

University of Groningen

Unruly urbanisation on Delhi's fringe

Bentinck, J.

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:

2000

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Bentinck, J. (2000). *Unruly urbanisation on Delhi's fringe: Changing patterns of land use and livelihood*. [Thesis fully internal (DIV), University of Groningen]. [s.n.].

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Unruly urbanisation on Delhi's fringe

ISBN 90-6809-294-4 (NGS)
ISBN 90-367-1260-2 (thesis)

Copyright © J.V. Bentinck, 2000. Per adres: Faculteit der Ruimtelijke Wetenschappen
Rijksuniversiteit Groningen 1999

Niets uit deze uitgave mag worden vermenigvuldigd en/of openbaar gemaakt door middel van druk, fotokopie of op welke ander wijze dan ook zonder voorafgaande schriftelijke toestemming van de uitgevers.

All rights reserved. No part of this publication may be reproduced in any form, by print or photoprint, microfilm or any other means, without written permission by the publishers.

Rijksuniversiteit Groningen

Unruly urbanisation on Delhi's fringe
changing patterns of land use and livelihood

Proefschrift

ter verkrijging van het doctoraat in de
Ruimtelijke Wetenschappen
aan de Rijksuniversiteit Groningen
op gezag van de
Rector Magnificus, dr. D.F.J. Bosscher,
in het openbaar te verdedigen op
maandag 26 juni 2000
om 16:00

door

Johan Volkier Bentinck
geboren op 21 mei 1969
te Haarlemmermeer

Promotor: Prof. dr. P.H. Pellenbarg
Co-promotor: Dr. P.C.J. Druijven

Beoordelingscommissie: Prof. dr. G.A. de Bruijne
Prof. dr. P.F. Lanjouw
Prof. dr. ir. F.J. Willekens

CONTENTS

TABLES	9
FIGURES	9
PREFACE	11
1 INTRODUCTION: THEORETICAL LEADS, RESEARCH QUESTIONS, AND METHODOLOGY	13
1.1 Introduction	13
1.2 Urbanisation: rural transformation and environmental change	17
1.2.1 Definitions and the descriptive models of the rural-urban fringe	17
1.2.2 Urbanisation and its implications for land use	21
1.2.3 The actor approach to land issues in the rural-urban fringe	23
1.2.4 Choosing the levels of analysis: areas, villages, and households	24
1.2.5 Changing environmental conditions for residents in urbanising places	27
1.3 Research questions	28
1.4 The research area and the selected villages	29
1.5 Methodology and data sources	29
1.5.1 Secondary data sources	30
1.5.2 Primary surveys and interviews	31
1.6 Structure of the thesis	33
2 THE RURAL-URBAN FRINGE AS PART OF METROPOLITAN DELHI	35
2.1 Delhi: an introduction to the Metropolis and its surroundings	35
2.2 Occupational change in Delhi's rural area	39
2.3 Alipur Block as part of Delhi's rural-urban fringe	40
2.4 The study villages from rural to urban	44
2.4.1 The village clusters of stages of urbanisation	44
2.4.2 A village still in the rural stage?	49
2.4.3 Villages in the stages of occupational change	50
2.4.4 Villages in the stage of increasing urban land use	52
2.4.5 An urbanised village	54
	5

2.5	Epilogue	54
3	LAND-USE DYNAMICS	57
3.1	Land uses observed in the rural-urban fringe	57
3.2	The heterogeneity in types of land use: a mix of urban and rural features	57
3.3	Using remote sensing to map land use	63
	3.3.1 Advantages of remote sensing and reasons for its application	63
	3.3.2 The generated remote sensing classification compared with the types of land use	64
3.4	The dynamics of land use: changes, effects and future developments	69
	3.4.1 Most frequently occurring land-use changes	69
	3.4.2 Impact of urban land use on adjacent and nearby agricultural land	69
	3.4.3 Future developments concerning land in Delhi's rural-urban fringe	70
3.5	Links with debates on urbanisation and land-use change	72
	3.5.1 The usefulness of remote sensing (RS) in the rural-urban fringe	72
	3.5.2 The issue of land degradation from a socio-economic perspective	73
4	ROLES OF ACTORS IN LAND-USE ISSUES	.75
4.1	Land-use issues from a socio-political perspective	75
4.2	The actors and their interests in land	76
	4.2.1 Private actors	77
	4.2.2 Public institutions, government policy, and urban planning regulations	83
4.3	Manifestations of actor networks in land-use issues	85
	4.3.1 Unauthorised colonies	85
	4.3.2 The lal dora issue	86
	4.3.3 Formal land acquisition: the case of the village Rithala	87
	4.3.4 Land prices; determinants and differentiation	89
4.4	Strength and weakness of the actors	90
4.5	The consequences of the actor network for urban land supply	91
5	THE IMPACT OF URBANISATION ON HOUSEHOLD LIVELIHOOD	95
5.1	Structure of the analysis	95
5.2	Urbanisation defined in terms of changes in local 'site' and 'situation'	96
5.3	Changing occupational and income opportunities	97
6		

5.3.1	Upcoming local and extra-local occupational and income possibilities	97
5.3.2	Pressures on occupational and income possibilities	99
5.4	The village households and their livelihood patterns	100
5.4.1	The socio-economic profile of the households	100
5.4.2	Socio-economic stratification of households	102
5.5	Urbanisation and household livelihood: socio-economic background	104
5.6	Household features and livelihood patterns	109
5.6.1	The place of residence: influence of the local ‘site’ and ‘situation’	109
5.6.2	Ownership of agricultural land and aspects of land management	113
5.6.3	Demographic structure: nuclear and joint type of households	117
5.7	Processes, generational change and perceived changes in livelihood	120
5.7.1	Inter-generational processes in occupations and other sources of income	120
5.7.2	Livelihood concerns: unemployment, aspirations and status issues	126
5.7.3	Perceptions and non-economic factors	127
5.8	Links to debates about urbanisation and rural transformation	127
6	THE EFFECTS OF URBANISATION ON LIVING CONDITIONS	131
6.1	Positive effects: better amenities, housing and health awareness	131
6.2	The adverse effects of environmental stress	134
6.2.1	Pollution	134
6.2.2	Congestion	135
6.2.3	Stress on amenities	136
6.3	Samaipur: how urbanisation encompassed a village	136
6.3.1	The village: prosperity at high cost	137
6.3.2	The slum: an environmental basket case	139
6.3.3	Industry: small, dirty and hazardous	140
6.3.4	Environmental conditions and the health of residents and workers	142
6.3.5	Health concerns among the population and workers in the settlements	144
6.4	Environmental conditions caused by spatial legislation and policy	146
6.5	Samaipur and the literature on urbanisation and the environment	147

7	CONCLUSIONS	149
7.1	Land-use changes due to urbanisation	150
7.2	The roles of ‘actors’ and their influence on the urbanisation of land	151
7.3	The effect of urbanisation on the villagers’ livelihood	153
7.4	Urbanisation and living conditions	156
7.5	Some reflections concerning the literature	158
7.6	Epilogue	159
	REFERENCES	161
	GLOSSARY	168
	SUMMARIES IN HINDI AND DUTCH	171
	fgUrh I k̄i	171
	Samenvatting	175
	APPENDICES	179
A	Technical details on Remote Sensing analysis	179
B	Statistical analyses with basic household survey	181
C	Non-agricultural occupations encountered among the village population	187
D	Contents of the CD-ROM	190

TABLES

Table 2.1 Comparison of the occupational characteristics of rural Delhi with other regions, 1971	40
Table 2.2 Comparison of the occupational characteristics of rural Delhi with other regions, 1991	40
Table 2.3 The stage of urbanisation of the study villages, 1971	45
Table 2.4 The stage of urbanisation of the study villages, 1971	45
Table 3.1 Comparison of the observed types of land use and the RS classification	66
Table 5.1 Livelihood characteristics of households; indicators of relevance to urbanisation	101

FIGURES

Figure 1.1 Project context of this thesis	15
Figure 1.2 The study area: Alipur Block in the National Capital Territory of Delhi	16
Figure 1.3 The accompanying CD-ROM	16
Figure 1.4 Stages of urbanisation of villages in the rural-urban fringe	19
Figure 1.5 Delimitation of the rural-urban fringe according to various concepts and superimposed on the map of Delhi	20
Figure 1.6 Central research questions	28
Figure 2.1 Topographic map of Delhi	36
Figure 2.2 Topographic map of Alipur Block	41
Figure 2.3 Operationalisation of the stages of urbanisation	42
Figure 2.4 Stages of urbanisation in Alipur Block	43
Figure 2.5 The study villages	46
Figure 3.1 Brick kilns: the interaction between farmers and agricultural land	61
Figure 3.2 The result of the remote sensing classification of Alipur Block	67
Figure 3.3 RS map of the study area with overlay of land-use types	67
Figure 3.4 Most occurring land use changes in Alipur Block	68
Figure 3.5 Estimation of 'consumption' of land by urban in Delhi and India	71
Figure 4.1 Private actors with roles and interests in land	77
Figure 4.2 The role of a small-scale property dealer	82
Figure 4.3 Actors within government and other public institutions with roles in land-use issues	84
Figure 4.4 Image of Rithala and surroundings	88
Figure 4.5 Spatial representation of land prices around Pehladpur Bangar and Rithala at current prices (1998)	89
Figure 5.1 Outline of the overview of the impact of urbanisation on the livelihood of households	95
Figure 5.2 Expanding income and occupational possibilities in the rural-urban fringe of Delhi	97

Figure 5.3	Pressures on occupational and income possibilities for people residing in rural-urban fringe villages	99
Figure 5.4	Agricultural assets per socio-economic group	105
Figure 5.5	Occupational characteristics per socio-economic group	105
Figure 5.6	The main occupations of individual workers per socio-economic group	105
Figure 5.7	Specific occupations and incomes per socio-economic group (in descending order of estimated importance)	107
Figure 5.8	Living standard per socio-economic group	108
Figure 5.9	Representation of socio-economic groups in the study villages	110
Figure 5.10	Agricultural assets of households per village	110
Figure 5.11	Occupational characteristics per village	111
Figure 5.12	The main occupations of working adults per village	112
Figure 5.13	Scores on the index of living standard of households per village	112
Figure 5.14	Representation of socio-economic groups in the categories of landownership	113
Figure 5.15	Agricultural assets per category of ownership of agricultural land	113
Figure 5.16	Occupational characteristics per category of ownership of agricultural land	114
Figure 5.17	Main occupations of working adults per category of ownership of agricultural land	114
Figure 5.18	Living standards per category of landownership	115
Figure 5.19	Living standard of households that sold land among Group I	115
Figure 5.20	Representation of socio-economic groups per category of demographic structure	118
Figure 5.21	Agricultural assets per category of demographic structure	118
Figure 5.22	Occupational characteristics per category of demographic structure	119
Figure 5.23	The main occupations of workers per category of demographic structure	119
Figure 5.24	Living standard per category of demographic structure	119
Figure 5.25	Case of favourable livelihood development in Group I	121
Figure 5.26	Case of unfavourable livelihood development in Group I	122
Figure 5.27	Case of a favourable livelihood development in Group II	123
Figure 5.28	Case of unfavourable livelihood development in Group II	124
Figure 5.29	Case of favourable livelihood development in Group III	125
Figure 5.30	Case of unfavourable livelihood development in Group III	125
Figure 6.1	Level of amenity in rural Delhi compared, 1981-91	132
Figure 6.2	The location of Samaipur at the urban fringe of Delhi	138
Figure 6.3	Land use in Samaipur, the industrial area and Sanjay Colony	138

PREFACE

As a child I was fascinated by a poster series that was hanging in the orthodontist's waiting room. The first in this series of very realistic drawings depicted a little peaceful farm; subsequent pictures showed it becoming engulfed by construction sites, then enclosed by roads, then crowded with buildings, and eventually overwhelmed by skyscrapers and highways. The green pastures ultimately had to make way for the urban monster and bow to modernisation. The little farm is no more. I used to wonder what happened to the (victimised?) farmer. Although the posters were meant to evoke pity for a defeated idyllic rural situation, I could not help but feel impressed by the urban jungle. I never imagined that I would spend more than four years doing research on a topic so close to that series of images. I thank Delhi for satisfying my wildest dreams about experiencing an 'urban jungle'.

Given the chance to do research in India, I felt a mix of high expectations and weak knees. The theme and setting were very appealing. I had already done the research for my MA thesis there, and with that experience behind me, I was not stepping into something totally unknown. The challenge was to combine aspects of urbanisation, the environment, and the livelihood of the people into a single investigation. The cross-disciplinary character of doing this research in a then exotic setting often puzzled me – and it certainly puzzled others I tried to explain the multiple facets of land and life in a rural-urban fringe. I hope that if this thesis does not synthesise everything, it will at least demonstrate a good comprehension of the local situation.

Although India can be a tough place, for a researcher it was very pleasant. The urbanising villages have retained that warm hospitality that characterises rural India. Almost all of the respondents were generous with their time. Non-responders were few and far between. Therefore, first and foremost, my sincere thanks go to the villagers and others who have welcomed me with tea, local sweets, lunches and even one or more night's stay but, most importantly, with insightful and usually honest answers to our questions.

I am grateful to several people in Groningen for the important roles they have played: my supervisor and co-promotor Peter Druiven for acquiring the IDPAD project and for his continued capable and committed guidance; my promotor Piet Pellenburg for providing practical feedback as well as very useful support of a more general academic nature; Jan Dekker for sharing his vast experience and helping re-interpret facts once they had been stripped of opportunist, fashionable, and politically correct academic biases – his trademark; and Dirk Strijker for enthusiastically taking up the guidance of a fieldwork student from the Department of Economics.

Doing PhD research can be a lonely affair. I was lucky to be accompanied to the field by colleagues from Delhi, who assisted in the interpretation – and I don't only mean their help in crossing the language barrier. I could also count on them for feedback and suggestions about the research approach. Besides, during the many long fieldwork days, we built up lasting friendships. I thank Rajeev Sharma, Prakash Mondal, and Jagmohan for their companionship. Dr. R.B. Singh provided a home base at the University of Delhi. I am happy that I could work with Surinder Aggarwal and Vineet Katariya in an enjoyable mode of co-operation on the study of Samaipur. I thank Mr. Bachi Ram for giving me some cartographic advice along the way. Mr. Yoginder Singh prepared a good

summary in Hindi. Some rural-urban fringe residents really went out of their way to help me; I would particularly like to thank Tejbir Singh Rana, Satya Prakash, the Tyagi family, Niranjan Kaushik, Ashwini Rana, and Dr. P.V. Khatri.

It has been both gratifying and fruitful that eight students from my institute could take part in the research. It was a learning experience for all of us. I particularly want to thank them for conducting basic household surveys and for bringing depth to the following topics in the fringe villages: land prices (Casper van Nassau), women's work (Wendy Warnar), women and environment (Natasja Stamsnieder), commuting (Jan Postmus), industrial location and work (Robert-Jan Lassche), housing (Constanze Cromwell), migration (Taeke Gjaltema), and industrial labour migration (Joost van der Geest).

I was also fortunate that the opportunity arose to work together with Arjen de Vries and Jan Skornsek on remote sensing and GIS, mostly on memorable Fridays. Apart from taking advantage of their indispensable expertise, I drew inspiration from a bond that grew among friends at a similar stage in our careers. I also appreciate the actual computer-related support provided by Jan de Ruiter, Henk Oosterhoff, Wim Blanken, Johan Zwart, Theo Smit, Joop Arnolli. Tamara Kaspers-Westra, thanks for making so many maps. And Jon Ubbink, thanks for the instructions regarding statistics. I am grateful to Nancy Smyth van Weesep for the thorough and very professional correction of my English. Jaap Sibma, thanks for the strict yet fair treatment of financial and accommodation matters. With all of my roommates at the department – Rens Kern, Ruud Dorenbos, George van der Weij, Esther de Boer, Bert Liewes, and Hilko van der Wal – I have shared good comradeship. Among the friends who were helpful and inspiring in other ways, I would like to mention Edmond Varwijk, Kees Lazonder, Daan Groeneveld, en Sabu Padmadas.

Happiness and peace of mind are necessary preconditions for preserving such an unnatural and long process as writing a dissertation. The support of my family was crucial in helping me overcome the dips and insecurities of this long-distance run – especially in the final stages: thanks! My gratitude also goes to my family in India, who showed an extraordinary degree of interest and trust. Although finishing this book feels pretty good, the best outcome of my sojourn in Delhi is my marriage with Shilpa. Shilpa, your love, trust, and the comfort you have so generously given have been essential – not only for finishing the book, but also for making this period such an enriching and enjoyable enterprise.