economics, University of Cape Town, unpublished mimeo.

Nel L 1997. *A Mathematical Model for Least Squares Point Determination from Cadastral Data* Unpublished MSc thesis, Department of Geomatics, University of Cape Town.

Nichols S E 1993. *Land Registration: Managing Information for Land Registration*. PhD thesis, Department of Surveying Engineering Technical Report No. 168, University of New Brunswick.

Nwabueze B O 1972. *Nigerian Land Law*, Nwamife Publishers, Enugu, Oceana, New York. 662 pages.

Oelofse C 1994. *The Surrounding Community's Perceptions of the Development of an Informal Settlement in their Area - A Case Study of Hout Bay, Cape*. Unpublished MSc Thesis, University of Cape Town, Department of Environmental and Geographic Science.

Oelofse C 1996. *The Integration of Three Disparate Communities: The Myths and Realities facing Hout Bay, Cape Town*. in Davies R J (ed). *Contemporary City Structures*, IGU Commission on Urban Development, Society of South African Geographers. 275-285.

Onsrud H J, Pinto J K and Azad B 1992. *Case Study Research Methods for Geographic Information Systems*. URISA Journal, 4, 32 - 44.

Payne G 1997, *Urban Land Tenure and Property Rights in Developing Countries*. Intermediate Publications, London.

Peil M 1976. *African Squatter Settlements : A Comparative Study*, Urban Studies, 13:155-166.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

Peil M and Sada P O 1984. *African Urban Society*, Wiley, Chichester.

Pelto J P and Pelto G H 1978. *Anthropological Research. The Structure of Inquiry*. 2nd Edition Cambridge University Press.

Peters T J and Waterman R H 1982. *In Search of Excellence*, Harper and Row, New York.

Place, F, Roth, M and Hazell, P 1994. *Land Tenure Security and Agricultural Performance in Africa: Overview of Research Methodology* in Bruce J W and Migot-Adholla S E (eds). *Searching for Tenure Security in Africa*. Kendall/Hunt, Dubuque, Iowa. 15-39.

Province of Western Cape 1985, *Land Use Planning Ordinance 15/1985*.

Province of Western Cape 1999. *Western Cape Planning and Development Act 7/1999*.

Province of Western Cape, *Municipal Ordinance 20/1974*..

Province of Western Cape, *Prescription (Local Authorities) Ordinance 16/1964*.

Ralawe M A (1993). *Land Tenure, Transfer and Registration in South Africa*, Unpublished mimeo, Centre for Rural Legal Studies, Stellenbosch.

Republic of South Africa 1913 *Natives Land Act 27/1913*.

Republic of South Africa 1927. *The Land Survey Act (repealed) 9/1927*.

Republic of South Africa 1936. *Development Trust & Land Act 18/1936*.

Republic of South Africa 1937. *Deeds Registries Act 47/1937*.

Republic of South Africa 1950. *Group Areas Act 41/1950*.

Republic of South Africa 1951. *The Prevention of Illegal Squatting Act 52/1951*.

Republic of South Africa 1955. *Group Areas Development Act 69/1955*.

Republic of South Africa 1961. *State Land Disposal Act 48/1961*.

Republic of South Africa 1963. *The Fencing Act 31/1963*.

Republic of South Africa 1966a. *Community Development Act 3/1966*.

Republic of South Africa 1966b. *Group Areas Act 36/1966*.

Republic of South Africa 1967. *Removal of Restrictions Act 84/1967*.

Republic of South Africa 1969. *Prescription Act 68/1969*.

Republic of South Africa 1973. *Companies Act 61/1973*.

Republic of South Africa 1980. *Shareblock Companies Act 59/1980*.

Republic of South Africa 1981. *Alienation of Land Act 68/1981*.

Republic of South Africa 1982. *Black Local Authorities Act 102/1982*.

Republic of South Africa 1983. *Timeshare Act 75/1983*.

Republic of South Africa 1984a. *Black Communities Development Act 4/1984*.

Republic of South Africa 1984b. *Closed Corporation Act 69/1984*.

Republic of South Africa 1984c. *Matrimonial Property Act 88/1984*.

Republic of South Africa 1986a. *Sectional Titles Act 95/1986*.

Republic of South Africa 1986b. *Abolition of Influx Control Act 68/1986*.

Republic of South Africa 1991a. *Abolition of Racially Based Land Measures Act 108/1991*.

Republic of South Africa 1991b. *Upgrading of Land Tenure Rights Act 112/1991*.

Republic of South Africa 1991c. *White Paper on Land Reform*, Department of Land Affairs, Pretoria.

Republic of South Africa 1993. *Local Government Transition Act 209/1993*.

Republic of South Africa 1994. *White Paper: A new Housing policy and Strategy for South Africa*, Department of Housing, Government Gazette No 16178, 23 December 1994, Pretoria.

Republic of South Africa 1995. *Development Facilitation Act 67/1995*.

Republic of South Africa 1996a. *Green Paper on South African Land Policy*. Department of Land Affairs, Pretoria.

Republic of South Africa 1996b. *Constitution of the Republic of South Africa Act 108/1996*.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

Republic of South Africa 1996c. *Interim Protection of Informal Rights Act 31/1996*.

Republic of South Africa 1996d. *Communal Property Associations Act 21/1996*.

Republic of South Africa 1997a. *White Paper on South African Land Policy*. Department of Land Affairs, Pretoria.

Republic of South Africa 1997b. *Land Survey Act 8/1997*.

Rollins L 1991. *Seizing the Gap: - A Potential Feasibility of Utilizing Open Urban Spaces for Informal Housing- A Case Study of Milnerton*, Unpublished Honours Thesis, Department of Environmental and Geographic Science, University of Cape Town.

Rutsch P and Jenkin F (1992). *The New Land Laws of South Africa (LRC-DBN)*. Metis Publications Law Service, Durban.

Saff G 1996. *Claiming a Space in a Changing South Africa: The "Squatters" of Marconi Beam, Cape Town*. *Annals of the Association of American Geographers*, 86(2), 235-255, Blackwell, Cambridge, Massachusetts

Scher D M 1993. *South Africa's departure from the Commonwealth*, in Liebenberg B J and Spies S B (eds). *South Africa in the 20th Century*, J L van Schalk, Pretoria. 364-375.

Schoeman C 1993. *District Six: The Spirit of Kanala*, Human & Rousseau, Cape Town.

Seekings J 1997. *SANCO: Strategic Dilemmas in a Democratic South Africa*, *Transformation*, 34, 1-30.

Senge P M 1990. *The Fifth Discipline, The Art and Practice of the Learning Organisation*, Doubleday, New York.

Sibanda S 1998. *Internal Memorandum to Family Titles Working Group*, Unpublished mimeo 7 August 1998, Department of Land Affairs, Pretoria.

Simon's Town Museum 1998, *Project Phoenix*, information pamphlet.

Simpson K W and Sweeney G M J 1973. *The Land Surveyor and the Law*, Natal University Press, Pietermaritzburg.

Simpson S R 1976. *Land Law and Registration*. Cambridge University Press.

Smuts J C 1926. *Holism and Evolution*. MacMillan, London.

South African Institute of Race Relations 1994. *Race Relations Survey 1993/1994*. Johannesburg, South African Institute of Race Relations.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

South African Institute of Race Relations 1996. *South Africa Survey 1995/1996*. Johannesburg, South African Institute of Race Relations.

Spies S B 1993. *British supremacy and South African unification and The launching of the Union of South Africa*. in Liebenberg B J and Spies S B (eds). *South Africa in the 20th Century*, J L van Schalk, Pretoria. 3-85.

Taylor S and Todd P 1995. *Assessing IT Usage: The Role of Prior Experience*. MIS Quarterly, December 1995, 19(4) 561-570.

Thompson L 1990, *A History of South Africa*, Yale University Press.

Tomlin C D 1990. *Geographic Information Systems and Cartographic Modelling*, Prentice Hall, New Jersey.

Torrens (1858 - 1859), *Speeches*.

Triandis H C 1979. *Values, Attitudes and Interpersonal Behaviour*. In *Nebraska Symposium on Motivation 1979: Beliefs, Attitudes and Values*. University of Nebraska Press, Lincoln NE. 195-259.

United Nations Centre for Human Settlements (Habitat), 1990. *Guidelines for the Improvement of Land-Registration and Land Information in Developing Countries (with special reference to English-speaking countries in Eastern, Central and Southern Africa)*, First Edition, Habitat, Nairobi.

Urban Foundation / Derek Chittenden and Associates. 1993. *Marconi Beam: Socio-economic Survey*. Urban Foundation, Cape Town.

Urban Problems Research Unit 1990. *An Overview of Development Problems in the Cape Town Metropolitan Area*. Working Paper No 40, University of Cape Town.

van Warmelo N J 1974. *The Classification of Cultural Groups*, in Hammond-Tooke W D (ed). *The Bantu Speaking People of Southern Africa*, 2nd edition, Routledge and Kegan, London.

van Zyl, B. 1995. *The Population of the Cape Metropolitan Region*, Report for the Provincial Administration of the Western Cape.

Visser and Potgieter 1998. *Introduction to Family Law*. 2nd edition, Juta, Cape Town.

Wesgro 1992. *South Africa's Leading Edge? A Guide to the Western Cape Economy*.

Williamson I P 1983. *A Modern Cadastre for New South Wales*, The University of New South Wales, PhD Thesis.

Barry M B 1999. *Evaluating Cadastral systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities*. PhD thesis, University of Natal, Durban. <http://www.geomatics.uct.ac.za>

Williamson, I P 1997. *The Justification of Cadastral systems in Developing Countries*. *Geomatica*. 51(1) 21-36.

Yakubu M G 1985. *Land Law in Nigeria*. Macmillan, London.

Yin R K 1984. *Case study Research: Design and Methods*. Sage, Beverly Hills.

Zille H 1990 *Negotiations on the Future of Squatters in Hout Bay*, unpublished.

Zwass V 1992. *Management Information Systems*, Wm. C Brown, Dubique, Indiana.