

University of Bath



PHD

Water to the swamp? Irrigation and patterns of accumulation and agrarian change in Bangladesh

Glaser, Marion

Award date:
1989

Awarding institution:
University of Bath

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

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.

W A T E R T O T H E S W A M P ?
IRRIGATION AND PATTERNS OF ACCUMULATION
AND AGRARIAN CHANGE IN BANGLADESH //

by Marion Glaser
submitted for the degree of
Doctor of Philosophy
of the University of Bath

January 1989

Attention is drawn to the fact that the copyright of this thesis rests with its author. This copy of the thesis has been supplied on condition that anyone who consults it is understood to recognise that no quotation from the thesis and no information derived from it may be published without the prior written consent of the author.

This thesis may be made available for consultation within the University library and may be photocopied or lent to other libraries for the purpose of consultation.

Marion Glaser

UMI Number: U009678

All rights reserved

INFORMATION TO ALL USERS

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

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



UMI U009678

Published by ProQuest LLC 2013. Copyright in the Dissertation held by the Author.
Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against
unauthorized copying under Title 17, United States Code.



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

UNIVERSITY OF TORONTO	
11	24 APR 1939
PHD	

5027147

Gewidmet meinen Eltern
mit Dank für jahrzehntelange Geduld

Acknowledgements

In occasional dark moments a P.h.D. may seem like a "piece of solitary masochism". But it cannot be done alone. Many helped me. If I left anyone out - please take it to be said.

Special thanks to Rex for care and support and patient endurance of the less desirable side-effects of thesis writing.

Thanks also to

Joy Kumar and his mother, Ingeborg and Anthony Bottrall; Erik and Ria Wijhuizen, Lynne and Bernadette Cogswell, and David Gisselquist, each for their particular mixture of friendship, hospitality and advice during my stay in Bangladesh.

Professors M Hamid and B.M Chowdury (Rajshahi University), Dr. S. Mandal (Bangladesh Agricultural University), BRDB, BADC, Social Welfare Office, Statistical Office and bank staff at Singra and Natore, Mr M. Asaduzzaman (BADC, Rajshahi) Ms K Bentvelsen (agronomist)

to the people of Samitigram - for their patience, and their salutary effect on mine

in particular to "Saidur" *) and his family, who accepted me into their home and taught and sheltered me in more ways than one.

Mrs. Gulbanno (Headmistress of Singra Girls' High School) for warmth, understanding and hospitality

Colette for "the home" - and much more

my family - for being there

My father, Jürgen Glaser and Herrn Karl-Heinz Henneberger for patient support with the production of multicoloured maps and figures

Idris, in particular for patient multiple technical troubleshooting and for proofreading

Also to Beatrice and Michael Godwin and Clare B. Jones for proofreading, and to Julie Bloomfield - for trying...

Tina (and the redheads) for diversion, derision and laughter

to Allister McGregor, Michael Nebelung and to David Lewis in particular for helpful comments on different parts of the thesis

to Sarah White - 'sister-in-spirit' along the muddy path from research proposal to completion

and last but certainly not least to Geof Wood - initiator and much appreciated supervisor of the research through all the interferences between 'life' and work

The thesis is one of four produced by a group of research students (A. McGregor, S. White, D. Lewis, M. Glaser) with our common supervisor Dr G. Wood. Although the studies are independent pieces of work undertaken in different areas of Bangladesh and focussing on different topics, many shared themes and complementarities emerged from our discussions of each others' work.

Financial support was provided by a studentship from the University of Bath with some "special effects" from the University finance department.

*) Pseudonym retained to protect the anonymity of the family as they are one of my case studies.

ABSTRACT AND SUMMARY

The thesis is based on fieldwork in one main and seven other villages in one area of Bangladesh. It examines patterns of resource accumulation by different household categories and changes in the form and meaning of agrarian relations which occur with the introduction of STW irrigation. It is argued that under present conditions of low non-agricultural incomes and declining per capita land resources in rural Bangladesh, a transformation towards a more expansionary, capitalist rationale of production and appropriation is taking place in agriculture. The fieldwork material shows how under more secure, higher-productivity conditions facilitated by irrigation, agrarian relations are being restructured by producers and appropriators to exploit the productivity potential of new technologies such as mechanised irrigation.

The comparison between the main and the seven other villages in this research shows that such restructuring of agrarian relations towards output and productivity objectives takes different forms and has different development outcomes depending on micro-level political economy conditions. The thesis uses the distinction between "forms of market" (or exploitation) and "modes of production" to differentiate between common patterns of transformation and divergent micro-level development outcomes of technological change.

Chapter I poses the main questions addressed in the research, defines the major theoretical concepts used and examines the structural meanings and functions of different agrarian relationships through Bengali history. A discussion of contemporary agrarian change and an introduction to issues and institutions in the irrigation sector in Bangladesh are also given.

Chapter II addresses methodological issues, describes the fieldwork and introduces the fieldwork concepts and definitions.

Chapter III introduces the area and the main village where research was carried out. Local irrigation-related changes in cropping patterns are then introduced. The final two sections of the chapter discuss forms of informal locally initiated cooperation in the main research village.

Chapter IV focusses on the concept of "household category". It concentrates on 11 case studies with a detailed description of how household structure and endowment with material and social resources interact to create overall household position. Some indicators of irrigation-related change in the main research village are summarised at the end of the chapter.

Chapter V constitutes the core of the thesis. Firstly, it demonstrates how with more secure, higher yields through irrigation, and with a continuing deterioration of per capita land availability, agrarian relations in the land, credit and labour markets are becoming more productivity-oriented and less subject to the productivity-reducing effects of market interlinkages. Secondly, it shows that the appearance of capitalist agrarian relations has not displaced market interlinkages and wider patron-client relations but that these have adapted to the needs of a capitalist production and appropriation rationale.

Chapter VI examines agrarian change in the seven other, "subsidiary" research villages and shows how irrigation-related changes in the agricultural production structure and their influence on household level accumulation processes can take very different forms in one small relatively uniform geographical area.

Chapter VII widens the focus to patterns of accumulation and change beyond the cultivation sector. The development effect at the micro- and household level of occupational diversification, in particular in the irrigation-related sectors is examined.

Chapter VIII summarises findings and discusses their theoretical implications.

CONTENTS

Acknowledgements	i
Abstract and Summary	iii
Contents	v
Tables, Figures and Maps	ix
CHAPTER I: AGRARIAN STRUCTURAL DYNAMISM	1
I.1 Introduction	1
I.2 The Past	8
I.2.1 The Mughals	8
I.2.2 The British	11
I.2.3 Pakistan	17
I.2.4 Independence	19
I.3 The Present	20
I.3.1 Land	21
I.3.1.1 Tenancy	22
I.3.1.2 Mortgaging	27
I.3.2 Credit and Usury	29
I.3.3 Labour	33
I.4 Irrigation	36
I.4.1 Technological Choices	38
I.4.2 The Shallow Tubewell	41
I.4.3 The Institutional Framework	44
CHAPTER II: METHODOLOGY AND PROCEDURES	51
II.1 Methodological Concepts and Conflicts	51
II.2 Preparation and Setting up	53
II.3 The Fieldwork	57
II.3.1 The Village Survey	57
II.3.2 The Command Area Study	59
II.3.3 The Seven-Village Revisit	60
II.3.4 The Case Studies	60
II.3.5 Occupational Diversification	61
II.3.6 The State and Foreign Donors	62
II.4 Strengths and Limitations of the Data	62
II.4.1 Before and After	62
II.4.2 The Attribution of Change	63
II.4.3 The Female, Foreign Researcher	64
II.5 Definitions and Concepts	66
II.5.1 The Household	66
II.5.2 Household Categories	67
II.5.3 The Village	69
CHAPTER III: THE AREA AND THE VILLAGE	71
III.1 Singra Upazila	71
III.2 The Main Research Village	72
III.3 The Crops and the Seasons	75
III.4 Samitigram: Cooperation and Conflict	84

III.4.1	The Jubok Samiti	86
III.4.2	The TV Samiti	87
III.4.3	The Mosque Samiti	87
III.4.4	The School Samiti	88
III.4.5	The Jute Samiti	89
III.4.6	The Credit Samiti	90
III.4.7	The Krishi Samabaya Samitis (KSS)	91
III.4.8	The Mahila Samabaya Samitis (MSS)	92
III.4.9	The Pukur Groups	92
III.4.10	The Paddy Trading Group	93
III.5	Irrigation in Samitigram	94
III.5.1	History and Present Context	94
III.5.2	Command Area Differences	95
III.5.3	The Shallow Tubewell Groups	100
CHAPTER IV: VILLAGE PEOPLE		107
IV.1	Household Categories	107
IV.1.1	The 'Rich'	107
IV.1.2	The 'Well-Off'	109
IV.1.3	The 'Coping'	111
IV.1.4	The 'Poor'	114
IV.2	Household Profiles	121
IV.2.1	The 'Rich': Malik and Saidur	122
IV.2.1.1	The 'Rich': Strategies and Change	129
IV.2.2	The 'Well-Off': Adom and Mujibur	133
IV.2.2.1	The 'Well-Off' Strategies and Change	138
IV.2.3	The 'Coping': Ali and Toslin	141
IV.2.3.1	The 'Coping': Strategies and Change	145
IV.2.4	The 'Poor': Kamal and Yussuf's Sons	148
IV.2.4.1	The 'Poor': Strategies and Change	154
IV.2.5	... and the Destitute: Sahera and her Children	157
IV.2.5.1	The Destitute: Strategies and Change	159
IV.3	Some Indicators of Change	160
CHAPTER V: IRRIGATED CULTIVATION AND ACCUMULATION		166
V.1	The Land Market	167
V.1.1	Landholding and Household Category	167
V.1.2	Land Purchases and Sales	173
V.1.3	Land Prices	180
V.1.4	Tenancy	183
V.1.4.1	'Traditional Sharecropping'	185
V.1.4.2	'New' Sharecropping	187
V.1.4.3	Fixed in-kind Rent	189
V.1.4.4	Tenancy, Distribution and Change	192
V.1.5	Mortgaging	198
V.1.6	Land, Cultivation and Irrigation	207
V.2	The Credit Market	210
V.2.1	Credit, Distribution and Change	212

V.3	The Labour Market	222
V.3.1	Organisational Forms of Labour	222
V.3.1.1	The Labour Groups (Dols)	223
V.3.1.2	Day Labour	227
V.3.1.3	Seasonal and Annual Labour	229
V.3.1.4	Household Labour and Labour Exchange (Gata)	231
V.3.2	Household Categories and the Labour Market	234
V.4	Cultivation Costs, Output and Accumulation	238
V.4.1	Yields	240
V.4.2	Cultivation Costs (All Cultivators)	240
V.4.3	Cultivation Cost (Tenants)	244
V.4.4	Net Output Values	245
CHAPTER VI: IRRIGATION AND CHANGE IN SEVEN OTHER VILLAGES		251
VI.1	Village Profiles	252
VI.1.1	Ninguin Ghun Para	254
VI.1.2	Baluabasua	257
VI.1.3	Solakura	259
VI.1.4	Patkole	261
VI.1.5	Shagarbari and Koyrabari	264
VI.1.6	Mahashandrapur	268
VI.2	Irrigation: Alternative Trajectories of Change	272
VI.2.1	Organisational Forms of Irrigation	272
VI.2.1.1	Low-Lift-Pump Groups	273
VI.2.1.2	Water Sale	273
VI.2.1.3	Land Renting by STW Owners	274
VI.2.2	Agrarian Production Relations	275
VI.2.2.1	Land	275
VI.2.2.2	Credit	278
VI.2.2.3	Labour	278
VI.3	Modes of Irrigation and Distribution	282
CHAPTER VII: OCCUPATIONAL DIVERSIFICATION		294
VII.1	Samitigram Income Source Diversification	295
VII.2	The Paddy Trade	301
VII.2.1	Paddy Sellers	302
VII.2.2	Paddy Processing	304
VII.2.3	Paddy Traders	308
VII.3	STW Supply and Services	310
VII.3.1	Supply	310
VII.3.2	Services	313
CHAPTER VIII: PEOPLE, TECHNOLOGY AND AGRARIAN CHANGE		319
VIII.1	Fieldwork Findings	319
VIII.1.1	Patterns of Accumulation	319
VIII.1.2	Patronage and Productivity	322
VIII.1.3	Factor Markets: Change and Continuity	325
VIII.1.4	People, their Choices and Room for Manoeuvre	330

VIII.1.5	Limits to Diversification	335
VIII.2	Which Way Change? Some Speculations	338
VIII.3	Outlook	344
Bengali Terms		347
Acronyms		349
Bibliography and References		350

TABLES

I.1	Effects of Irrigation and Modern Inputs on Production and Labour Absorption	37
II.1	Fieldwork Elements - In Chronological Order	58
III.1	Command Area Characteristics: Private and Group STWs	98
IV.1	Composite Picture of Household Categories	119
V.1	Land Transfers and Changes in Holding Sizes	173
V.2	Land Sharecropped in and out per Household Category (acres)	193
V.3	Land Sharecropped in and out per Household Category (%)	193
V.4	Land Mortgaged in and out by Household Category	202
V.5	Owned, Operated and Effective Landholdings by Household Category (acres per category)	207
V.6	Owned, Operated and Effective Landholding by Household Category (acres per household)	207
V.7	Landownership and Irrigation in Samitigram	209
V.8	Credit Taken by Household Category (% of total category)	213
V.9	Types of Informal Loans Taken by Household Category	218
V.10	Forms of Hired Labour in Samitigram	223
V.11	Use of Types of Hired Labour by Samitigram Households	235
V.12	Types of Hired Labour Performed	237
V.13	Cultivation Costs and Returns: Irrigated Boro	241
V.14	Cultivation Costs and Returns: Rainfed Amon	241
V.15	Market Cost of Labour for Boro	243
V.16	Cost Breakdown of Boro Cultivation	246
VI.1	Alternative Contexts of STW Irrigation and Water Prices	271
VI.2	Income Distribution from Irrigated Boro Cultivation: Samitigram and Baluabasua	285
VII.1	Samitigram: Income Source Structure by Household Category	296
VII.2	Prices Received by 5 Sellers of Boro paddy in Samitigram	303
VII.3	Samitigram: Cultivation and Non-Cultivation Incomes	315

FIGURES

III.1	Cropping Calendars	83
V.1	Effective Landholding by Household Category	169
V.2	Owned Landholding by Household Category	169
V.3	Prices for STW Irrigated Land in Samitigram 1940-85	179
V.4	Seasonal Wage Variations by Labour Type (Samitigram)	232
VI.1	The Distribution of Households by Landholding Size	253

MAPS

II.1	Bangladesh Singra and the Research Area	55
III.1	Samitigram and Environment	73
III.2	Samitigram Residential Area	74
III.3	Samitigram Agricultural Land and the STW Command Areas	97

CHAPTER I: AGRARIAN STRUCTURAL DYNAMISM

I.1 Introduction

This study is interdisciplinary and concerned with development. I examine development as a possible outcome of processes of economic growth and distributional change as far as they lead to the elimination of a basic "core of absolute deprivation" (Sen 1981) ¹).

Since in Bangladesh inequality and absolute deprivation are closely associated, development is connected to patterns of accumulation by households. Accumulation occurs through production and exchange processes which influence patterns of growth and distribution. The introduction of a new technology changes production and exchange relationships and affects the volume and direction of resource flows. Changed patterns of accumulation by different household types result. My research is concerned with the structural changes and development effects which arise from these dynamics.

The study analyses the micro-level changes which follow the introduction of a mechanised minor irrigation technology, the shallow tubewell (STW, see I.4). In Bangladesh, the introduction of mechanised irrigation has increased agricultural productivity and output. New resource flows manifest themselves as patterns of accumulation - and disaccumulation - by households. The agrarian structure which mediates such patterns of accumulation, and the structural change which occurs with the introduction of STWs are the central concern of this thesis.

The analysis is undertaken in a 'political economy framework' which takes into account the effect of concentrations of power and wealth on market behaviour and market interlinkages. The emphasis of the study is on market relationships and rather less on institutions such as kinship, religion and faction.

However, the concern with patron-client relations throughout the study bears out the connections between market and non-market sectors and indeed raises some doubts as to the analytical usefulness of the conceptual separation of the two sectors (see also VIII.1.2).

My definition of agrarian structure is adopted from Boyce (1987) in a slightly modified form:

The agrarian structure is ... the subset of institutions governing the distribution of rights in agricultural means of production, notably land. These rights include not only ownership but also such arrangements as tenancy and mortgaging (and credit M.G.), which create a divergence between ownership and actual operation.
(Boyce 1987 p.37)

This research is concerned with five sets of questions:

Firstly, it examines irrigation-related change for different household categories. Households are seen to operate in a specific opportunity situation, which is determined by a number of features of household position. Clusters of household features determine household category ²). The study investigates patterns of accumulation from irrigated cultivation by household category. Patterns of accumulation are seen as the manifestation of realised category-specific household opportunities. The thesis focusses on the examination of the constraints and the 'room for manoeuvre' (Clay & Schaffer 1984) of households from different categories in relation to opportunities from irrigation.

Secondly, it is attempted to identify at the micro-level the different roles which one irrigation technology, the STW, can play in a variety of environmental and political economy contexts. It is examined how a major increase in potential agricultural productivity through the introduction of STWs interacts with rural micro-level conditions and results in a variety of accumulation and development patterns in eight villages in one region. Specifically, the study compares the structural role of locally initiated and

farmer-managed STW irrigation groups in the main research village (Samitigram, see Ch III) with that of private individual ownership of STWs in seven further 'subsidiary' research villages (see Ch VI).

Thirdly, and centrally, the thesis considers agrarian production relations. Differences in the rationale with which households engage in production and exchange relationships are considered and the implications of changes in the structural meaning and/or contractual forms of agrarian relations which have occurred with the increased productivity potential from mechanised irrigation are discussed.

Differentiations in form and meaning of agrarian relations (sharecropping, mortgaging, employment and credit) over time, between households and between different relations engaged in by the same household, are examined for their effect on the position of households from different categories and on the agrarian structure as a whole.

Fourthly, the change in the effect of unequal relationships of power and dependence (patron-client relationships; see Wolf 1966; Scott 1972; Beteille 1974), and in particular market interlinkages (see Bharadwaj 1974; Adnan 1984; Ellis 1988) on patterns of productivity and forms of exploitation with the introduction of irrigation into agriculture is examined. With reference to the rural land, labour credit and input markets, market interlinkages are here defined as

The contractual tying of terms of exchange in one market to that in other markets.
(Ellis 1988 p. 150)

Fifthly, more as a window onto future areas of investigation than as the centre of this research, irrigation-related change at the household- and village-level is set in the context of wider regional, national and international structures which affect patterns of accumulation and change at the micro-level in

Bangladesh.

The findings of the research reveal fundamental differences as well as common features of agrarian change in the eight villages where field research was carried out. Chapters III to V examine patterns of change with group irrigation in the main research village, Samitigram. A much briefer study in Chapter VI of seven 'subsidiary villages' examines patterns of change in the context of individually owned and operated STWs.

The main themes of the research connect to the debate on modes of production and structural transformation processes. While acknowledging the theoretical progress achieved by the 'mode of production debate' in the 1970s, I do not engage in the occasionally somewhat sterile terminological disputes which have erupted in the literature on the subcontinent ³⁾. However, questions of capitalist versus non-capitalist production relations are central here as far as they reflect the material dynamics of household development, political economy and agrarian change.

A line of theory which must be acknowledged here is that which stems from the writings on the diversity of possible meanings of formally similar agrarian relationships. Banaji (1971) distinguishes between "forms of exploitation" (such as wage labour, serfdom or sharecropping) and "relations of production" (such as capitalism, feudalism). This provides the conceptual apparatus to differentiate between 'form' and 'meaning' of agrarian relations in this thesis.

Banaji (1971 p.2498) writes

... capitalism cannot be defined in terms of the existence or non-existence of wage labour, for the latter is only transformed into a capitalist relation of production under certain historical conditions, in the first place its insertion into a framework of extended reproduction where unlimited expansion, perpetual progress, becomes the law of production... wage labour as such, as a relation of exploitation is possible and has occurred historically in a simple reproduction context

Subsequent work (Wood 1981) develops the concept of 'meaning' in an account of the regional diversity and flexibility over time of agrarian relations in Bangladesh. Much more at the micro-level, this study examines changes in the structural meaning of agrarian production relations in rural land, labour and credit markets under technical change.

The conclusions of my work fit well into a more recent theoretical model of agrarian change formulated by Adnan (1984) which is partly based on earlier work by Bharadwaj (1974). One of Adnan's central concerns is to free the concept of "transformation to capitalism" from ahistorical teleological determinism (1984 p.37⁴). He attempts this by showing the systematic "necessitating" factors which compel agrarian producers to adopt a capitalist mode of production. Adnan concentrates on the "phenomenal forms" through which capitalism "takes hold of production itself" rather than remaining "parasitic" (i.e. unproductive in mercantile or usurious forms in the circulation process).

Following Adnan (see also Banaji below), I distinguish capitalism by the **expansionary rationale** upon which continued appropriation relies. Under capitalism, capital assumes control over the production process while under other modes of production, appropriation is 'parasitic' since it appropriates from outside the production process neither assuming "operational accountability", as Adnan puts it, nor basing continued appropriation on the improvement of the productive capacity of the actual producers. A transformation to capitalism thus means

a switch to exploitation via expanded reproduction.
(Adnan 1984 p.226)

A central concept in the thesis (see Bharadwaj 1974; Adnan 1984) is that of "interlinked" (or "interlocked") markets⁵). With interlinked markets, the relative strength of transacting partners depends on their overall class position

rather than on supply and demand conditions in separate markets. Citing the example of the employer-labourer relationship Rudra says

Dependence is based on the unequal power of causing damage to the other party by withdrawing cooperation in the production process.
(in Desai, Rudolph & Rudra 1984 p.254)

In the context of unequal power-dependence structures, market relationships do not conform to the textbook type. The market is not

an institution in which purchasers and sellers exchange at a standard price and with full freedom
(Rudra 1984 p.261)

Market participants from different classes face different market conditions in formally equal market positions.

Adnan (1984 p.108) convincingly states that the use of interlocked markets does not imply a particular form (or mode) of production but that interlocked markets can be found under capitalist and pre-capitalist forms of production (cf. also Banaji 1971; Wood 1981). Ellis (1988 pp.150-154) outlines how "interlocked" markets can be used by the productivity-maximising patron to overcome the inefficiencies of fragmented markets on the one hand and how, on the other hand, "interlocked" markets can be associated with the stagnant production conditions of semi-feudalism or antediluvian patterns of surplus use. In accordance with this, I found that market interlinkages can be associated with extractive antediluvian (see Patnaik 1972a&b; Wood 1981) forms of appropriation as well as with different forms of capitalist appropriation.

Depending on a variety of micro-level conditions, (most centrally the organisational form of irrigation), the introduction of STW irrigation is here found to either reduce or increase the incidence of market interlinkages in agricultural production. On the whole, under irrigated conditions market interlinkages are found to have become part of more capitalist forms of production and appropriation from agriculture.

Beyond the overall change towards capitalist forms of production with STW irrigation, the organisational form of STW irrigation is found to affect micro-level outcomes.

With group irrigation in the main research village (Samitigram), extractive market interlinkages were found to have been partly displaced by single-market production relations under which appropriation centres on increases in productivity and output. At the same time, extractive market interlinkages, mainly for the production of rainfed crops, are retained.

Group irrigation has resulted in relatively favourable access conditions to water and in increased gains for all cultivators. However, due to higher gains by wealthier households, patterns of accumulation from group-irrigated cultivation also result in further polarisation of household positions.

With individually owned STWs in the seven subsidiary research villages, extractive market interlinkages were expanded and enforced. The establishment of new market interlinkages through control over water was linked to the assumption of increased control over the production process by the appropriating elites and to the adoption of productivity and output objectives as a tenet of production relations and market interlinkages. As under group irrigation, but in a less equitable manner, under individual STW ownership market interlinkages facilitated expansionary capitalist.

As will be shown in later chapters, despite the common background of a transformation toward capitalist forms of production, the micro-level resource accumulation and development outcomes of STW irrigation in Samitigram and the seven villages differed fundamentally. In contrast to the differently sized gains for all cultivators in Samitigram, the seven villages showed far less favourable outcomes for smaller landowners and poor tenants as a result of STW irrigation.

I.2 The Past

To gain an idea of change, some examination of history is necessary. My account of agrarian structural change in Bengal concentrates on three topic areas. Firstly, changes in the structure of agricultural production and the relations of production are traced through the main periods of Bengal's history. In particular, changes in modes of appropriation and distribution of surplus from land are examined. Secondly, the interaction between changes in the structures of agricultural and non-agricultural production are considered. Thirdly, the effect of trade on Bengali agricultural production and the changing dynamics of producers' connections to wider regional and world systems are outlined. Rajshahi district and Natore division, where the field research for this study was conducted (see Ch III), are referred to whenever historical material was available.

The history of Bangladesh is usually divided into five periods: the early history; the Mughal period; the British period; the Pakistan period; independence. Relevant material from the early period was not available to me.

I.2.1 The Mughals

The invasion by Muslim turks in the 13th century found India with no central government and only a minimal tax-collecting administration. Rajshahi was conquered from the Hindu Sena dynasty by a Muslim ruler in 1204 and then governed by a series of *sultans* and *nawabs*. Bengal was only incorporated into the Mughal empire in 1576 by the most famous of the Mughal emperors, Akbar.

Land revenue collection existed in the Indian subcontinent even before the Mughals. It was traditionally a relationship between two parties, the ruler and the subject, in which the subject ceded a part of the crop in return for protection from the ruler. The question of land ownership thus did not arise (see Moreland 1962), as the distribution of agricultural surplus occurred entirely in the

conceptual framework of land occupancy and rule. The Mughals did not change this but imposed a central bureaucracy on top of the old ruler-subject relations. This constituted an extra layer of intermediary surplus extraction, but no systemic change. There is no clear historical evidence on whether the degree of surplus extraction from the agricultural producer increased under Mughal rule but the reports on land revenue for the Mughal period point to 'extraordinarily heavy demands' (Moreland 1962 p.92). The Mughal bureaucracy rested on a class of Muslim nobles, who were initially paid cash salaries but later awarded non-hereditary (prebendary) rights of tax collection. The Mughal emperors claimed a part of the collected land revenues. Under Akbar, revenues were said to amount to one third of gross produce, of which half was paid to the emperor. The crop was divided at harvest between cultivator and state. Spear (1981 p.42) comments

The Mughal nobility was thus an official aristocracy which was hereditary as a class but not as individuals, which was landholding, but not feudal.

During the Mughal period (1574-1756) Rajshahi had twenty-nine Mughal governors. The *diwani* (tax-collecting right) for Rajshahi was bestowed on the Natore *rajahs*, a line of Hindu Brahman rulers who amassed large estates through the appropriation of the tax-collecting rights of defaulting Muslim *zamindars* throughout the eighteenth century.

As village records of the Mughal period were destroyed (Islam 1977 p.128), only general statements about agrarian relations before the British are possible. The village economy probably approached the classic Chayanovian situation where labour availability determines the extent of land under cultivation per household. With labour rather than land as the scarce factor of production, an increase of operated area per household was less the ambition of the cultivator than that of the ruler. Large areas of Rajshahi remained uncultivated in this period (Siddique, 1976). After tax the cultivator was left with subsistence, but

few reserves.

The original function of sharecropping in this period is outlined by Cooper (1983) as threefold. Firstly, sharecropping expanded cultivation into new 'jungle' areas and brought waste lands back into cultivation after disasters such as the famine of 1770; secondly, it provided the food requirements of the non-cultivating upper classes; and thirdly it allowed the appropriation of produce by non-cultivating landlord-cum-produce traders. In the Mughal period, a sharecropping relationship was thus not so much desired by a tenant as something he was forced into with a variety of means down to physical coercion.

Dasgupta (1984 A-129) claims that although forced labour existed on *zamindari* estates during the Mughal period, this was a form of part-time labour by cultivators and did not indicate the existence of a class of agricultural labourers in the period. Moreland (1962 p.104/5), on the other hand, argues that landless labourers under predial slavery existed before Akbar's rule. He also reports that in the British period it was common in some districts of Bengal to sell agricultural slaves with the land they were attached to under "claims subject to the laws of ancestral real property" (loc. cit.). The existence of a servile, landless labouring class before British and Mughal rule is also suggested by Patnaik and Dingwaney (1985) who argue that agrestic and domestic forms of slavery were later transformed into debt bondage in response to changed conditions of production. Chakravarti (1985) describes these newer forms of bondage as

the sale of a labourer through the purchase of debt by
the new employer.

Spear describes extractive appropriation during the Mughal period as follows:

The cultivated land was recorded, the value of the
crops assessed, and the share of the government
fixed... actual collection took the form of a

bargaining match with the agents, the one pleading poverty, the other state necessity. In unsettled times, villages would fortify themselves with mud walls and scrub hedges and sometimes go forth to battle with the collectors.

(Spear 1981 p.42)

The agrarian situation until the arrival of the British is described by Faaland and Hossain

... low levels of international exchange, lack of technological advance and steady levels of extraction of peasant surplus meant that rural living standards were static. (1980 p.284)

However, non-agricultural production was diverse. Most of it supplied a small segment of the upper classes with luxury goods (jewellery, muslin, silk, copper articles). Other articles like iron, cotton and wood products reached larger segments of the internal market and artisan production catered to largely self-reliant village economies (Dasgupta 1984).

Trade in the Mughal empire flourished on a regional basis relying mainly on water transport and some overland caravans as there were neither metalled roads nor railways. The richness and diversity of Bengal's products has been described in glowing terms by a number of travellers in the 13th to 17th century (see Nebelung 1986 p.5-6). Grain was provided to neighbouring kingdoms and the muslin produced by Bengal's weavers supplied the courts of the rulers throughout Asia. Sugar, saltpetre and bamboo for ship construction were exported from Bengal, and silk was produced and supplied to weaving centres in other parts of India.

1.2.2 The British

The British East India Company (BEIC) obtained the *diwani* tax-collecting right for Bengal from the Mughal Emperor in 1757. The district of Rajshahi came under British control as part of the Natore *raj*.

During the British period, agricultural production in Bengal was made

to adjust to the demands of world markets. British traders used a variety of economic and coercive means to turn the Bengali cultivator towards production for the market. The production of cash crops was enforced by increasing demographic pressures and continued low productivity of food production which turned former subsistence producers to the production of non-food crops for sale. Directed by British trading and imperial interests, cotton, jute and indigo became the new link between the East Bengali cultivators and the world market. Cultivators' economic fortunes thus became a function of world demand.

Initially, the British had left the land system untouched. With the 'Permanent Settlement' of 1793, the levels of land revenue payable to the government by the *zamindars* were fixed and the *zamindari* status was made dependent on revenue payment. No legal rights were given to the tenure holder below the zamindars. The 'Permanent Settlement' was meant to create the conditions for increased agricultural productivity through agricultural stability. Its first result was a large expansion of cultivated area. While in 1790 one third of Bengal was covered by trees, by the end of the British period less than one tenth of area remained under forests. At the same time, there was an increase of up to 300 percent in *zamindari* rental obligations between the last year of Mughal rule and the first year of operation of the Permanent Settlement (Bhaduri 1976 p.45). The threat of expropriation to the old *zamindars* led to a commercialisation of rights to land revenue so that

A large number of under-tenures became a feature of the land-system of Bengal as a consequence of the Permanent Settlement. Under-tenures enabled old zamindars to retain a hold on property after it has been sold... Nearly all the zamindars and talukdars (inferior village land revenue collectors, M.G.) also possessed subordinate rights in their estates.
(Sinha 1968)

Spinatsch (1984 p.56) reports that the average number of levels of

subinfeudation between *talukdar* and *rayat* (cultivator) in Barisal district were 4 in 1871, 20 in 1911 and over 50 in 1947 (see also Bhaduri 1976 p.51) The Bangladesh District Gazetteer for Rajshahi (Siddique 1976) reports increasing subinfeudation of the estates of the Natore *raj* and the eventual disintegration of the old Natore *raj* in the British period. The Permanent Settlement thus differentiated tenurial rights to land to suit the budgetary strength of growing numbers of rent-receiving intermediaries who retained a claim to a stagnating amount of agricultural surplus (see also Bhaduri 1976).

With the commercialisation of rights to land, the conditions for the emergence of labour markets were created. Ghose (1979 p.387) argues that since the early 20th century wage labour replaced peasant production in Bangladesh. Without subscribing to Ghose's rather sweeping contention, Dasgupta (1984 A-133) finds that the proportion of labourers rose from 5% in the pre-British period to 20-30% by 1872. He presents historical evidence for the emerging linkages between factor markets under which, for example, agricultural labourers were also tenants of their employers so that labourers' room for manoeuvre in both factor markets was subject to additional constraints.

As a consequence of the escalation of subtenurial rights and in direct contrast to the original intentions of the Permanent Settlement, agricultural investment and productivity suffered.

... it paid nobody to invest individually in the improvements of land. For, gain from increased productivity of land has usually to be shared by the various layers of intermediaries, while there was no viable mechanism of sharing the cost of land improvement collectively.

(Bhaduri 1976 p.48)

The Bengal Tenancy Act in 1885 attempted to amend the situation by giving a legal basis to some of the customary rights of tenants and cultivators. Very few rights were given to sharecroppers, the bottom rank of tenants and the

actual cultivators, and none to wage labour. In the absence of any practical legal recourse for sharecroppers, local power relations determined the implementation of the Bengal Tenancy Act. It has been argued that the Bengal Tenancy Act is still reflected in the hierarchy of interests in land in present-day Bangladesh (Jannuzi and Peach 1980, Table 1.1 p.5).

The pressures of increased rental demands combined with demographic growth and stagnant agricultural productivity resulted in growing indebtedness of cultivators. One manifestation of this, the seasonal 'distress cycles' of cheap selling and expensive rebuying of food crops, is still familiar today (see BRAC 1980). A number of writers argue convincingly that in this period debt relations replaced land revenue as the predominant means of surplus extraction from agriculture (Bhaduri 1976; Wood 1981; Dasgupta 1984; Bose 1986). This limited productivity potential and enforced involuntary links of the rural producer to the market economy. Although land rent continued as a demand on the cultivator through increasing layers of tenurial rights, usurious interest took its place as the main means of surplus extraction. Bose (1986 p.169) argues that interest (rather than revenue from land) was the main form of income for moneylender-traders in the Mughal period, while the usufructary form of mortgage *khaikalashi* was uncommon (see V.1.5 for *khaikalashi* under the different conditions of present day irrigated agriculture in the research area). Bose further argues that agrarian credit relations in the British period constituted the critical link to the world economy and an essential determinant of the content and volume of agricultural production. Bhaduri (1986) shows that due to seasonal distress cycles the process of market incorporation through debt relations took place for rice cultivators as much as for 'cash-crop' producers.

Throughout the British period decreasing holding sizes had to support increasing numbers of population. As a result, small cultivators in East Bengal

turned to jute, which provided higher output values per unit of land but also demanded higher input costs. The incomes of those with the most inferior rights to land at the bottom of the tenorial hierarchy were falling below subsistence level. Through the emergence of labour-intensive jute cultivation, the incidence of hired labour in Bengal increased. Bose (1986) argues that the higher labour cost for jute production enforced the extractive function of the credit mechanism and drew even the small peasant cultivator into the market. Dasgupta (1984 p.A-140) states that while agricultural labourers of 1880 were not much worse off than non-labouring cultivators, by 1940 labourers' bargaining position and comparative real income level had decreased considerably.

Non-agricultural production in the British period falls into two phases. In the first phase Bengali manufactures, especially woven products, were redirected towards European and in particular British markets. Bengali cloth was in great demand in Europe at the time. A system of advances (*dadnis*) financed from Britain and passed via a hierarchy of Bengali intermediaries to producers, coupled with a variety of means of coercion, forced the weavers to sell at low prices to the European traders.

The second phase of the development of non-agricultural production in Bengal coincides with the industrial revolution in Britain and is best described as de-industrialisation and re-agriculturalisation leading to agrarian involution in Bengal. With the start of factory production of cloth in England, the local and foreign markets for Bengali cloth were systematically closed by the British. After a few decades the Bengali textile manufacturing sector was ruined. This period saw the demise of Dacca (present day Dhaka) as a growing manufacturing centre and the emergence of Calcutta as the centre for a new class of intermediaries in trade and agricultural processing.

Calcutta's newly-rich traders increasingly displaced the traditional

zamindars, who fell into rent arrears and lost their estates. The new trader-*zamindars* exerted great economic pressures on the cultivators while not reinvesting into their estates. East Bengal was transformed into the agricultural hinterland of Calcutta, connected by railways since 1870 and forced into cash crop production by fiscal and physical means. In 1900 East Bengal produced over half of world jute. The economy had undergone a structural change from a diversified manufacturing economy with an agricultural base to a provider of agricultural raw materials for production in foreign economies. With agricultural production thus externally oriented, the cultivator was exposed to the swings of the world market as never before.

The agrarian scene at the time is one of depressed poverty. Agricultural productivity and output were stagnant as the expansion of cultivated acreage had reached physical limits. A 'technological barrier' to production growth (see Chauduri 1984 in Desai et al) had been reached while pressure on land had increased further with the weavers' reversal to agriculture. Attached agricultural labour was largely replaced by casual forms of landless labour (Dasgupta 1984). The position of tenants versus *zamindars* weakened. Reports of organised armed robbery by displaced tenants abound for Rajshahi (Siddique 1976 p.35/36) and other parts of the country (Spear 1981 Ch 7). Between 1883 and 1888 Rajshahi was the scene for a 'no-rent' campaign of peasant cultivators and later of cases of organised peasant opposition to *zamindars* in Natore.

The monetisation of the agricultural sector and the indebtedness of the agricultural producer now bound an internally disarticulated and re-agriculturised Bengal to world markets. A new class of intermediaries based in Calcutta was the executor for Bengal's new function as raw material procurer for the British empire. This class assumed an increasing hold over the countryside by buying up traditional *zamindari* holdings. In 1930 Bengal turned from net export

to import of rice (Boyce 1987 p.6) while increasing numbers of cultivators were relying on the sale of non-food cash crops (jute) for export. These were obtained by the intermediary traders through the continuation and intensification of extractive practices rather than through increasing productivity of land or labour (see also Faaland and Hossain 1980 p. 286). For the purposes of the colonial rulers and their internal counterparts down to the village level, it was sufficient to rely on debt and usury to ensure continued surplus appropriation.

I.2.3 Pakistan

In 1947 East Bengal became part of Pakistan in many ways, 'a second colonial era' (see Faaland and Parkinson 1976) began. After most Hindu *zamindars* and moneylenders had fled to India in any case, the *zamindari* system was abolished in 1950. The elimination of the intermediary rent-collecting hierarchy by the 'East Bengal State Acquisition and Tenancy Act' of 1950 brought the state into direct contact with rent-paying cultivators for the first time. However, other than totally eliminating the limited rights of sharecroppers (*bargadars*) which had been granted by the Bengal Tenancy of 1885, the 1950 Act did not touch on the hierarchy of interests in land. In many respects the *zamindars* were replaced by the top-level of Muslim surplus cultivators who tended to be former rent-collecting *talukdars*, and who appropriated the old *zamindari* estates. A new land ceiling of 33 acres was rendered ineffective by a variety of circumventive practices and legal loopholes. This was to happen again in post-independence Bangladesh (see Jannuzzi & Peach 1980 pp. 11/14).

East Pakistani cultivators continued to produce cash crops (jute and cotton) for export. Through currency overvaluation, import licensing and a variety of other means, the agricultural surplus of East Pakistan built up West Pakistani industries (see Nations 1971). The survival margins of the East Pakistani cultivators narrowed as surplus was extracted through usury and unfavourable

terms of trade rather than reinvested in agriculture. Demographic pressures increased and productivity increases were low. Although absolute levels of food production increased, per capita food production declined and food imports increased significantly during the Pakistani period. In 1968/69 only 2.6% of cultivated land in East Pakistan was under modern irrigation methods (Siddique 1979 p.8/9).

Partition meant the exodus of a majority of Hindus, who prevailed in non-agricultural occupations. This meant that both non-agricultural production (handicrafts, jewellery and leather) and trade connections with India were dislocated. A further re-agriculturalisation of East Pakistan and a restructuring of trade towards West Pakistan was the result. During the Pakistani period, agricultural surplus from the East (present-day Bangladesh) financed industrial development in the West (present-day Pakistan). However, the separation of East Bengali jute production from West Bengali jute mills at partition meant that East Bengal, the world's largest jute producer, now obtained some of its own jute mills.

The exodus of the Hindus left East Pakistan without a political, business or industrial elite. In an attempt to counter emerging Bengali separatism, the West Pakistani regime fostered a new East Pakistani Muslim elite through state patronage during the late sixties. The emerging educated East Pakistani elite was also given political office in East Pakistan and to a limited degree in West Pakistan. In 1971, 20 Bengali families owned 57% of all industrial investments in East Pakistan (Sobhan 1980 cited in Spinatsch 1984 p.120). With the state playing an increasingly prominent role, economic success thus continued to depend on external patronage in East Pakistan. In the rural areas, the surplus peasants (*talukdars/jotdars*) cemented their position through the appropriation of political-bureaucratic networks, which were coming to determine marketing and input

provision to an increasing extent. While state patronage was the vehicle through which the rural elites maintained their position, dyadic patron-client relationships aggregated into factional alliances retained the majority of agricultural producers in a dependent position at the end of the extractive chain.

I.2.4 Independence

Bangladesh was left with a legacy of destruction. Immediately after independence, international and national agencies and a large number of non-governmental organisations set up offices in the capital and provided relief. Within three years of independence Bangladesh had received more resources through relief and aid than in her previous 24 years as East Pakistan (Boyce 1987). Aid has since become part of Bangladeshi economy and society. Since 1971, Bangladesh has met only a fraction of her foreign exchange needs through export earnings. Aid has strengthened the Bangladeshi state internally (but not internationally) and created an array of vested interests in the country. Aid also influences the degree and direction of Bangladeshi trade and industrial development and has created a class of 'aid-contract' importers in Bangladesh, whose fortunes rise and fall with donor decisions.

Van Schendel comments on the role of the state in independent Bangladesh

Whereas in most peasant societies in recent times we can observe an expansion, a growing distance between peasantry and state and a lengthening chain of intermediaries, in Bangladesh the opposite is true. The state, in colonial times almost obscured by layer upon layer of zamindari landlords, came much closer to the peasantry in Pakistan times, and again after the breaking away of Bangladesh ... The distance between peasantry and state decreased, and the power of dominant village groups vis-a-vis the state increased. This process contributed to the strengthening of the position of these groups within the peasantry.
(van Schendel 1981 p.278)

Through connection to or as part of state bureaucracies at local and

higher levels, village elites appropriate and use aid and other public resources (see Wood 1976; Chisholm 1984; BRAC 1979; 1980). The state and the external forces behind it have thus become an integral part of agrarian relations (see also McGregor, forthcoming).

Industrial enterprises and banks, which had been owned by West Pakistanis to a large extent, were nationalised in 1971. As before, through the separation from West Bengal in 1947, the Bangladesh economy was disrupted in 1971 by the loss of one of its main external market connections, West Pakistan.

Bangladeshi agriculture has witnessed the advent of the 'green revolution' since the sixties. In order to achieve the potential improvements in agricultural productivity and output, more water and fertiliser, high-yielding seeds and new cultivation methods were required. The utilisation of the country's irrigation potential was estimated to treble agricultural yields (Faaland & Parkinson 1976). Bangladesh's first Five Year Plan envisaged the achievement of food self-sufficiency by 1977/78 through the use of the new cultivation technologies. In 1988, with the country once again the scene of major floods and large national and foreign relief operations, Bangladesh is far from this goal.

I.3 The Present

This section introduces some of the current research and debates on agrarian relations in Bangladesh in order to set the context for the fieldwork-based part of the thesis (III-VII).

Land, labour, draught power, cultivation implements, water, seeds, fertilisers and pesticides are cultivation inputs in Bangladesh today. Land, labour and capital are the main factors of production ⁶). The way in which factors of production are combined for cultivation determines agricultural output, productivity and household-level accumulation patterns.

I.3.1 Land

The implicit assumption in much of the development literature is that accumulation mainly derives from agricultural production, and that

Rural development in Bangladesh is virtually synonymous with agricultural development.

(I.Ahmed 1981 p.1)

In view of declining per capita land availability, this exclusive focus on land and cultivation is questionable. It prevails not only in mainstream development literature on Bangladesh (e.g. Jannuzzi & Peach 1980) but also in the efforts of some smaller non-governmental organisations to improve the position of the poor landless population by trying to provide access to increasingly scarce land. It is argued here that as a way of looking beyond land, the income generating potential of non-agricultural and agriculture-related production and exchange structures has to be examined, in particular for the most disadvantaged groups with little chance of access to land. While this thesis concentrates predominantly on cultivation, (see Chs III, V and VI), occupational diversification issues are taken up in chapter VII ⁷).

The intensity of land use by farm size is a subject of interminable correlation exercises and discussions (Sen, 1962; Barbier 1984). Land productivity is often inversely related to farm size (e.g. Dayal & Elliot 1966; Berry & Cline 1979; for Bangladesh, Hossain 1974; Ahmed 1981). The inverse farm size-land productivity relationship has been attributed to greater self-exploitation of household labour by smaller cultivators; to higher supervision cost for hired labour on larger farms (Boyce 1987); to better quality lands of smaller farms; to higher cropping intensities on smaller farms and to the concentration of larger landowners on antediluvian extractive uses of surplus rather than on productive uses (Patnaik 1979). Others have argued that, with the increasing prominence of externally provided inputs, we are witnessing the emergence of a "large but

efficient *kulak* class" with higher per acre outputs than smaller landholders (Herring in Desai et al 1984; A. Rahman 1986 pp. 141). Theories like Lipton's 'survival algorithm' for the small cultivator under conditions of risk support this. On the other hand, Ahmed (1981) finds higher productivity of small farms under rainfed and irrigated conditions.

This study does not add to the proliferation of such absolute statements on the relative efficiency of large and small farms. However, it does outline some of the conditions under which large and small cultivators are able to realise productivity increases. The case studies of Chapter IV and the survey-based material of Chapter V outline the impact of factor market interlinkages on the agrarian relationships and agricultural productivity of different household categories.

I.3.1.1 Tenancy

A main point of debate is whether sharecropping constitutes an obstacle to productivity-enhancing agricultural investment, and whether, and in what way, it adjusts to changes in the conditions of production. This and the related question of how sharecropping and other forms of land tenancy affect the returns from cultivation to different household categories are the main issues which this thesis addresses.

In the classical (Smith 1961 ed.) and neo-classical view (Marshall, 1961 ed.), investment into agriculture is constrained by sharecropping, as tenants will only invest when the return of the investment increases their crop share beyond the investment cost. It is assumed that the tenant bears the full investment cost. The investment constraint is overcome under the so-called 'ideal lease' where input costs are shared between landowner and tenant in proportion with their output shares (Rao 1967; Zaman 1973). Under irrigated HYV cultivation, the appearance of such ideal leases has been observed in Bangladesh (Zaman 1973 for

Phulpur and Thakurgaon; McGregor forthcoming for Tangail) 8).

Following Cheung (1969), the 'Chicago School' assumes perfect competition and the 'choice to opt out' for landowner and sharecropper. The implication is that there are alternative income sources for both. This constitutes undue optimism about the employment situation in present-day rural Bangladesh (see Clay 1978; Hirashima & Muqtada 1986). Whether, as happens more commonly, a rich landowner sharecrops out to a poor tenant, or whether, under a less common and more recent form of 'reverse tenancy' (see Vyas 1970; Nadkarni 1976; Herring 1978; Briscoe 1979, A. Rahman 1986), a poor landowner is forced to rent his land to a wealthy cultivator, an asymmetry of alternatives to the sharecropping agreement exists between the wealthy and the poor party. However, if sharecropping-in is becoming a domain for a wealthier 'sharecropping elite' (as argued by Rahman 1984), these wealthier tenants will be more likely to have alternative income sources to sharecropping. As a consequence, tenants' rationale for sharecropping may lie more with the cultivation efficiency of the sharecropped land than with the retention of sharecropping rights and production 'at any cost' even under the productivity constraint which can be imposed by market interlinkages (see Adnan 1984 p. 147/53). The investment behaviour of these wealthier tenants is thus likely to be more efficient than that of poor tenants.

The fieldwork-based section of the thesis (V.1.4 & VI.2), explores how the structural function of sharecropping and land renting under irrigated conditions can change. While, under rainfed conditions sharecropping combines the labour of the poor with the land of the wealthy, under irrigated conditions 'reverse tenancy' tends to combine the land of the poor with the water of the wealthy (see Boyce 1987; Ghose 1979). In these instances, the description of sharecropping as

A static symbiosis between exploiter and exploited more or less immune to progress.
(Boserup 1965)

becomes clearly inappropriate.

As agricultural productivity potential increases, sharecropping is thus neither inflexible nor homogeneous in contractual form or function. On the one hand, sharecropping-in may be used by wealthy cultivator-tenants to increase their own cultivation efficiency, as it enables them to achieve increased irrigation command areas or land consolidation. On the other hand, sharecropping-out can be used by large landowners to take advantage of the productive efficiency of small and medium tenants. The flexibility of sharecropping terms (see Jansen 1983) means that the distribution of cultivation returns between landowner and tenant varies with their relative power positions rather than with their formal position as landowner or tenant inside the sharecropping relationship. The central factor is power, which cannot be deduced from the form a relationship takes ⁹).

Marxists argue that sharecropping is a transitional form of labour appropriation. Byres (1974) holds that an increase in the productive forces and thus in the potential to derive profit from capitalist forms of agricultural production will lead to the disappearance of sharecropping. Quasem's findings (1987 p.57) of a decline in the numbers of sharecroppers after the introduction of STWs appear to confirm this prediction. However, Quasem provides no data on the amounts of sharecropped land so that it is possibly that sharecropped land had come to be distributed among fewer tenants rather than reduced in amount. Chisholm (1984 p.37) also finds a decline in tenancy in some of his case studies while Howes (1984 p. 66) finds a rapid fall in the number of households sharing out land after the introduction of mechanised irrigation. The transformation of sharecropping into fixed, in-kind rent as a corollary of increased productivity potential through technological change is found by Rahman (1979) for

Bangladesh and Ghose (1979) for the Punjab in the context of an overall decline in tenancy.

Current research results are thus diverse. Another factor which has been linked with sharecropping is cultivation risk. Cultivation risk is a function of technical and environmental variables and of political economy factors which affect access to inputs. Environmental, technical and access conditions change with the introduction of irrigated HYV cultivation. This alters cultivation risk and thus may affect the incidence of sharecropping. While the majority would argue that increased risk induces risk sharing through sharecropping (e.g. Alam 1984; see also V.1.4.3), the view that decreased risk will induce sharecropping also exists (Patnaik 1972b) Different access conditions to irrigation water and other HYV inputs lead to different levels of cultivation risk. This will affect agricultural production structures, patterns of accumulation at household level and the roles and meaning of land tenancy.

A change in the role of tenancy implies a change in the interaction of tenancy with other agrarian relationships. If the role of tenancy as part of a multi-stranded web of extractive patron-client connections is undermined, market interlinkages may cease to support extractive forms of appropriation and leave room for, or support other, more productivity-oriented forms of appropriation.

Rahman (1984) points out for the Faridpur area of Bangladesh that the absence of a land market turned sharecropping into the main mechanism to increase the size of operated holdings. Rudra (1978 p.964) states

Tenancy can be a full-fledged capitalist institution when it is the tenant, who is the dominant party and the lessor a small poor landowner.

Under Bangladeshi conditions of small, fragmented holdings, cooperation between owners of large and medium holdings, who rent land to each other, may be emerging. In the process, productivity may become a criterion for

access to land, and more efficient cultivators may gain access to sharecropping land. Tenancy relationships may replace land sales or serve to bring about transfers of land ownership to wealthy tenants. It is clear that

... a tenant can no longer be stereotyped as a vulnerable partner with no bargaining power in relation to the landowner... the conditions for their (rich tenants M.G.) acquiring land are very different than those for the poorer owner-cum-tenant cultivators.
(Rahman 1984 p.181)

Ray (1978) distinguishes between two forms of tenancy: 'entrepreneur renting' by wealthy tenants, especially when essential cultivation inputs such as water are inaccessible to the small landowner, and the more common small tenant/large landlord relationship.

This study investigates how tenancy can change with irrigated cultivation. It presents a differentiated view of the dynamics of its possible adaptations and transformations through productivity increases and in the process of technological change. It is shown that change does not necessarily mean the displacement of non-capitalist relations, but it may mean that their complementarity with emerging capitalist relations has been argued by Rudra (1978 p.999) who talks of "a hybrid class" when the same individuals benefit simultaneously from capitalist and feudal relations (see also Bernstein 1979).

The findings of this research indicate an ongoing diversification of the meaning and form of agrarian relationships under which the wealthy take advantage of both 'old' extractive and 'new' productivity-enhancing expansive modes of appropriation in production and exchange relationships in different parts of the annual crop cycle and outside cultivation. This implies a diversification in forms and functions, rather than the outright displacement, of traditional extractive agrarian relations such as usurious moneylending and mortgaging and 'traditional' sharecropping (see V.1.4.1).

1.3.1.2 Mortgaging

Mortgaging in Bangladesh has been associated with a number of functions in the agrarian structure of different regions. Under the *girbi* mortgage system in Mymensingh (Arn 1978, Wood 1981), rich households mortgage out land to poorer households in order to buy more and better land. Here the mortgage functions as an informal 'banking system' for richer households and achieves a redistribution of the more fertile land towards the wealthier classes (Arn 1978 p.11). Which household classes raise money through mortgaging and the uses to which they put the money, constitute important determinants of the direction of agrarian change.

In Comilla and in Dhaka district land is mortgaged in *bondhok* from poor to rich households. There, the mortgage tends to precede the transfer of ownership of the mortgaged land as the poor mortgagor's debts accumulate (see Wood's Bondokgram 1978; Jahangir's two villages 1981). In contrast to the *girbi* system of Mymensingh, here the terms of the *bondhok* mortgage (compound interest and full repayment of the loan while the land is cultivated by the mortgagee) are themselves the mechanism which achieves the eventual transfer of land ownership to the mortgagee.

In other contexts mortgaging is better described as a 'rental system for agricultural land' (Jansen's *khai-khalashi* 1983 p. 129; Rahman's *shon korali* 1984 p.165).

The flexibility of definitional boundaries for agrarian relations is shown by Rahman who writes

Khaikalashi ... is more of a mortgage than a tenancy... the tenant pays rent to the landowner in advance and enjoys rights of cultivation on the land for a specified number of years after which the land has to be returned to its owner.
(A. Rahman 1986 p. 153)

Van Schendel (1981 p.330) remarks on a village in Rangpur

It would appear that mortgage not leading to sale is a mechanism of far greater weight than is usually realised. Our data on Goborgari show that land is sometimes kept in mortgage for a generation or longer without legal transfer.

When mortgaging functions thus as 'a hidden form of tenancy', its effect on the structure and productivity of cultivation needs to be examined. Under the *khaikalashi* and *shon korali* forms of land mortgaging, a sum of money is received by the mortgagor in exchange for which the mortgagee cultivates a plot of land for a specified number of years. For each year of cultivation the sum of the principal loan is reduced so that after a period of time (5-10 years in Jansen's Bhaimara in Dhaka district; 1-5 years in Rahman's Isharpur in Faridpur, 10-20 years in Samitigram; see V.1.5) the land reverts to its owner without any cash repayments. Jansen comments on the *khaikalashi* mortgage

All poor people prefer this type of loan as they are certain to get their land returned. However, in Bhaimara and the neighbouring villages this type of mortgage was not common. This type of mortgage contract seemed to occur in circumstances when well-to-do people needed to help each other with a loan for a particular purpose...
(Jansen 1983 p. 130)

Howes (1985 p.64/5) finds a change from a less exploitative form of mortgage (like *khaikalashi*) to a more exploitative form (like *bondhok*) and an increase in the importance of the percentage of land transfers resulting from mortgage in the Islampur area during the seventies. A. Rahman (1986) finds a decline in the incidence of mortgaging with increased availability of modern inputs.

It is clear then that extractive usury as the main function of mortgaging relations is a regional, and possibly period-specific feature of changing agrarian structures. Under new production conditions, as with the introduction of mechanised irrigation, it has to be re-examined. The achievement of access to land through a mortgage under high-productivity conditions has different productivity and distributional implications than under low productivity

conditions where usurious extraction remains the main income generation mechanism for a mortgagee. This thesis examines some of the roles land mortgages play in one area of Bangladesh as productivity and cultivation income increases through mechanised irrigation.

I.3.2 Credit and Usury

A recent literature survey (Hussein 1983) concluded that more than 60% of all rural loans in Bangladesh come from non-institutional sources. Although 'friends and relations' were the most important source of informal credit, 63% and 75% respectively of informal loans and loan contracts had some form of interest attached. Interest was highest (200%-400%) among moneylenders, shopkeepers and marketing intermediaries. Although these results "discard the stereotype that all informal credit is usurious" and show that "the market is basically dichotomous, having commercial and non-commercial sectors" (Gill in Hussein p. iv), they also underline the continued existence of usury. This thesis is concerned with credit as a production input and thus does not focus on non-commercial (no-interest) informal lending which is "a form of social security and not investment-oriented" (loc. cit).

Usurious lending became a main mechanism of extraction from agricultural producers in the British period and made rural producers dependent on wider markets (see I.2). Informal rural debt relations have been firmly connected with patron-client structures in much of the literature. Breman points out that for 19th century India

...the master did not want the debt repaid, He did not make a loan to press for payment afterwards, but rather to be able subsequently to assert himself as a patron... Nor did the 'hali' work to pay off his debt... for to be an unattached labourer was the last thing he wanted.

(Breman 1974 p.59/60)

The intrinsic logic of usury within a patron-client relation is seen as

equally valid today by studies which stress the extractive and productivity-inhibiting function of usurious credit (Bhaduri 1973; BRAC 1980). It is argued that rural moneylending diverts funds from investment and thus depresses agricultural productivity and output. As debtors remain in a poverty-and-dependence trap with recurrent consumption loans which are linked to labour and especially tenancy markets (see Bhaduri 1973), their chances of disengaging from dependence and retaining the production surplus is small. This, in turn reduces opportunity and incentive for debtors and lenders to increase productivity. It has been claimed that rural informal lenders refuse productive lending in order to safeguard their income from usurious lending (Bhaduri 1973). Myrdal (1968 p.1042) branded the rural moneylender as 'the enemy of the village economy'. Ray and Ray (1973) argue that 'peasant-cum-moneylenders' will improve agricultural productivity only if increases in income outweigh loss of interest from moneylending.

On the other hand, A. Rahman (1979a p.4) rightly states that if creditors have sufficient power to impede innovation they ought also to have the capacity to extract the extra surplus generated through innovation. Examples of informal lending for productive purposes exist in Bangladesh. A. Rahman (1979) reports informal loans from landlords to tenants for productive purposes at lower interest rates than for consumption loans. Jansen (1983) records the practice of informal lending for productive or business purposes in return for a share of the profits.

T. Rahman (1984 p.194) finds the disintegration of credit ties between large landowners and their poor tenants in a Faridpur village during the seventies. She states

It would not be true to say that landlords use usury to extract the surplus-labour of their tenants.
(ibid p.194)

In line with this, A. Rahman (1979) finds that in Comilla and Phulpur districts landlord/moneylenders derived 20-28% of their total income from land rent and only 4-5% from interest. He concludes that

... the surplus product is primarily appropriated through land rent and usury as a mode of surplus appropriation is redundant.

This is an interesting inversion of Bose's finding (1986, see also I.2) that interest replaced land revenue as the main mechanism of surplus extraction during the British period.

In the last 15 to 20 years, two main factors may have channelled funds out of usurious moneylending into agricultural production in Bangladesh. The first is the emergence of formal credit. During the 1970s, the formal credit system in Bangladesh predominantly financed the public sector and trade (to 50% and 25% of total advances respectively; World Bank 1987) while the agricultural and industrial sector remained marginal in the allocation of formal credit. In the late 70s and early 80s agricultural credit (crop and minor investment loans) became a main policy instrument for agricultural growth. Thus credit outstanding to agriculture as a percentage of sectoral GDP increased from 2% in FY 1978 to 11% in FY 1987.

Section V.2 of the thesis looks at the role of formal credit in irrigated agriculture, the interaction of formal and informal rural credit types with social and household structures and at credit-related accumulation patterns by different household categories.

The second factor which may have channelled funds from usurious lending into agricultural production is that returns to agricultural investment and returns to usurious moneylending have moved closer together. A. Rahman (1979 & 1979a) finds that although returns to high-interest moneylending still exceed those to agriculture, the gap has narrowed.

It is argued in this thesis that due to an increase in formal credit and investment outlets in agriculture and trade there has been a displacement of debt relations and usury as mechanisms of surplus extraction in the cultivation sector. The productivity increases in irrigated HYV cultivation combined with the increased availability of labour make the use of land rent as a means of surplus extraction in contemporary Bangladesh a structurally and functionally different instrument than it was in colonial times of relative labour scarcity. With current pressures on land, extractive practices in the cultivation sector fail to provide increasing returns unless productivity is increased. Whether as direct operators or as non-operating appropriators of agricultural surplus, those able to exert control in the agrarian political economy are becoming structurally compelled to increase productivity and to employ agrarian structural elements such as sharecropping, land mortgaging, labour relations and credit for this purpose.

In this context, credit has been described as being "used to strengthen other markets" (Rahman 1979a) rather than constituting the predominant mechanism of appropriation. This would mean a fundamental change from the functions of credit in the colonial period. The question is taken up in Chapter V.2.

Irrigation offers itself for a test of these questions. If usury continues as a main extractive mechanism, investment into irrigation equipment and irrigated cultivation can be expected to be impeded by usurious practices. This study examines to what extent irrigation is in the process of becoming integrated into exploitative social relations of production in interlinked markets and to what extent, and under which conditions, it is opening the way for a more productivity-oriented type of economic decision-making in more separate factor markets.

I.3.3 Labour

Siddiqui (1982) calculates that the daily wage equivalent in rural Bangladesh fell from 2.60 lbs in 1951 to 1.80 lbs of rice in 1977. Rahman (1986) finds this reduced to 1.60 lbs in the early eighties. The World Bank (1987 p.131) finds that agricultural wages in 1982 were only 89% of their 1974 value despite a higher real per capita GDP. There were 4 million more poor and 13 million more 'hard core poor' in 1982 than in 1974. Since 1982, this trend is reported to have reversed with an increase in real agricultural wages by 20% in the 1974-86 period - at least for those in full-time employment (see Wood et al forthcoming) - along with inflows of credit and off-seasonal Food for Work-type construction programmes (World Bank 1987 p.131). Recent research indicates that the wage level in villages with a higher level of agricultural technology has stabilised (Rahman 1986 p.185).

It has been disputed that the concept of 'labour market' is appropriate to the rural situation on the subcontinent. Rudra (1984) argues that labour relations occur inside a 'self-contained village society' in which, in a situation of 'unequal dependence' neither labourers nor employers engage in the labour-wage relationship with full freedom of exchange. In Rudra's study of 39 villages in West Bengal, a uniform intra-village wage rate uninfluenced by any interaction between villages emerges as a result of village-specific power balances between labourers and employers and as a result of 'extra-economic constraints' for labourers and employers in their labour relations.

In some respects, Rudra's 'unequal dependence' between labourers and employers shows parallels to the concepts of the patron-client relationship (for Bangladesh see Arens and van Beurden 1977; Wood 1981; Jansen 1983, 1987) and to the concept of interlinked markets (Bharadwaj 1974; Adnan 1984). In contrast to Rudra, Jansen does find intra-village differences in wages around a 'reference

wage rate', which are related to quality of labour and supply and demand conditions. In this thesis I distinguish labour market segments which are integrated into the agrarian structure and linked to other markets in different ways and to different degrees, and which are undergoing different types of change with the introduction of STWs.

In the context of increasing HYV cultivation, the labour relationship may cease to constitute an integral part of a wider patron-client relationship. Rahman (1984) outlines the elimination of employment security for tied labourers in a Faridpur village with the emergence of 'boy labourer teams' for HYV *boro* paddy transplantation. Dasgupta observes for West Bengal in the context of irrigated HYV cultivation

even the smaller farmers are being forced to supplement family labour with hired labour in some seasons and for some operations ... those employing agricultural labourers are not necessarily the large farmers."

(Dasgupta 1984 p. A143)

In either case, employment ceases to be part of a multi-stranded patron-client relationship. Dasgupta argues that with increasing numbers of labourers the patron-client relationship disintegrates as employers no longer need to maintain special relations to secure labour. This has also been argued for Bangladesh by Jansen (1983; 1986). It may also be the case that, with a decrease in risks to economic survival and in the level of deprivation in some contexts of economic growth, dyadic patron-client relations, with their undeniable element of subservience, are less readily entered by the poor.

Another influence on local labour relations are migrant workers. Wood's study in Comilla (1978a; see also Boer 1981) finds that the richer peasant who hires labour does so mostly on a non-permanent basis and prefers to hire migrant labourers. Dasgupta claims that

... migrants are not properly integrated into the local rural market
... this makes this body of workers relatively more docile and
compliant, although not necessarily cheaper
(Dasgupta 1984 A145)

Thus larger employers may gain flexibility in their adjustment to local supply and demand conditions and to seasonal peaks in labour demand through migrant labour while containing the effects on local labour relations and wage levels.

Here I am concerned with changes in labour markets and labour relations with irrigated cultivation. In order to address irrigation-related growth and distribution issues as well as questions concerned with organisation and power at the micro-level, the labour market of the main research village is presented as a complex and differentiating structure of submarkets in section V.3. An analysis of the rationale and the constraints under which workers and employers engage in the labour relationship traces the room for manoeuvre gained by different labour market participants through recent changes in agricultural production techniques and productivity.

It is shown in the fieldwork-based part of the thesis how a shift of extractive market interlinkages out of parts of the agricultural production process has moderated wage-reducing pressures in those sectors. That this does not necessarily mean the disappearance of extractive market interlinkages but can mean their reappearance in a different, more productivity-focussed form, is one of the findings of this research. It leads to a questioning of uniform interpretations of patron-client relationships as 'fetters on productivity' under conditions of increased agricultural productivity.

1.4 Irrigation

Irrigation has been singled out as 'the leading input' for the agricultural performance of rice economies (Ishikawa 1967) and for Bangladesh in particular (Boyce 1987). Over the last decade, the expansion of minor irrigation has accounted for over 60% of crop production growth in Bangladesh (World Bank 1987 p.55).

It is not shortage but control of water which constitutes the main problem for agricultural production in Bangladesh. Seasonal floods are as much a problem for agriculture as are seasonal water shortages. Rivers, tanks and underground aquifers carry sufficient water for agriculture (see Boyce 1987 p.162).

Widespread irrigation is a recent phenomenon in Bangladesh. In 1942 only three districts (Mymensingh, Chittagong and Rajshahi) are recorded as having any irrigation at all and nowhere did irrigated area exceed 4% of gross cropped area (GoI 1949 in Boyce 1987 p.166). From the 1960s onwards Pakistan implemented some large scale irrigation, drainage and flood control and minor irrigation projects so that by 1973, 11.1% of the net cropped area was irrigated (Howes 1985 p.5). In 1985 22% of the cultivated area in Bangladesh was reported under irrigation and the Third Five Year Plan envisages an expansion of irrigated area by 1.5 Mio ha of land or 17% of cultivated land (World Bank 1987 p.54).

Table I.1 illustrates two main points. Firstly, that yields and employment creation through irrigated HYV crops are significantly higher than through rainfed local variety crops. Secondly, that the effects of irrigation are connected to those of other HYV inputs (fertiliser, seeds, pesticides).

This research is concerned with the structural and developmental

effects of this growth of agricultural productivity with special reference to the role of shallow tubewell (STW) irrigation (for the attributability issue see also II & VII).

Under resource constraints, there is a technical limit to the intensity of exploitation compatible with the reproduction of exploiter and exploited. With productivity increases, such as through irrigated HYV cultivation, this technical limit shifts. What happens to development under these circumstances is under debate. In the tradition of neo-Malthusian pessimism Arthur and McNicholl (1978) argue that population growth will increase and use up the 'slacks' created by productivity and output increases. In contrast, Edwards et al (1978) envisage that

TABLE I.1: Effects of Irrigation and Modern Inputs on Production and Labour Absorption

Crops & Varieties	Yield Rate (kg cleaned rice per ha)	Labour Use (days per ha)	Fertiliser Use (nutrient kg per ha)	No of Times Irrigated
Early Monsoon rice (aus)				
Local Variety	827	143	22	nil
HYV	2,048	198	98	3.0
Monsoon Rice (aman)				
Local Variety	1,163	125	29	nil
HYV	1,961	163	79	0.9
Dry Season Rice (boro)				
Local Variety	1,554	207	9	3.6
HYV	2,734	242	140	7.3

Source: Mahabub Hossain September 1986 Reproduced in World Bank 1987 p.55

population growth will fall. Different patterns of distribution of the increased productive surplus are likely to be associated with different outcomes.

Irrigation-related increases in productivity and output could lead to an intensification of exploitative agrarian relations inside which the new resource, irrigation technology, enforces established power bases (see Jansen's waterlords 1979; Bhuiyan 1984; Chisholm 1984). On the other hand, new methods of and attitudes towards production may be appearing in the context of technological change which create various degrees of room for manoeuvre for different household classes. This thesis shows that there is no uniform technology-determined 'path' of development. Rather, there are a number of alternatives. The choice between these is affected by environmental, socio-economic, political, and in the final analysis, personality factors¹⁰).

I.4.1 Technological Choices

A range of irrigation technologies exists in Bangladesh. Sources of irrigation water are distinguished by age and technology level (modern/traditional), by scale (major/minor), by origin of water supply (surface/groundwater), or by source of power (manual/mechanised). The STW is a mechanised minor irrigation technology, which uses a centrifugal suction pump and can lift water from aquifers of up to 140 feet to a command area of around 20 acres. Other minor irrigation technologies are the deep tubewell (DTW), which pumps water by submersible turbine pump from deeper aquifers (up to 200 feet) to a command area of about 60 acres, the low-lift pump (LLP), which uses a suction pump to lift water from surface sources, and various versions of the manually operated shallow tubewell (MOSTI), which usually tap aquifers to a depth of 20-30

feet to a command area of less than an acre ¹¹).

No single irrigation technology can be described as 'most appropriate' for Bangladesh. The availability of surface water and the level of aquifers in any particular location impose technical constraints on technology choice. With decreasing availability of surface water (see Thomas in Timmer et al 1975), the importance of groundwater irrigation in Bangladesh has increased over the last two decades so that future irrigation potential is mainly confined to groundwater sources.

However, Bottrall (1983) remarks that the sequence of technological development in Bangladesh has been the reverse of what could be expected from the country's high labour and low capital endowment. With increasing scale, capital intensity and technological complexity, irrigation technologies have attracted greater financial support from donors and government agencies (see also Thomas 1975; Edwards et al 1978; Howes 1985; Biggs & Griffiths 1987). Among groundwater irrigation technologies the DTW first attracted support in the 60s and 70s, with up to 98% subsidies, followed by a greater emphasis on STWs in the early 80s. On the other hand, the MOSTI has only been the subject of greater official attention over the last few years but has not had a large impact on total irrigated area (see Howes 1985 p.9). Subsidies have increased with the scale and technological complexity of the technology and tend to be appropriated by rural elites.

In a comparison of groundwater technologies for Bangladesh Hannah (1978) finds that, at current prices, the STW is the cheapest irrigation method. However, by assuming that the MOSTI is operated by household labour at a shadow price of zero, Hannah eventually presents the MOSTI as the most appropriate technology. In a somewhat more

realistic approach, Small (1983) costs labour at the price of the additional food consumption of otherwise unpaid household labour and finds the MOSTI at 39.5 Tk/acre cheaper than the DTW (43.6 Tk/acre) but more expensive than the STW (28.8 Tk per acre). Biggs and Griffiths (1987) find that with labour costed at the market rate of TK 10/day, the total running cost of the MOSTI is over two and one-half times the running cost of the STW. Applying equal market rates to hired, tenant and household labour, Howes (1985 p. 107) finds that poorer households appropriate a significantly higher share of total value from MOSTIs than from DTWs. However, Howes' assumption that non-marketed labour is able to appropriate the equivalent of the market wage ignores the structural undervaluation of household labour upon which the perceived advantage of the MOSTI relies ¹²). Two of the central causes of deprivation among the landless in rural Bangladesh, high rice prices and low wages, are thus essential for the economic viability of the MOSTI (see Hannah 1976 pp. 443-44).

The MOSTI relies on the maintenance or intensification of labour exploitation. At the present stage of technological development, it is only a more economic proposal than the STW if labour receives subsistence or below subsistence returns. A concentration on the MOSTI in the irrigation sector thus runs the danger of relying on the reproduction of poverty. Johnson (1985) finds 30 pumping hours per acre for DTWs, 90 for STWs and 1800 for HTWs. Labourers, the supposed main beneficiaries of MOSTIs, bear the burden of this backbreaking work without remuneration even at the market rate (see also Mandal 1978; Quasem 1987 p.3).

However, as a result of future research, positive features of the MOSTI with respect to poverty elimination, such as greater access to

irrigation water for poorer cultivators, increase of land available under tenancy and higher yields per acre (in comparison with DTW; see Howes 1985) may in the future be combined with a less 'labour-mining' type of technology. Various vested interests in high-cost, high-technology equipment impede this (see Biggs & Griffiths 1987 & I.4.2). At present the MOSTI provides access to irrigation water in particular for poorer cultivators. This is important since water may not be available to them from any other source. Bhuiyan (1984) reports that in Tangail, Tamapur and Bogra MOSTIs went out of operation as farmers experienced problems with the cost and availability of labour or, more importantly here, because access to a STW was gained.

An alternative approach to poverty elimination might adjust the capital intensity of mechanised irrigation technologies on the one hand and increase the degree of control of disadvantaged rural groups over new productive resources on the other. There is a choice of material to produce different tubewell components such as filters and strainers. More labour-intensive methods can be used to produce and install mechanised irrigation technologies. The targeted allocation of ownership and control of new technologies such as STWs can direct some of the new productive surplus to groups of land/assetless (see Wood 1984; Wood, Palmer-Jones & Ahmed, forthcoming). The work of several NGOs (e.g. Proshika, BRAC) in Bangladesh is based on the expectation that control of new agricultural assets by poorer classes will decrease the rigidity of land-based agrarian power structures¹³).

I.4.2 The Shallow Tubewell

STWs irrigate about 16% of the total irrigated land in Bangladesh. In many ways the STW is an 'intermediate irrigation

technology'. Its scale of operation, use of capital and labour and necessary degree of organisation of irrigators per irrigation unit places it between the DTW and the MOSTI among groundwater irrigation technologies (see Haque 1975; Hamid 1982; Bhuiyan 1984; Howes 1985). It is also in the intermediate position in terms of sinking costs and operation and maintenance costs. However, Edwards et al (1978) report that despite consistently higher rates of return to low-technology models, a three-week World Bank appraisal mission in 1971 chose a high-technology STW from a range of available options as the basic model for forthcoming programmes in Bangladesh. This acted as a lead to other agencies so that contemporary models of STWs in Bangladesh adhere to the high-technology choice.

On these and other grounds, the STW may well be regarded 'an elite technology' in Bangladesh. In contrast to DTWs which operate - at least nominally - for cooperatives, and to MOSTIs which are predominantly individually owned by poorer cultivators, STWs tend to be individually owned and used by wealthier cultivators. One study (Bhuiyan 1984; see also Howes 1985) found that STW irrigators own nearly twice as much land as LLP and DTW irrigators. Another, (Quasem 1987 p.52) reports higher levels of access of large farms to STWs. These last two findings are confirmed in the seven villages (see Ch VI) by this research.

It is important to note that elite control and ownership is not a characteristic inherent in STW technology. The STW offers itself to individual and group use. Bhuiyan comments

The STWs represent a scale that befits the needs of individual large farmers or groups of small farmers tapping the shallow groundwater... The existence of a cooperative environment is an economic necessity for investment in a STW by a farmer group.
(Bhuiyan 1984)

In the main research village, Samitigram, this study finds irrigation groups with positive implications for productivity and poverty eradication (see III.5). Contrasting disadvantages for the poorer population are found in the seven villages where STWs are owned and used on an individual basis. This divergent development effect is not a feature of the technology as such, but results from a combination of ecological, political economy and personality factors.

The development effect of alternative organisational solutions for the ownership, control and use of STWs is a major theme of the research. Rather than compare two or more irrigation technologies (as for example Howes 1985; Bhuiyan 1984), I concentrate on a single technology and examine its implications in different socio-political and physical conditions. This approach introduces a deliberate bias against the assumption that patterns of change are 'technology inherent'.

In line with its intermediate position among groundwater irrigation technologies, the ownership of STWs occurs under individual, cooperative and corporate forms, while that of the DTW is mainly cooperative and that of the MOSTI mainly individual. However, the form of asset ownership does not allow direct conclusions about patterns of technology use and control. The legal existence of a cooperative or a water users' association gives little indication of the actual use made of irrigation equipment or the resultant patterns of resource accumulation to different classes. These issues need to be examined in the context of the agrarian structure and political economy as a whole. Unless phenomena like Jansen's "waterlords" (1979) are explained in the context of structures of political and economic control, they lead to technology-centred arguments. It is proposed here that, beyond environmental and

technical variables, historical, structural and personality factors influence the development effect of a productivity-enhancing technological innovation. By concentrating on one irrigation technology, the focus on the influence of factors other than technology on patterns of agrarian change can be sharpened.

I.4.3 The Institutional Framework

A range of public and private, national and international institutions are involved in the minor irrigation sector in Bangladesh. Only the main institutional actors are introduced here to set the context for this study and also to outline some of the contradictions between the interests of actors at the various levels of the irrigation supply and service networks and the needs of those "at the end of the line" who cultivate and irrigate the fields.

Irrigation is part of Bangladesh's Five Year Plans (FYP) and various shorter term plans which are formulated by the National Planning Commission of the Ministry of Finance and Planning. Irrigation-related policy development takes place in three main ministries:

- 1) The Ministry of Agriculture (MOA).
- 2) The Ministry of Local Government Rural Development and Cooperatives (MLGRD).
- 3) The Ministry of Irrigation, Water Development and Flood Control (MIWDFC).

Several agencies of varying degrees of autonomy within these ministries have executive functions in the irrigation sector.

The Bangladesh Agricultural Development Corporation (BADC) is semi-autonomous within the MOA. It is the largest and most important

agency in the minor irrigation sector in Bangladesh.

BADC's irrigation portfolio consists of supply and maintenance of pumps and engines, spare parts, fuel and lubricants. With 90% of DTWs and LLPs and 50% of STWs, BADC was the main procurer of minor irrigation equipment in Bangladesh until the early eighties. It also provided almost all maintenance services. BADC's internal structure extended over 4 administrative levels down to the *upazila* with separate divisions for DTWs, STWs and LLPs. Of BADC's 26,000 employees 14,000 worked in irrigation-related fields in 1982 (GOB/World Bank 1982).

As a result of privatisation throughout the eighties, BADC's portfolio in the agricultural sector has been drastically reduced. The number of BADC employees in irrigation is reported to have fallen to 12,000 (Lewis 1987) as procurement and maintenance of irrigation equipment has been transferred to the private sector. In practice, the dismantling of the BADC appears partial and slow, and BADC and the private commercial import and service sector tend to coexist with an uneasy overlap of functions.

For the period 1985 to 1990, the BADC will be involved in a number of major bilateral and multilateral government-funded irrigation projects with the IDA, the Asian Development Bank (ADB), the EEC, the ODA (U.K.) and ADAB (Australia).

The Bangladesh Water Development Board (BWDB) is part of MIWDFC. Its main functions are in flood control, drainage and large-scale irrigation but some minor irrigation projects have also been undertaken. These were supported by different donors and clashed in approach with those of the BADC. BWDB also collects, analyses and disseminates surface water data for the country. BWDB has two engineering wings, an extension

wing and a cooperative wing to service its own projects.

The Bangladesh Rural Development Board (BRDB) is a semi-autonomous body within the MLGRDC. Its activities are based on the Integrated Rural Development Programme (IRDP) which originated at the Bangladesh Academy for Rural Development (BARD) at Comilla in the 60s and was adopted as a national programme in 1971. By 1982 the IRDP covered 260 of Bangladesh's 450 *thanas* (now *upazilas*). BRDB has offices in Dhaka and at district and *upazila* level.

The IRDP (BRDB) approach consists of three basic elements:

1) A structure of primary village cooperatives (KSS for cultivators; MSS for women and BSS for landless) federated into *Upazila* Central Cooperatives (UCCAs). Agricultural input, service and credit provision and organisational assistance are the UCCA's main tasks.

2) *Upazila* Training and Development Centres (UTDC) to coordinate all the agencies involved in the programme and act as focal instruction points for 'model farmers' from KSS groups.

3) An *Upazila* Irrigation Programme (UIP) to increase the uptake of modern irrigation methods, ensure the efficient use of equipment and to provide group and scheme management training.

BRDB assumes the organisational (non-technical) functions in BADC's irrigation projects. The formation of farmers' groups (KSS) is the core of these activities. Since 1983 BRDB has focussed on irrigation in particular through the World Bank funded RDII programme, through its new Irrigation Management Cell and through the Irrigation Management Programme (IMP) which aims at increasing the efficiency of existing irrigation facilities. Other donors to BRDB are ADB, DANIDA and the IDA.

The Directorate of Agricultural Extension (DAE) is also part of

the MOA. Since 1978 a 'train and visit' (T&V) scheme has operated in which individual farm households are visited by extension workers on a fortnightly basis. DAE is the only public agency which employs staff below the *upazila* level. Irrigation extension and data collection are part of DAE's portfolio.

The Water Master Plan Organisation (MPO) is administratively under the MIWDFC. MPO was set up to work out a multi-sectoral national water plan (NWP) in order to facilitate coordinated national water resource strategies.

Several banks operate irrigation-related credit programmes. Bangladesh's central bank, the Bangladesh Bank (BB) has financed STWs under its rural credit programme (BB-RCP) since 1981. In its first two years of operation the BB-RCP financed one third of the total STW sales in Bangladesh. This amounts to 200% and 70% of the sales of the much older programmes of the BKB and BADC.

The Bangladesh Krishi Bank (BKB) provides STW equipment and credit. By 1982 BKB had supplied half of the recorded installed STW capacity in Bangladesh (GOB/World Bank 1982). BKB functions through 18 regional offices and about 415 branches. Despite the official privatisation policy, BKB opened an irrigation wing in the early eighties to ensure repair and maintenance of BKB financed equipment. The installation of BKB financed equipment takes place through private contractors.

STW technology is mainly imported into Bangladesh. In 1986 there was only one producer (Deutz) and two assemblers (Mitsubishi & Kirloskar) for STWs in the country. Private supply and service networks have thus formed around the import of STWs. These networks stretch from production

sites and administrative centres in foreign industrialised nations (Japan, West Germany, Korea, India) across a number of intermediary trade and administration levels in Bangladesh to the end user in the village. A variety of national and foreign interests thus affect the product which arrives at village level and the conditions attached to its delivery.

The privatisation of STW supply and services has intensified marketing and distribution efforts by commercial suppliers who obtain STWs from Dhaka-based importers. Marketing strategies vary between brands and by region but, in contrast to the public agencies, commercial suppliers tend to establish direct communication with the cultivator through, for example, fieldmen who tour the villages on bicycles, or local mechanics who receive commission from town-based traders (see Lewis 1987 p.22).

In the wake of privatisation, the public sector has been weakened and a local level private sector now constitutes the final link to the cultivator. In Bangladesh, this has not brought the development of self-sustaining marketing structures in the private sector. The STW importers in the capital and their branches or contractors in districts and *upazilas* depend on government and foreign donors who determine both the technical content and the location of irrigation programmes. Under privatisation, STW importers are allocated regional quotas and import licenses to import equipment for the large foreign-funded irrigation projects. The discontinuation of an aid programme means the demise of the associated private sector supplier. A dispute between a donor or foreign company and the Bangladeshi authorities means that internal private sector supply and service structures fall into decline. This will be further explored in section VII.3.

In their European headquarters, the director for South Asia of one of the leading STW brands in Bangladesh explained to me

For us Bangladesh is only a negligible part of the world market. We moved into STW imports and in-country production in the context of our global marketing strategies. Engine production in Bangladesh may serve as a springboard into other markets or other countries in the area. We are currently employing a team of international experts to improve our marketing strategies in the area.

Interview, January 1987

A further manifestation of foreign interests has been identified by Lewis who discusses a "spare parts mentality" which

... led the BADC to become one of the largest consumers of irrigation spare parts in the world, in spite of the fact that only about 30% of the land of Bangladesh is irrigated. Some of the engines supplied by the BADC, such as Yanmar are comparatively cheap to buy but very expensive to maintain, since the total spares for an engine might cost as much as 20 times its original cost. Because the tenders for spare parts do not have to go through the Ministry, the way the engine purchases have to, the issue of the price of spare parts is not given adequate attention...

(Lewis 1987)

Some of the leading foreign suppliers of tubewell engines to Bangladesh have their own training colleges for mechanics. Phenomena like the "spare parts mentality" may thus be implanted and maintained easily. Clearly, the involvement of foreign donors and foreign capital creates constraints for national STW supply, service and marketing development, and more importantly here, for the end users' capacity to exploit irrigation potentials fully. Recent privatisation efforts have resulted in a more direct dependence of the Bangladeshi private sector on foreign capital, and in a weakening of the Bangladeshi state, but not in the development of self-sustaining STW supply structures. However, despite the apparent failure to develop viable national production or marketing structures for STWs, it is argued that there is a range of STW-related

activities, such as village mechanic, spare parts producer and equipment trader (see VII.3) which provide some scope for development.

NOTES

1) This recognises the non-material aspects of development and the connections between growth, environmental deprivation and poverty (see Redclift 1984; 1987; Blaikie 1986; Brundtlandt 1987).

2) Household categories in this study are distinguished by nine characteristics (see Table IV.1 & II.4.3).

3) On models of capitalist, feudal, semi-feudal, colonial, Asiatic and peasant mode of production see Patnaik 1972 a & b; Bhaduri 1973 & 1983; Alavi 1975; Taylor 1979; Harrison 1977; Shanin 1972.

4) For a particularly striking example of the teleological tendency see Warren (1982).

5) Both authors use "interlinked" and "interlocked" interchangeably. Bharadwaj also talks of "conjoint" markets. Here "interlinking" is used to indicate the variability in the degree of market connection.

6) Despite the fungibility of production credit within the cultivator household and the resultant attribution problem (see David & Meyer 1980 p.205) which haunts the credit literature, credit is increasingly essential for cultivation (see V.4). It is therefore treated here as a factor of production and as a proxy for capital.

7) For the networks around new agricultural technologies see Lewis (forthcoming).

8) Chisholm (1984) reports sharing of non-labour input costs between tenant and landowner for one DTW group in Bogra.

9) See also White (1988) who comes to this conclusion in a discussion of women's work.

10) The term 'personality factors' subsumes some aspects which this research did not cover (e.g. the way 'personal' preferences result from caste background, upbringing etc). These aspects fall more into the realm of psychological sciences which is beyond this study's interdisciplinary focus on themes from sociology, anthropology and economics.

11) For further technical details see Dutta & Mandal (1985) and Asaduzzaman (1985).

12) Although it is mentioned in Howes 1985 p.99. See also Adnan 1984 for a model of the agricultural sector in which different pricing rules apply in the household and in the market.

13) For a discussion of some of the problems of these approaches (e.g. the class homogeneity of landless groups and the danger of new structures of dependence between group 'animators' and members) see Hebelung (1988), McGregor (forthcoming).

CHAPTER II: METHODOLOGY AND PROCEDURES

II.1 Methodological Concepts and Conflicts

I went to Bangladesh with a number of ideas as to what my rural fieldwork was to achieve and how I was to go about it. I intended to ask questions with as few preconceived ideas as possible and to look at data from the viewpoint of the villagers. This needed a conceptualisation of the rural environment and its inhabitants through categories derived from the local understanding of unity and separateness. The definition of my research 'village' and my derivation of household categories (see II.3 below) are influenced by this. The research was to be "grounded" (see Glaser & Strauss 1975, Glaser 1978) in the collection of data and subsequent induction supplemented by deductive theory-building. Most importantly, processes of change important to the actors in the research environment were to be identified by induction, i.e. by the analytical evaluation of observations.

Participant observation as the means to make sense of local relations was to be one of the central research strategies. I expected to be investigating new forms of exploitation which further enriched the wealthy and impoverished the poor. In view of my research agenda I expected to interact with the rural poor in particular. On the other hand, I anticipated that a certain amount of circumspection in contact with the rural elites would be needed since I was to investigate how to use new rural resources to increase the opportunities for the poor.

Two main methodological strategies formed the basis of my approach to the field research. Firstly, the anthropological approach of immersing myself into the research environment and letting research directions be determined by the data. The snappy little phrase "I'll live in a mud hut", joyfully used as a response to pre-departure enquiries of European friends as to what I was going to do in a

village in Bangladesh embodied my expectations to integrate myself in some way into village life and understand it from the inside. This was to be combined with a second aspect of fieldwork, the collection of comprehensive survey information on issues such as household size and structure, wealth and type and quantity of incomes and similar concepts used in sociology, economics and the policy debate. Through this two-fold approach I intended to obtain a view on the qualitative changes in agrarian relations and their meaning in a particular micro-environment as well as a quantitative picture of accumulation processes as they affect different household types under irrigated and non-irrigated conditions. While an understanding of the meaning of agrarian relations is one of the central elements of the thesis (cf. Ch V), an indication of the quantitative incidence of qualitative changes was necessary, not least in order to convey academic credibility and policy relevance to the work.

In the course of the fieldwork, the quantitative 'survey' approach and the anthropological 'understanding of meanings and functions of relationships' clashed repeatedly. To obtain anthropological data I needed to be 'part of' the village. To obtain comparable quantitative data I needed to act as an outsider, conduct directed interviews, 'write things down' on long questionnaires and check inconsistent information. This double role sometimes created distrust and insecurity among villagers in their evaluation of my doings. The outcome is a compromise. The collection of quantitative data, which I recorded and cross-checked during formal interviewing, and of anthropological information on meanings and functions of relationships which I absorbed in a much more informal setting interfered with each other. As a result, neither set of data is as complete as it might have been in isolation. The combination of both types of data, however, gives a more comprehensive picture than would have been possible by a more elaborate collection of either type of data alone.

II.2 Preparation and Setting Up

After nine months of preparing a series of papers and acquiring some very basic Bengali, the next ten weeks consisted of intensive language training at the Oriental Institute, Barisal, in the South of Bangladesh. Through residence with Bengali families, my colleague Sacra White (White 1988) and I gained a basic knowledge of how to survive and live in a Bangladeshi environment. At the end of this period I had acquired a degree of familiarity with customs and habits. I was able to discuss my research plan in standard Bengali and I had gained a strong sense of how I was different from my Bengali host family and how my attempts to integrate myself into their way of life were hampered by the threat to my own cultural norms and sense of identity.

The next step was to choose an area and a village for the field research. The presence of great numbers of STWs, the relative closeness of the local dialect to standard Bengali, the distance of the region from well-researched areas around Dhaka and Comilla and the attractions of the regional specialities (mango and silk) led me to Rajshahi in the North-West of the country. The availability of a set of uniquely detailed data on the distribution and use of irrigation technologies for two *upazilas* in Rajshahi ¹⁾ pointed to Singra *upazila*.

One late morning at the end of September 1985 I got off the bus in Singra *upazila* and made my way, letters of introduction in hand, to the desks of the local officials. The idea of village research was familiar to several people in Singra because a group of researchers (Qadir, Chowdury, Emmert & Dey, 1978; see Ch VI) had conducted research in Singra. Nonetheless the arrival of a single female with a rucksack and the stated intention of staying for a year to study the effects of irrigation was somewhat surprising and uncomfortable to the incumbents of the Singra male officialdom.

A period of visits to villages in the *upazila* followed. My village choice criteria combined academic and practical considerations. In order to achieve

greater depth in my investigations, I was looking for a relatively small village. As I intended to compare organisational alternatives for irrigated agriculture I was especially interested to have some irrigation groups in the research village. I also wanted a village with a resident mechanic in order to follow up the relationships around this. Moreover, the village was to have irrigators and non-irrigators so that cross-sectional and time series data could be compared. Last, but not least, there had to be accommodation available for me.

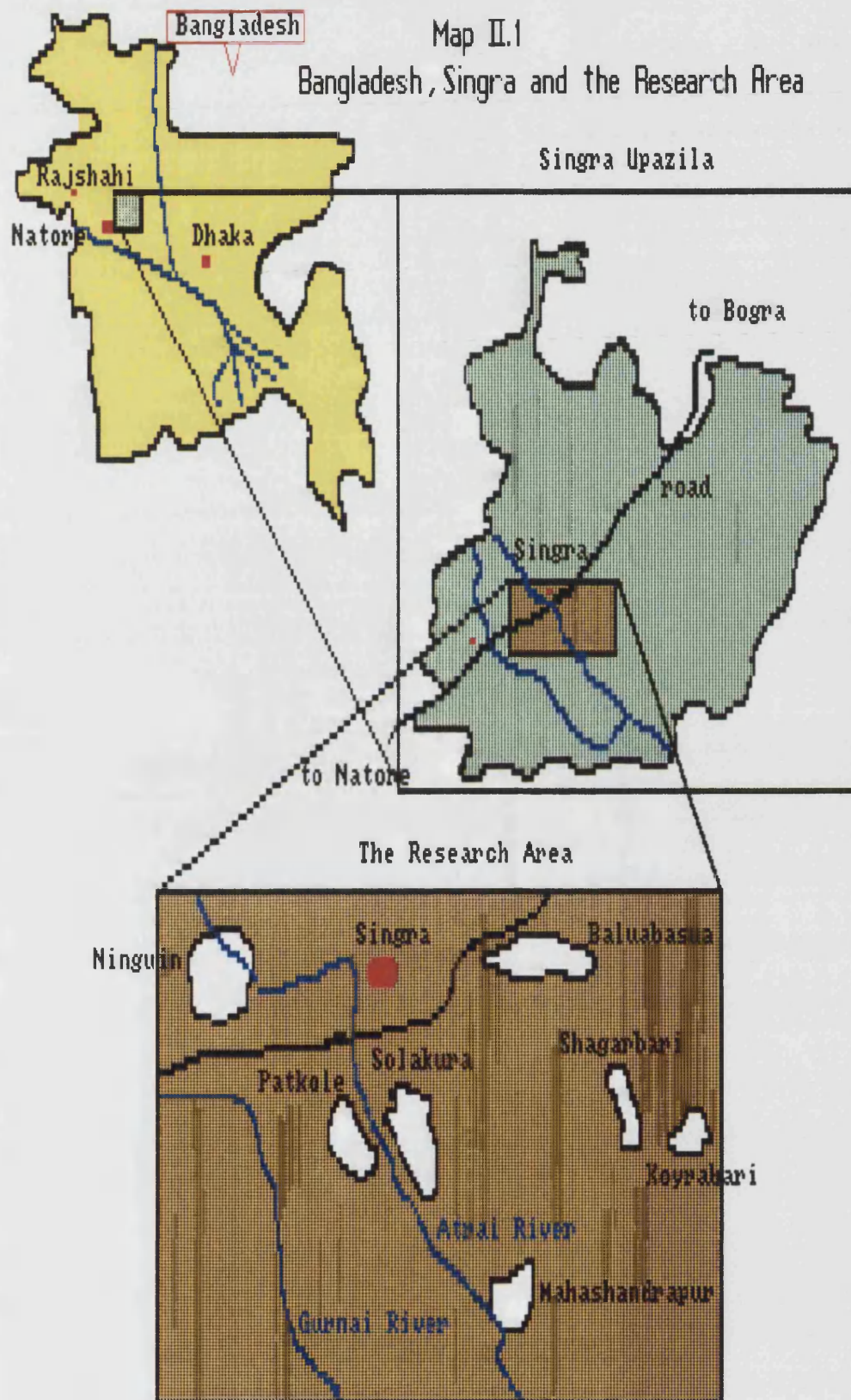
I started on daily excursions to villages in the area. At the time of the year, October, most fields were still flooded and even residential areas were 'swampy' ²⁾. My eventual village choice was as much intuitive as led by the long list of criteria. I was introduced to Samitigram (see Ch III) by the wife of an absentee landowner, who lived in Singra town (Faruque, see III.4.7- 8).

Some of my criteria for village choice were met. There were irrigation groups, there was a local STW mechanic, a family was willing to put me up, although they seemed somewhat confused by my intention to "learn how village life works and how irrigation has changed your lives and then write a book about it". There was also a separate abandoned hut as an alternative more independent form of accommodation. The village was small enough to be manageable by a lone, linguistically handicapped foreign researcher.

Other village choice criteria had to be abandoned. There were few, if any, non-irrigating cultivators. It appeared that irrigation groups only existed under conditions of relatively intensive irrigation. I therefore abandoned the intention to compare irrigators and non-irrigators in order to be able to work on irrigation groups. For the first time I was able to engage village people in more extended discussions on my research. I liked the village.

I moved into the house of my host family a few days later. After a year of preparation I had finally arrived in 'my village'.

Map II.1 indicates the location of the research area and of the seven



adapted from Qadir, Chowdury, Emmert & Dey 1978 p. 6

villages where I worked later on. In order to protect the anonymity of its people, Samitigram, (a pseudonym for the village I lived in), is not shown.

Accommodation and research assistance were the first issues to be tackled. My intention not to associate myself too closely with one village 'factions' initially made me want to set up my own household. Since I was in no way equipped to manage the technicalities of everyday village life on my own, I would have needed to find an assistant immediately. Working with an assistant from the beginning would have made me crucially dependent on his or her mediation. To set up an independent unit inside the village also appeared to run counter to the objective of participant observation. Living with a village household, on the other hand promised to provide me with opportunities to get to know people far better than through visiting and interviewing with an employee on whose mediation I depended. I decided to live with a family and to look for research assistance from the area, if and when I required it. Eventually about 3 months of my research work were undertaken with the assistance of a local temporarily unemployed primary school teacher.

My hosts were a wealthier village family of 17 resident members (see IV.2.1 Saidur). Back in England I had wanted to live with a poor family. I now found that poor people had no space in their one-roomed mud houses. Those who made the decisions, the men, were too embarrassed to speak to a foreign woman. When they did speak to me during the initial period, I could hardly understand their strong dialect. My relatively wealthy host family were able to speak standard Bengali and they had space for me. I stayed.

Now clearly associated with one of the wealthy families of the village, I had gained a degree of insideness in a household which I felt would also meet my most elementary needs for mental and physical space.

My research results have undoubtedly been coloured by my close

contact with my host household which was part of the 'new' village elite. Through them I understood much of the rationale of change. I understood less, maybe of the rationale of non-change of their more conservative neighbours and also less of the opportunity situations of the poorest sections of the population. The choice was a conscious trade-off between less than perfect options. I attempted to counteract my strong association with one village faction by a variety of regular formal and informal contacts (visiting, eating, employment for research assistance, boat transport) with other sections of the village.

II.3 The Fieldwork

"Erstens sind die Dinge immer anders und zweitens als man denkt." ³⁾

The main components of the field research are summarized in Table II.1. Although fieldwork elements were focussed on in the order they are presented below, all research components, but in particular the village survey and the command area study (II.3.1 & II.3.2), were continuously updated and added to during my time in the field.

II.3.1 The Village Survey

This was the first, longest and most continuous part of the fieldwork. I added to and checked the data on my survey questionnaires until the very end of my fieldwork but spent the first nine weeks conducting a complete house-to-house survey. This, and the command area study (see Table II.1) are the elements upon which some of the major arguments of the thesis, in particular Chapter V, are based.

The village survey conveyed to me a sense of the village as the spatial expression of social and economic relationships and a strong impression of a range of systematic differences between households which combine into an

Table II.1: Fieldwork Components (In Chronological Order)

1. Village Survey Interviews with all household heads (9 weeks/continuous)
two follow-up surveys of all sharecropping and mortgage relationships in the
village (2 weeks)

Themes: family size, age & gender structure, household occupations & income
sources, landholding size and history, other assets, tenancy, labour & credit
relationships, irrigation activities, rice self-sufficiency, political party
membership

Particular emphasis on production and exchange relationships

2. The Command Area Study Interviews with all STW group managers and owners
and some irrigators in 31 STW command areas (8 weeks)

Themes: Owners, tenants and sizes of all owned or rented plots in 31 C.As on
Samitigram lands, map of C.A, type & age of STW, loan source, location of STW,
water & capital charges and costs, C.A. history and social and economic dynamics
among STW owners, managers and users

3. The 7-Village Revisit Interviews with key informants (teachers, prominent
locals, *imams*) and all or a selection of members of the landless and highest
landowning households (7 weeks)

Themes: history of household landholding, income sources, involvement in
irrigation, village irrigation history

4. Case Studies Visits and interviews with 15 households of the primary research
village (8 weeks)

Themes: relative importance and interdependence of different elements of
individual households' resource strategies

5. Occupational Diversification Interviews at local ricemills and parboiling
business and with STW agents and traders in and beyond the locality (occasional,
about 5 weeks)

Themes: Structures and opportunities in trade, processing and non-cultivation
production, types and origins of occupational diversification and connections with
national and international institutions

6. The State and Foreign Donors

Interviews with government officials, traders, donors and foreign suppliers in the
STW sector (6 weeks)

Themes: Structure of the STW sector, objectives and constraints of actors and
decision-makers and their 'rebound' effect in the village

overall household position. My household categorisation (see II.5 & IV.1) relies on a review of the survey data.

I placed strong emphasis on agrarian relations. All interviewees were asked whom they had credit, mortgage, labour or tenancy relations with. This gave me a first idea of the clusters of relationships, and of the relative power positions of different households. It frequently raised the issue of market interlinkages and has come to form the base for the discussion of the possible diversity of meanings of agrarian relationships in Chapter V of this thesis. The emphasis on agrarian relations also enabled me to cross-check the information given by one party (e.g. the landlord or employer) with that provided by the other party (e.g. the tenant or labourer) to a relationship. I complemented the complete village survey by a more detailed follow-up of all sharecropping and mortgaging relations for which both parties to the agreement were re-interviewed. The arguments of Chapter V are based on the complete survey and the two related follow-up surveys which covered over 70% of all village households. Since the nature of the argument requires a full contextual understanding of household situations, some of the explanation of the arguments of chapter V is undertaken with the help of the case studies (see II.3.4 & IV).

II.3.2 The Command Area Study

This involved interviews with the managers of all STW groups, the owners of all individually owned STWs on Samitigram agricultural lands, and with a number of irrigators of each command area. I also attended meetings of most irrigation groups and discussed the written proceedings of previous group meetings with managers and members. Particular emphasis was laid on the investigation of organisation and operation of group irrigation. Interviews covered the issues summarised in Table II.1. The use of *mouza* maps attracted a great deal of attention and prompted farmers to point out their plots and to

recount command area development.

The command area study gave me a sense of the history, extent and organisation of irrigation in Samitigram. With the plot size data of all irrigators from STW owners and group managers, I was able to cross-check the survey information given previously by household heads. The most important set of data from the command area study is a 2'*1' chart which covers all 31 STW command areas on village lands and contains the size, owner and tenancy and mortgaging relations connected with every plot in the command area. The discussions with group managers and cultivators during data collection for the chart provided much of the material on the changes in agrarian relations with irrigation in Samitigram (see Ch. V) and of the development of the character of market interlinkages under irrigated conditions in particular.

II.3.3 The Seven-Village Revisit

This revisit of an area covered by a previous study (Qadir et al 1978) was undertaken in order to escape from the limitations of the one-village framework and to be able to identify variables which affect the structural role of STW irrigation. Although interviews with household members from the top and bottom landholding categories were conducted in all villages, much of the data for the seven villages was obtained from key informants (e.g. teachers, *imams*, shopkeepers). The main value of the seven village revisit lies in the identification of strongly contrasting meanings and development effects of agrarian relations surrounding STW irrigation.

II.3.4 The Case Studies

Fifteen case studies chosen by selective stratified sampling from the four household categories (see II.5.3) were visited and interviewed at least three times. Extended periods of undirected interaction were spent with households (accompanying household members to ricemills, markets, visits to relations, a

wedding etc). During these visits, three questionnaires were worked through with each case study household. Questionnaires focussed on overall income generation and resource management strategies, and on the variety of roles STW irrigation played in this. Two questionnaires dealt in particular with non-cultivation income sources, farm management issues, cultivation costs for irrigated *boro* and rainfed wheat and *amon* crops, with the households' involvement in irrigation and other groups and with the role of social and kin relations for household strategies. The third questionnaire ⁴⁾ examines the role of women in household advancement strategies.

Sometimes I was indubitably somewhat annoying to those who found themselves repeatedly visited as "my case studies". Sometimes, people were glad to explain "the whys and hows" of their lives. The detailed interviews and closer involvement with case study households had two main positive effects on the research. Firstly, I gained an understanding of the interdependence of various strands of household strategies and of the different types of rationale which could underlie household strategies. Secondly, by tracing the social relations of the case study households (e.g. marriage and other kin relations) I obtained a picture of the density and function of social networks in the village.

Only 11 of the 15 case studies, for which the most complete data was obtained, are presented here (Ch.IV).

II.3.5 Occupational Diversification

My research on the implications of STW irrigation outside the cultivation sector consisted of a range of informal interviews. Each of the nine mechanics who serviced the STWs around Samitigram, local ricemill owners, parboiling operators, paddy traders, transport operators (trucks, oxcarts and *ricksaws*) and STW agents and traders were interviewed. Interviews concentrated on the relation of cultivation and non-cultivation activities in total household

strategies and the relative amounts of income derived from different activities.

II.3.6 The State and Foreign Donors

Interviews with officials (BADC, BRDB, DAE, BKB and commercial banks) at union, upazila, district and divisional level were conducted. These explored institutional programmes in the STW sector and their implementation, particularly with reference to the research area.

The final six weeks of the fieldwork period were spent in Dhaka where interviews with major institutions and donors in the irrigation sector and with commercial importers of STWs were conducted. An interview with a director of one of the main producers of STWs for Bangladesh was conducted later in West Germany.

The objective of my focus on public and private institutions beyond the village and the national boundaries was to gain an impression of the objectives and constraints of actors at the different levels of STW supply and service networks in order to assess their effect on irrigation-related rural development potential.

II.4 Strengths and Limitations of the Data

A number of points need to be noted on the fieldwork process and the resultant information base for this research.

II.4.1 Before and After

One limiting factor for the research is the scarcity of quantitative benchmark data for the period before mechanised irrigation upon which to base comparisons to the irrigated period.

Official land records, the transcription of which taught me much about Bengali script and semi-legal land registration practices, proved hopelessly inaccurate so that I eventually abandoned the attempt to use them.

People's recall of dates and time periods was often less than accurate. The majority of people used very general indicators of time such as "in the Pakistan Period" or "after the *gondogol*" ([lit: trouble]; describes the 1971 independence war).

Willingness to provide information differed widely depending on the issues concerned. While it was surprisingly easy to obtain data on the development of land prices for a period of over 40 years (cf. Figure V.3), it was nearly impossible to obtain any quantitative information on the incidence of tenancy, credit or mortgaging relations in the period before STWs. Similarly, the recall information about the level of agricultural wages over time appeared to be much more guided by the interests of the interviewee in relation to the perceived role of the interviewer than by recall ability.

On the other hand, a great deal of information was available in response to questions about "how tenancy, mortgaging or employment relations were regarded and operated before irrigation". As a result, a strong qualitative before-and-after picture emerges from the survey interviews. This more qualitative than quantitative picture is part of the arguments on the direction of agrarian change proposed here.

II.4.2 The Attribution of Change

Any attempt to assess the impact of a single factor in a multi-variate environment faces an attribution problem. This is exacerbated since the total effect of several factors is different from the sum of their individual effects. Once processes of change have been identified as having followed the introduction of any new factor, such as a technology, they cannot easily be attributed to that single factor.

Irrigation is clearly not the only reason for contemporary agrarian change in Bangladesh. The character of rural change is affected by factors other

than mechanised irrigation, and the full extent of the output increases achieved under irrigated conditions relies on the presence of a range of supplementary inputs (see Table 1.1). Nonetheless, agrarian change in Bangladesh (Hossain 1988), as in many Asian countries (cf. Ishikawa 1967), can be regarded as irrigation-led in so far as output increases would not have occurred without irrigation but could have occurred, although to a lesser extent, without the presence of other supplementary inputs.

Recent research on Bangladesh and West Bengal confirms this. Boyce (1987) concludes that water control variables (irrigation and flood control) explain approximately 80% of inter-district variations in yields in Bengal.

II.4.3 The Female, Foreign Researcher

A final point concerns the influence of the female researcher on the data collected in a predominantly Islamic society segregated by gender. In Bangladesh, male and female spheres of activity are relatively separate (for qualifications see White 1988). In the villages there are rules for interaction between men and women in the household and women avoid communications with male outsiders.

Initially, men were shy of me, a foreign woman, and extremely monosyllabic when I tried to discuss agriculture, irrigation or anything else connected with 'their world'. At one most disheartening occasion a man, having asked me about my family remarked enthusiastically:

If your brother came here we could explain everything to him. We could take him to the fields and fishing and we could explain all about irrigation to him.

At my suggestion that all this could be undertaken with me, he turned away in embarrassment.

At another, early occasion, a country boat containing about 20 village

men and myself on the way back from the market almost capsized as all the men crowded into one half of the boat leaving the other half for me.

I began to wonder how I would understand anything about irrigation if those who were engaged in it would hardly talk to me. Something needed to change. I gradually gave up many of my early attempts to fit in with the conventional female role models, most of which in case attracted more criticism of my ignorance of the "right" way of doing things than approval. I stopped wearing a *sari*, started to attend the weekly *hat*, an almost exclusively male occasion, to chat in the tea stalls, waded through muddy fields to talk to farmers and went out late at night. My explanation that "in my country women can do this" combined with repeated enquiries of whether I was giving offence was usually well-received and countered with many questions about "my country". Barriers seemed to break down.

To the benefit of the research, if not to my self-image, I had become genderless, or even an "honorary male" in the company of men (cf. Papanek 1964). Now, in the heat of a discussion in exclusively male company, I would occasionally be addressed with a male kinship term ⁵⁾. Thus, although certain spheres such as the social 'get togethers' after Friday prayers in the mosque obviously remained closed to me, my position had become one of advantage. As first became obvious to me at a village festival where I was made a frequent messenger between the women assembled behind a bamboo screen and their men outside, I was now the only adult in the village who moved freely between male and female spheres.

As I did not belong to either male or female sphere exclusively, I could determine my own code of conduct to a large extent. I moved freely around homesteads and fields and talked to both men and women. In Bangladesh men can only communicate freely with their wives, sisters and mothers ⁶⁾ and female

Bangladeshi researchers find it very difficult due to greater pressure on them to conform to Bengali ideals of female behaviour.

Clearly, I hardly ever learnt anything by unobtrusive immersion into the research environment. Especially in the initial weeks all my actions attracted crowds and caused discussions among the onlookers.

II.5 Definitions and Concepts

The thesis is based on three central concepts. 'The household', 'household categories' and 'the village'. These are presented below.

II.5.1 The Household

The economic unit of the household, rather than the kin unit of the family is the relevant concept for this research.

Villagers distinguished two types of households:

Firstly, "*Jara ekoutre boshabosh thake*" ("those who sit together"). These are multi-nuclear households from the same family which keep accounts jointly and eat together (joint households).

Secondly, "*Jader prithok hoe gieche*" (literally "those to whom separation has happened) These are nuclear household units which eat and keep accounts separately from other nuclear or joint households of their family (nuclear households).

A household is distinguished by the keeping of joint accounts and joint provision of food for all household members who are not employed and fed elsewhere as part of their pay. There was only one exception to this, where an old widow was fed by each of her three landless sons' nuclear households in turn but kept her own accounts. A distinction of households by joint or separate residence did not prove useful as some residentially joint households kept separate accounts (particularly the 'poor'; see Table IV.1). Villagers considered

such households as nuclear.

II.5.2 Household Categories

The four household categories developed in this research were explored and refined in an iterative manner throughout my time in the village. Household categories relate to villagers' concepts as well as to the survey data. The categories are meant to capture the essential distinctions between households in the eyes of their members. Through an understanding of how differences are perceived from the inside, I explored which changes are most important to people in that society. Questions like "What type of people are there here?" or "How is this household different from yours?" provided some initial understanding of local concepts. Thus, although household categorisation was clearly affected by the research agenda and is therefore not entirely the product of undirected communication, villagers' perceptions were included into the conceptual framework of the research.

Other concerns also informed the final categorisation of households. Firstly, both descriptive and relational aspects were to be included. Households were to have both comparable formal attributes as well as stand in similar relations to members of their own and other household categories. Secondly, the particular concerns of this research with resource flows and accumulation patterns influenced the final choice of criteria for household categorisation. Eventually, households were differentiated according to nine points (see Table IV.1). The four household categories which result, could be described as "resource-status categories" ⁷⁾ when resources are understood to encompass material and social (relational) aspects.

Irrigation is then examined in its interaction with the composite elements, which form the four household categories.

After household categories had been developed, the following two values were calculated for each household:

- 1) **Effective landholding (e.l.)** -

land owned
+ ½ land sharecropped in
- ½ land sharecropped out
+ land mortgaged in
- land mortgaged out

 (or ½ according to type of mortgage)

- 2) **e.l. per head** - e.l. / number of household members

Effective landholding ⁸⁾ indicates household income from land, while operated holding is useful to derive cultivation expenditure, and owned land points to household wealth. The comparison of operated and effective landholding (see Tables V.5 & V.6) indicates patterns of accumulation from cultivation. 'Per head' measures of landholding take household size into account. The large household/large landholding bias, which tends to lead to overestimates of the importance of land for wealthier households with more members (see Table V.7 line 6) is thus avoided.

There are at least two shortcomings to the land-based approach to the categorisation of rural households. Firstly, it does not take into account inter-household differences in production costs (see V.4) or quality of land. Secondly and more importantly, non-land incomes are not taken into account. As is argued throughout the thesis (cf. especially V.1), it is increasingly inadequate to express the economic position of households in rural Bangladesh through landholding only ⁹⁾. The composite household categories used here attempt to overcome the shortcomings of land as the sole indicator.

A main distinction between the 'coping' and the 'poor' is their position in the labour market. The 'poor' sell their labour. The great majority of the 'coping' do not. It is likely that in a few years' time some of the labour-selling 'poor' households will be better off than their contemporaries who still operate as small owner-cum-tenant cultivators. This underlines the temporary nature of the

factors which determine household categories. The categories themselves and people's positions within categories are changing continuously. The best that can be done is to outline a 'snapshot' of a situation and to complement it with historical information and speculations about the future to gain some idea of the type of change and degree of development an agrarian structure is undergoing.

II.5.3 The Village

In order to understand change as it appeared to the actors meant that 'the village', my primary research universe, had to be delineated according to the perceptions of its inhabitants. Using villagers' notions of "us and them" or "our people and other people" 103 households were eventually included in the primary, complete survey (see Table II.1). The village of Samitigram neither conformed to the official delineation of the *mouza* for tax purposes nor to the Bangladesh Bureau of Statistics' (BBS, 1974; 1986) village delineation. Samitigram village is best described as the spatial expression of those economic, social and kinship relations which were considered most central by the villagers themselves ¹⁰).

NOTES

1) Provided by Mr K.Pitman, MPO Dhaka.

2) There were moments when the idea of studying the impact of irrigation in a 'swamp' seemed humorous. Beyond the particularly wet conditions in the Singra beel, most of deltaic Bangladesh turns wet and muddy during the monsoon. The thesis title carries a mark of my deliberations on this, especially during the rainy periods of village fieldwork.

3) "Firstly, things are always different and secondly, more different than you think." One of my father's favourite mottos of which I was reminded more than once during the fieldwork.

4) Designed and 'administered' by S. White (White 1988) as a comparative exercise to her own work in Tanore upazila, Rajshahi.

5) Only children and people considered junior or inferior by the speaker are addressed by name in Bangladesh. Generally kinship terminology is used.

6) A male western colleague once remarked to me that during his field research in Bangladesh he did not see a single woman for weeks at a time.

7) A term retrospectively borrowed from Bharadwaj (1985 p.335).

8) Wood 1978, van Schendel 1981, McGregor (forthcoming) and Lewis (forthcoming) employ the concept.

9) With the proliferation of agricultural and agriculture-related activities (see Lewis forthcoming), patterns of occupational diversification will differ by household category (see Wood's 1978 findings on a village in Comilla and Chapter VII).

10) See Bertocci 1970 & 1975 for similar concepts of 'village' and 'region'.

CHAPTER III: THE AREA AND THE VILLAGE

III.1 Singra Upazila

With 204 square miles Singra is the largest *upazila* in Rajshahi division. It is in Natore district and consists of 12 *unions* and 446 *mauzas*. Singra contains the country's largest *beel* (marshy area), the Chalan Beel. Since most *beel* land is flooded for several months of the year, Singra's population density is below average with 1102 people per square mile compared to 1557 for Bangladesh. Per capita land availability is also above the national average with 0.57 acres (0.33 for Bangladesh). The yields of Singra's main crops are slightly above average with 0.49 tons per acre for *amon* (Bangladesh 0.48 tons per acre) and 1.1 tons per acre for *boro* (Bangladesh 0.97 tons per acre). Singra is the only *upazila* with a surplus of foodgrain production over requirements in Natore district. In 1982/83 cropping intensity ¹⁾ was 115 for Singra and 153 for all Bangladesh ²⁾. The Chalan Beel is a low-lying area with only one rainfed monsoon paddy crop (*amon*) on land without irrigation.

On the whole, Singra is now a relatively prosperous *upazila*. The country's main North-South road passes through its centre. This road connects Bogra, Rangpur and Dinajpur in the North with Dhaka, the capital and Jessore, Kusthia and Khulna in the South. It is a main artery of national road traffic.

Singra is the *upazila* with the greatest number of STWs in Bangladesh ³⁾. The total irrigated area in Singra *upazila* was 23908.18 acres in 1985. This is about 66% of the *upazila's* total net cultivated area. Of the irrigated area 99% is cultivated with *boro* paddy and 1% with wheat. About 88 % of total irrigated area is served by STWs. Of this 97%

is single cropped and about 3% double cropped. 87% of STWs in Singra are privately sunk and 11% through BADC. 81% of STWs in Singra are privately repaired ⁴⁾.

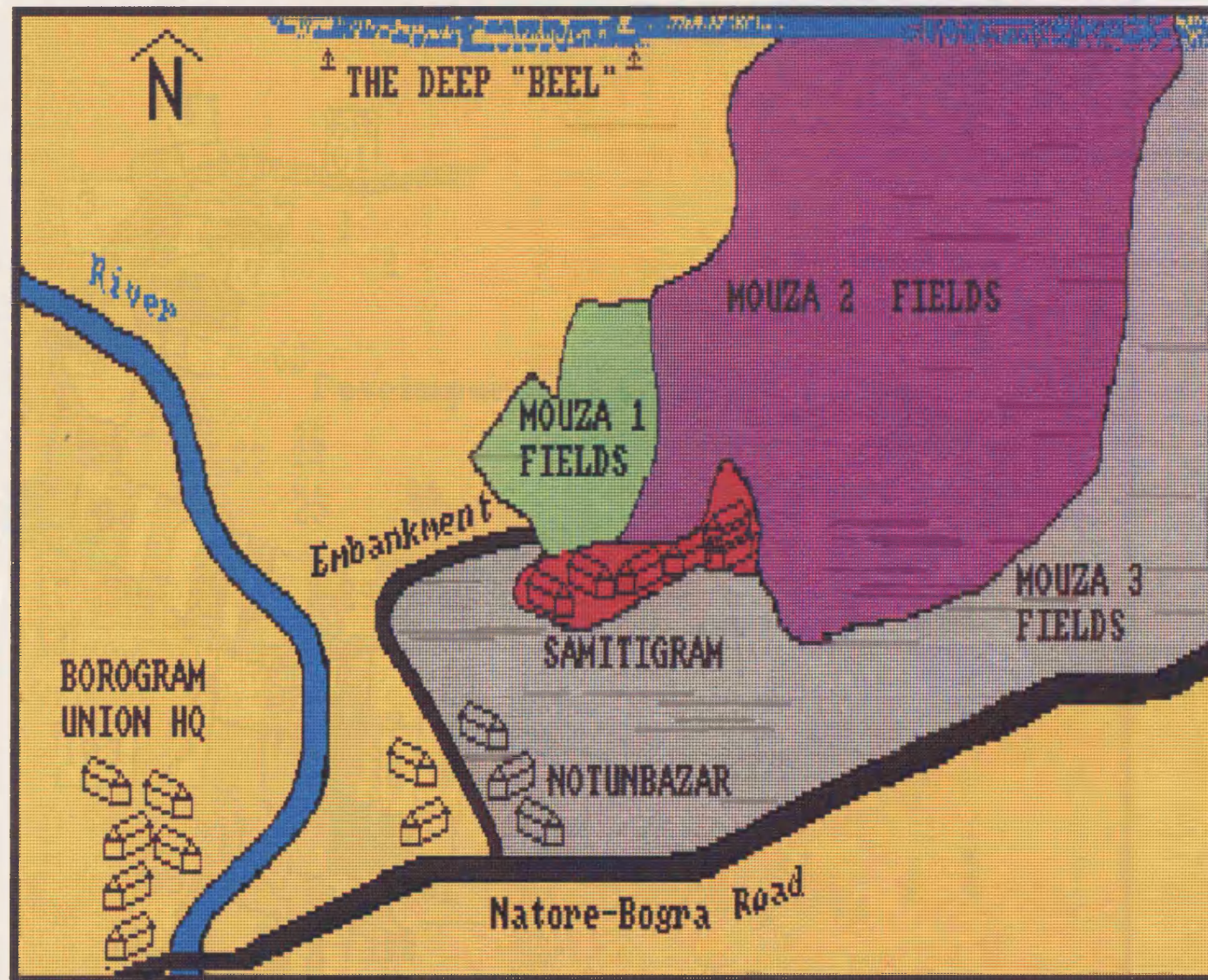
Singra has a large percentage of low land ⁵⁾. This land dries up later and thus needs less water per irrigation season. This means that pumping costs are lower per unit of land and command areas can be larger than on higher land.

III.2 The Main Research Village

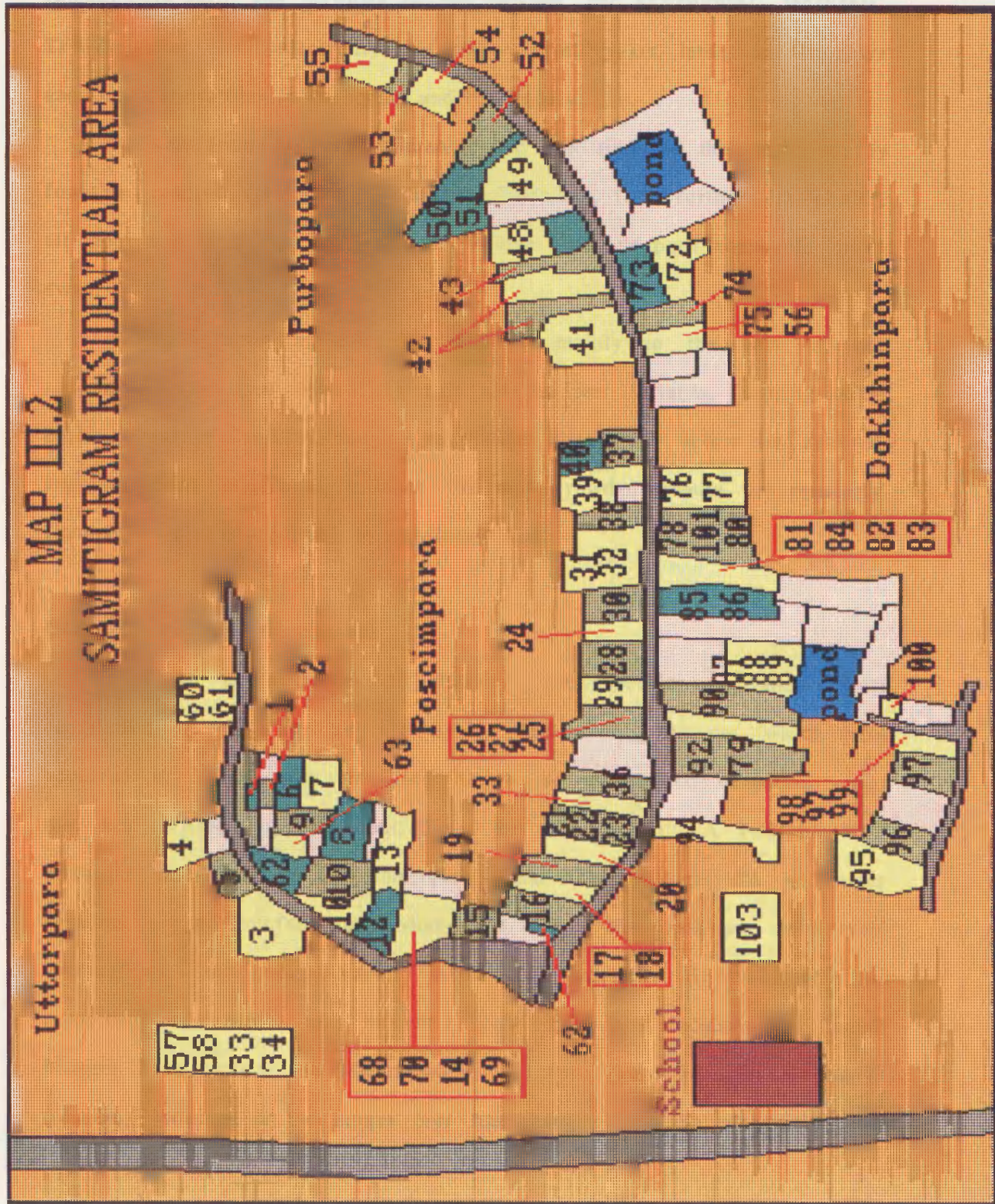
The village, Samitigram lies about a mile from the metalled road and the *union* headquarters Borogram. It is connected to the road by a mud embankment. During the rainy season the embankment becomes impassable. Then, wooden country boats run from the village to the road through flooded fields. Notunbazar, a row of four or five stalls selling tea, biscuits and dry goods, where the embankment joins the road, marks the bus stop. Here, the men rest after they return from their marketing, exchange their news and start out together to return to the village. In recent years, several new shops have been opened here by people from Samitigram, and the road junction acquired its name *notun bazar* (new market). Notunbazar is becoming a new focus of local trading activity as more villagers from Samitigram open shops there.

Samitigram is not a village according to any of the official definitions (e.g. BBS 1974 & 1985 and Land Revenue Statistics). It is located in three *mauzas* (tax revenue villages) and consists of four neighbourhoods (*paras*; see Map III.2). All inhabitants of Samitigram are Muslim and belong to the same *samaj*. Part of one of the *paras* (Uttorpara) is Hindu. The Hindus of Uttorpara are not part of Samitigram in terms of

MAP III. 1 SAMITIGRAM AND ENVIRONMENT



MAP III.2 SAMITIGRAM RESIDENTIAL AREA



peoples' perceptions and the density of economic and social relationships (cf.II.5.3). Among the four *paras*, Purbopara and Poscimpara contain all but one of the richer households of the village whereas Uttorpara and Dokkhinpara have the majority of the landless and agricultural labourers. STW irrigation and electricity arrived several years later in Uttorpara and Dokkhinpara than in Purbopara and Poscimpara.

Samitigram had 103 households at the time of the basic survey for this research. During the year of fieldwork, four further households, all poor and landless, moved to the village and one poor household moved away.

Samitigram's agricultural land is mainly to the east of the residential area (see Map III.1). Like all the *beel* villages, Samitigram is built on raised land. Although population density is below the national average, living conditions in villages are more crowded because the regularly flooded low *beel* is unsuitable as residential land.

III.3 The Crops and the Seasons

There is a sense of stability and security in the annual completion of the agricultural cycle. The actual changes which have occurred in Singra with the introduction of mechanised irrigation over the last fifteen years contradict this impression. A fundamentally different annual cycle now determines rural life. Village life no longer revolves around rainfed *amon* paddy, but around the irrigated *boro* crop. Fluctuations of paddy sales, labour demand, the disbursement and repayment of formal and informal loans and most households' annual budgets have come to be determined by the *boro* crop. Even the timing of (Muslim) weddings in the Singra *beel* has changed from the pleasantly cool

and dry post-*amon* period into the hot and wet period after the *boro* harvest period when households now have more cash available.

New types of agricultural work have appeared with *boro* cultivation:

- field preparation (land levelling and extra ploughing)
- preparation of *boro* seedbeds
- transplantation of *boro* seedlings (the previous main crop *amon* is broadcast)
- fertilizer application and pest control
- more intensive weeding (impossible for deep water *amon*)
- the annual re-excavation of irrigation trenches
- the operation and maintenance of STW engines and pumps

All this has meant more work in Samitigram. Ahmed (1973) estimates that a 93% increase in labour requirements is created with the replacement of a local paddy variety by the HYV IR8, which is one of the common *boro* varieties in Samitigram. Clay & Khan (1977) calculate that if, as on most Samitigram lands, HYV *boro* constitutes an additional rather than a replacement crop, there will be a 143% increase in labour requirements. Clearly, changes in labour requirements due to the introduction of HYV will vary with the amount of labour used for the rainfed crops which serve as a base for the comparison. Also, as noted by Bartsch (1977), the capital used per acre for the cultivation of the same crop may differ between areas. Different rates of increase in labour demand as a result of the introduction of mechanised irrigation are thus due to regional diversities in cropping patterns and cultivation methods. Available research results for Bangladesh show very clearly though that labour requirements increase substantially through HYV cultivation (see Table I.1) and through STWs (see Hamid 1982).

Increases in labour demand and changed seasonal patterns have changed the rhythm of the agricultural year. Between late December and

February the *beel* dries out and new muddy paths appear almost daily between the *boro* seedbeds, the occasional wheat patch and newly transplanted paddy fields. At this time, the fields become dotted with small bamboo and straw huts. These are the shelters for the shallow tubewells and their operators throughout the irrigation season from February to early June. As the *beel* areas have been silting up over recent years and as the region's two main rivers (Atrai and Gurnai) dry up in mid-April to May when water is most crucial for the *boro* crop, most low-lift pumps in the area have gone out of operation over the last five years. Samitigram's main crop (*boro*) has thus come to depend almost exclusively on shallow tubewells. The number of shallow tubewells per acre in Singra is one of the highest in the country (Asaduzzaman, 1984). Mechanised irrigation, first in the form of LLPs and later of STWs, has transformed the village's production and exchange cycles over the last 10-15 years.

In 1978 Qadir et. al. (p. 7) still wrote

Broadcast *amon* is the most commonly grown type of paddy in Singra. ... It is grown in the *beel* areas which are subject to flooding during the monsoon season. The seeds are scattered (broadcast) in April or May before the *beels* begin to flood ... deep water *amon* is not very productive, although the extra straw produced (by the longer stalk M.G.) is of some value. There is little potential for the application of fertilizer as it would simply be washed away by flood water.

In 1986, STW-irrigated high-yield *boro* paddy varieties (locally called 'irri tom', 'irri 76', 'irri 8' and 'chinese') are grown on 75 to 80% of Samitigram lands. On lower land, which dries up later and floods earlier, this has meant a total displacement of the *amon* crop since *boro* pushes the sowing of *amon* too far into the rainy season for the young seedlings to grow out of the water. On slightly higher land, *amon* is

sometimes still sown either after a wheat crop has been harvested in late March, or later in the year after the *boro* harvest in late May to early June. The latter increases the risk of *amon* failure through early monsoon flooding. With STW irrigation, the majority of cultivators now regard *b.amon* as an additional "bonus crop" with low production costs, low yields (24-30 maunds per acre) and a high risk of crop failure whereas irrigated *boro* is the centre of their cultivation strategies. However, *b.amon* does form the mainstay of some poor households' economic strategies (see Kamal IV.2.3). On the whole, it is mainly consumed by the producing households with smaller surpluses sold locally in *hats* (weekly markets) and *bazars*.

The role of irrigated high yield *boro* paddy in the local economy is very different from that of *amon*. While Qadir et al (1978) report a net deficit of rice in the area in 1976, Singra *upazila* has turned into a surplus, rice-exporting area over the last ten years. Irrigated *boro* has taken over the agricultural cycle and now determines most household budget allocations over the year. Land buying and selling transactions tend to plummet when the *boro* crop cycle starts and money is needed to finance cultivation and to pick up after the harvest in June and July when crops have been sold and cash is available. *Boro* seedbeds are prepared in November and December as soon as sufficient land has dried up. During this time, the cultivating households apply for formal cultivation credit with the banks in the *union* and *upazila* headquarters and through the Singra BRDB-KSS system to finance the transplanting, weeding, irrigation and harvesting costs of next year's *boro* crop.

Boro cultivation has further monetised agricultural production. As a result of an almost six-fold increase in cash cultivation costs for *boro* compared with *amon* (cf. Tables V.13 and V.14), cultivators' credit

needs have therefore increased drastically. Cultivation loans from the banks have become part of the annual cycle. In December, before the *boro* is transplanted, the farmers work out their credit applications. Until deep into the night KSS meetings draw up bank applications and allocate loans to members. The KSS managers then spend days in the *upazila* offices of the BRDB in order to lobby for their groups' loan applications. Wealthier household heads flock to the district town in order to get photos for their individual bank loan applications for which they are busy conducting negotiations with the local bank manager.

Transplantation of the *boro* seedlings takes place when the sun has dried the flooded fields to the right consistency of mud. *Boro* transplantation is organised in various ways. Groups of women or small boys are employed to pull up the rice seedlings. The seedlings are then planted into the ploughed fields by adult male labour groups (*dols*, see V.3.1.1). Transplantation is also often carried out by households practising labour exchange (*gata*, see V.3.1.4), a custom carried over from the sowing and harvesting of *amon* in the pre-irrigation period. Wealthier households with larger landholdings combine hired labour with household labour within the *gata* labour exchange system or hire a labour group.

Transplantation is staggered over several weeks in accordance with paddy varieties and with the cultivation timetable of individual farms. Although irrigation command areas now play a decisive role for agricultural production decisions, the individual cultivator household in Samitigram still makes cultivation decisions in line with the constraints and objectives of the farm unit. In other areas of Bangladesh, such as Bogra ⁶⁾, STW owners' control over water has conveyed control over the production decisions of cultivator households ⁷⁾.

As soon as the *boro* seedlings are transplanted, the irrigation season begins. Pumps are repaired and new pump shelters are built in the rapidly drying fields, drains are repaired, electricity lines, where they exist, are reconnected to pumps, pump operators are employed and the pumps are brought from the houses and sited in the fields.

All transplanting is usually finished by the end of February. As the weather gets hotter, the *boro* paddy needs more water. Until the harvest in May to early June, weeding and irrigation are the main agricultural activities. Jute, potatoes, some lentil varieties, mustard seed and sesame seed are the minor crops of larger landowners. Wheat is used as an alternative to winter *boro* paddy on high and intermediate land although the wheat season is somewhat earlier in the year than the *boro* paddy season. Wheat cultivation is only possible on higher land. On lands where wheat cultivation is possible, irrigation groups (see III.5) tend to break up more easily than on low land where the absence of irrigation facilities within the command area of a STW makes cultivation impossible when water from irrigated plots interferes with unirrigated plots.

The *boro* harvest from May till early June is a time of extreme heat and hard work. The village fills with groups of migrant labourers (*dols*) from areas of the country with different cropping cycles (e.g. Kusthia where sugar cane is the main crop). Migrant labourers clamber off the tops of buses and trains in the district town and arrive in Notunbazar with *mathals* (big bamboo hats for protection against the sun) on their heads and bundles and sickles in their hands. *Dols* have a leader (*sardar*) who conducts negotiations with prospective employers at the time of the *dols* arrival in Samitigram or some weeks before. Some of the local labour force also form *dols* for the *boro* harvest. Now the women of the

cultivator households in Samitigram have to provide food for up to 30 harvest labourers and at the same time parboil and dry the new paddy before it is sold or taken to the rice mills. Women of non-cultivating labourer households, on the other hand, find themselves with less work.

Paddy trading peaks immediately after the harvest as many cultivators sell to finance their cultivation costs. Richer village households buy paddy now in order to sell it later on during the year at a higher price. Haystacks grow to enormous heights as the new paddy is threshed. At this time of the year, the size of the haystack outside a homestead gives a good indication of household wealth. At the end of the *boro* harvest there is a feast of meat and sweets. Then migrant labourers disburse to their home villages taking with them bags of paddy as their payment. Labour groups often get together to hire a lorry to take home their paddy.

Towards the end of the *boro* harvest, sesame is cut and brought in from the fields. Depending on when the first monsoon rains arrive and on land elevation *amon* is sown between June and July on some of the *boro* land. If the rains arrive early, the young seedlings are in danger of being submerged and spoilt by floods. In a year with a very late monsoon like 1985, additional irrigation water may be required to soften the sun-dried soil in order to sow and maintain the *amon* seedlings until the rains arrive. *Amon* is now only sown on medium and high *beel* land because after the introduction of HYV *boro*, its sowing time has been pushed further into the monsoon so that low *beel* land is usually flooded before the *amon* seedling can take root.

After *amon* is in the ground the village changes gear. An atmosphere of relaxation sets in. This is the time of the year when

married women go to visit their parents' houses as their work load at home is least. Negotiations for the weddings of the year start. Wealthier shopkeepers and traders now hold little feasts of sweets (*halkatas*) for their clients, during which debts, which have accumulated over the year are collected. Men are involved in paddy trading but can often be found in shacks and tea stalls playing cards. The STWs and their shelters have been removed from the fields and stored until the next transplanting of *boro* in January and February. Agricultural work consists primarily of *amon* weeding now. People start to recover their boats from the bottom of pools and tanks to repair them in time for the coming rainy season. There is not much paid work at this time of the year. Construction work on programmes run by the U.S. American organisation CARE provides some employment to the poor and landless. Fishing in the flooded *beel* is the main income source for most of the poor and landless of the village and many village households eat fish from the *beel* at this time of the year. As the climate gets hot and wet, many people suffer from fevers and diarrhoeal diseases. Jute is harvested in late July and August and the smell of retting fills the air for several weeks. Most Samitigram jute is used for home consumption. September and October are the months for handicrafts. Ropes and baskets are made, quilts and pillow covers are sown and embroidered for the winter and fishing nets are made and repaired.

By late October the rains stop. It is time to harvest the *amon*. Depending on how deep the fields are under water, the crop is either cut from a boat or standing in water to the hips or more. The *amon* paddy is brought to the homesteads and the grain separated from the paddy stalk as cattle is driven over it repeatedly. The harvest of the new *amon* and

the arrival of the cool season is celebrated with the preparation of many types of rice cake eaten with the *khejur* date syrup of the cold season.

While the village is waiting for the flood waters to recede, the preparations for the next *boro* season begin. Seeds are removed from storage and sprouted, cultivation loans are applied for and fertilizer is procured. As soon as there is dry land, it is put to use. Very high land is used for onions, garlic, potatoes and water melon. The earliest *boro* seedbeds are also prepared on high land. This gives farmers a choice between vegetable production and an early, and therefore more secure *boro* crop. According to many villagers, Samitigram vegetable production declined as a result.

After the *boro* seedlings have been in the seedbed for two to three weeks they are pulled up and transplanted into the ploughed fields which have reappeared from beneath the flood waters. Gradually the paths in the fields start reappearing and the village becomes accessible by foot again. The wheel has come full circle. An agricultural year has passed.

III.4 Samitigram: Cooperation and Conflict

Samitigram is a small village. Most of the inhabitants are related, and kin relations are part of economic and social relations. However, over the last 15 years a new element has entered economic life. Organised cooperation on a group basis has changed the village's production and exchange relations. My pseudonym for the village, Samitigram, reflects the extraordinarily high incidence of groups (*samitis*) and the way these *samitis* have come to play a major role in village life. As will be shown in VI.2, the distribution of income from

irrigated agriculture has been significantly affected by irrigation groups (*samitis*). Samitigram is locally renowned for its people's cooperation in the pursuit of their economic interests. When questioned about their cooperation, villagers often said that they cooperated in agriculture but fought over everything else.

There was clearly more of an economic than an ideological base to cooperation in groups in Samitigram. There is no other village in the area where groups play as important a role for resource flows as in Samitigram. Chapter VI underlines this through a comparison of Samitigram with seven other villages.

Most Samitigram groups were formally unconstituted, some were officially initiated and supported cooperatives, and some bore more resemblance to joint business ventures. The majority of were formed in the immediate post-independence period between 1971 and 1976. At that time, a generational changeover of the village leadership brought a shift in village political and economic life. Cooperation in groups became a strategy to expand agricultural output and profits whereas earlier, and at the time of the research in the seven villages (see VI), cooperation tended to be maintained only until economic pressures undermined it.

In 1985/6, *samiti* meetings were an integral part of everyday life in the village. Procedures like keeping accounts and writing minutes had become familiar to the younger generation of villagers. Men older than the '*jubok samiti* generation' tended to have less, if any, formal education and thus to play a marginal role in *samiti* meetings. There were about eight '*samiti* office holders' in the village, all men in their early to mid-thirties, relatively well educated (to about class 10) and with one exception from the 'rich' and 'well-off' household category (see Table

IV.1). Managers were sufficiently large in number to exercise mutual control over *samiti* management practices. Despite some recognized misappropriation, the conduct of *samiti* managers tended to be controlled by the fact that other managers, who could not be taken advantage of easily, were members of almost every group.

The link of the *samitis* to resources administered outside the village by state and parastatal organisations, existed through an absentee landowner, Faruque and his wife, resident in the Singra *upazila* headquarters. Faruque is the chairman of the committee, which allocates KSS loans, and his wife is the chair of the larger MSS in Samitigram. Their position in the *upazila* headquarters worked back into Samitigram through connections with people of the *jubok samiti* circle like Saidur (see IV.2.1). They channelled resources from the various parts of the bureaucracy towards the village. In cases of conflict or in order to support one of the numerous *dorkastos* (applications) to a bureaucratic institution, Faruque or his wife were the brokers for many Samitigram households.

Points 1-10 introduce the village's various *samitis* with the exception of the irrigation *samitis*. These are introduced separately in section III.5.

III.4.1 The *Jubok Samiti*

In the late 1960s, the people who are today Samitigram's 'retired rich old men' were the village leaders. Stories about conflict and factional fighting during this time abound. The present village leaders were then at the end of their teens, and most of them attended the secondary school at the union headquarters, Borogram. There was then no embankment between Samitigram and Borogram (see Map III.1). The *Union*

Chairman therefore asked the older secondary school students, many of whom lived in Samitigram, to form a *jubok samiti* (youth cooperative) in order to build an embankment to connect Samitigram and the *union* headquarters. In return, he promised a television. The story goes that the students built the embankment but were refused their reward. Upon this provocation the *jubok samiti* rallied. Descriptions of how the chairman was forced to keep his promise are colourful today. Eventually, half the value of a television was rendered by the chairman. The *jubok samiti* was the first village *samiti* and became the initiator of a number of other groups in Samitigram. This happened in the early seventies, shortly after Bangladesh independence and apparently in the context of a great deal of idealism and drive for change among the youth of the village.

III.4.2 The TV *Samiti*

In order to raise the remaining cost of the television, the *jubok samiti* formed a group in which villagers could acquire a share in the television in return for the right to keep it in their homestead for some period of time at regular intervals throughout the year. Shareholders took turns in keeping the television and everyone in the village goes to watch it in courtyards, under palm trees or in bamboo groves as it makes the rounds through the village houses. The television brought information and impressions to Samitigram which have widened people's perspectives and made them aware of other parts of the world, of alternative ways of life and - in a hazy manner - of issues in current national and world politics.

III.4.3 The Mosque *Samiti*

The *mosque samiti* is the executive committee for the religious community of Samitigram, the *samaj*. The construction of a mosque and of a

madrasah for the village was undertaken by this group. This appears to have had a considerable unifying effect as all the households of Samitigram belong to the same *samaj* (group of Muslim households, which belongs to the same Mosque). Today the mosque has a steady income from its land which is sharecropped in turns by poorer Samitigram villagers, from a fishpond and a number of fruit trees, which were donated to the mosque by wealthier villagers. The mosque holds religious functions and maintains an 'emergency fund' for distressed villagers. The *mosque samiti* fulfils a rudimentary social welfare function for the village. As such it contributes to the atmosphere of relative social harmony, which distinguishes present-day Samitigram from the neighbouring villages.

III.4.4 The School *Samiti*

In 1980, about the time when the children of the original *jubok samiti* members reached school age, the village primary school became a focus of attention. The *school samiti* was formed to monitor teachers' attendance and to buy books and basic equipment. One villager gave some land from which a regular small income went to the school. The *school samiti* activities reflect the new importance education is recognised to have for the economic prospects of a household. The adoption of new cropping technologies and occupational diversification out of agriculture require an educational level beyond that needed for traditional cultivation methods. Access to bureaucratically administered resources requires knowledge of the written and unwritten rules of interaction with bureaucratic institutions and of the techniques for their manipulation. Thus lack of formal education has become a major obstacle to economic improvement in an environment so pervaded by resource flows from the outside that most things are assumed available by *dorkasto* (application)

by the villagers.

III.4.5 The Jute *Samiti*

Saidur, one of the founders of the *jubok samiti* (see IV.2.1) is the chairman of the jute *samiti*, which was formed between eight villages in order to obtain jute loans and seeds from the *upazila* office of the Department of Agricultural Extension (DAE). Although the *samiti* officially covers eight villages, some of the member-villages are not included in anything except the official membership list of the *samiti*. In an investigation of the economic conditions for collective action in South India Wade (1988 p.87) remarks that there is no village-to-village interaction in any field of activity. All the central positions in the *jute samiti* are occupied by people from Samitigram and the agricultural inputs obtained are distributed by two dealers from Samitigram. The *jute samiti* shows the same limits of effective cooperation as Wade's study. Households from other villages are outside the boundaries where trust and common interests are the basis of economic cooperation. The exclusion of households from other villages is recounted by Samitigram leaders with the same degree of satisfaction and pride as the intra-village cooperation of Samitigram groups. It appears that cooperation or collective action are only feasible at a very localised level within the moral and interactional boundaries of the immediate community, *samaj* or village. Beyond the confines of the village, Bailey's comment (1966 in Shanin 1984 p.308) rings true

Outsiders cannot effectively ask for cooperation from the peasants... to the villagers this seems either a joke or something to be very worried about, as a football player would be if he heard himself being urged on and urged to cooperate by the captain of the opposing team.

The jute *samiti* demonstrates how new cultivation technologies change interactional principles within the confines of old interactional boundaries.

III.4.6 The Credit *Samiti*

The *credit samiti* has had a major impact on the village's production structure and its exchange relations. It was started in 1980 with 37 members who all made a weekly deposit of ten Taka. When savings reached 10,000 Taka, a fixed deposit bank account was opened with the local commercial bank. Now, loans on the deposited savings are taken out annually. These loans are recycled to Samitigram villagers at a reported 30 to 35% interest and to group members at 25% interest for the *boro* season without collateral requirements. *Credit samiti* profits are then deposited in the bank and in the following year an even greater loan is recycled to the villagers.

Loans from the *credit samiti* have enabled a number of cultivators to engage in irrigated cultivation. Other households, some of them landless, have received business loans. The *credit samiti's* loan recovery rates are 100% as I found out in the process of teaching this *samiti's* manager how to calculate the group's annual profits. The influence of the *jubok samiti*, which was described as "guaranteeing" villagers' repayment of dues to other groups such as the irrigation *samitis*, appeared to prevent defaults. The *samiti* was also called *samajkolen samiti* (social welfare group) in the village. This may exaggerate its actual effect on the poorer sections of the village population. Nonetheless the economic strategies of many landless and land-poor households crucially depended on loans from the *credit samiti*. Despite the *credit samiti*, usurious 100-230% p.a. interest loans, which

previously were the only access to finance for small cultivators, still constituted an element of economic and social control in the hands of the wealthy. Those in control of the credit *samiti* in the village tended to use their position as a source of income and influence and also continued to pursue individual usurious lending. The credit *samiti* did, however, create a new resource for a number of poorer households and enabled them to engage in irrigated cultivation (c.f. IV.2.3).

In 1986, the credit *samiti* made a 32% profit on its loan operations and increased its assets to Taka 40,000. Members planned to buy a bus and run a service from the road junction at Notunbazar to the district and *upazila* towns in a few years' time when assets are large enough. This idea was adopted from the example of some Comilla KSS about which some rumours got to Samitigram via a well-respected neighbouring villager.

III.4.7 The *Krishi Samabaya Samitis* (KSS)

The KSS (Farmers' Cooperatives) are village farmer associations supported by the BRDB. Most Bangladeshi villages have at least one KSS. There were KSS in Samitigram in the early 70s under the leadership of the prior generation of village leaders. These KSSs were defunct in 1986. One member of the present *jubok samiti* leadership commented laughingly:

"They haven't repaid their loans yet. They are not able to do anything."

The four KSS in the village today were mainly involved in obtaining cultivation loans and collecting dues from members after the harvest. The managers of the KSSs were all members of the *jubok samiti* and cooperate closely in most agricultural matters and in running the KSSs. The KSSs appeared to constitute a considerable material resource for their leaders

in various legal and illegal ways. This is generally known and tolerated in Samitigram.

III.4.8 The *Mahila Samabaya Samitis* (MSS)

There are two MSSs (Women's Cooperatives) in Samitigram (MSS1 and MSS 2). Like the KSSs they have a Chair'man', a manager and several directors. The first MSS in Samitigram was formed in 1973. Its main function is to obtain loans for its members. MSS1 had 90 members. Membership applications from further women were refused so that in 1983 a second MSS was formed. MSS 2 had 30 members of which some members and the chairwoman were Hindu. The women received loans officially intended for poultry raising. However, almost all of these loans were used for other purposes by the MSS women's husbands. Some poorer households' cultivation activities depend on the MSS loans. Most MSS loans were used by the male household members but some of the women from wealthier households did use them for poultry business and to lend to poorer households at higher interest rates.

Two or three of the MSS officeholders went to the *upazila* headquarters every week in order to attend meetings and receive information on health, family planning and household production.

III.4.9 The *Pukur* Groups

At least two ponds on Samitigram lands were owned by groups. One pond was owned by six 'well-off' and 'rich' households. About half this pond's annual proceeds from fish-breeding were given to the mosque and the remainder distributed among the pond owners. One of the major bathing and washing ponds for the village was owned by a group of 12 households. In 1986 this pond was re-excavated and new concrete steps down to the water were constructed. The cost for this work was borne by the richer

households among those who owned a share in the pond.

The mere fact that ponds have several owners in a country as densely populated as Bangladesh is not remarkable. The cooperation between people in Samitigram to maintain and use ponds productively for fish breeding is. It is one feature of the present predominance of *samiti* activities in the village and an example of how Samitigram groups work to increase both productivity and distributional equity in comparison with no-group situations (see VI.2).

III.4.10 The Paddy Trading Group

In the early 1980s, four 'well-off' households of Samitigram and two of Borogram *union* headquarters formed a business association in order to engage in paddy trading. Sometimes group members sell their own crops and those of other villagers to long-distance traders who come to the road junction with their lorries. At other times they rent lorries and take their rice to be processed in a Natore rice mill and then to other parts of the country where produce prices are higher. Through the formation of the paddy trading group, some Samitigram households extended their income sources beyond cultivation and beyond the village into the towns and into other areas of the country. They have linked into transport networks and national systems of paddy price information and have established contacts to areas which were far beyond their horizon only a few years ago. A households' involvement into these widening networks is influenced by its class position. However, not only class position but also a mixture of personality traits and education affect the degree and economic success of a household's use of wider networks.

III.5 Irrigation in Samitigram

III.5.1 History and Present Context

Traditional irrigation devices, such as the *doon* (canoe-shaped water lifting instrument) and the *seti* (swing-bucket) have been used in Samitigram for many generations to irrigate winter vegetables and local variety *boro* paddy on low land. Today, these traditional irrigation devices only remain in use on one piece of Samitigram land (STW No.14, Map III.3), where a STW is sited but its owner, who is from another village, refuses to sell water to other parties.

The first mechanical irrigation device in Samitigram was a LLP in 1964. Soon after inception, the irrigation group around this LLP quarrelled and broke up, and LLP irrigation ceased. For a few years there was no further mechanical irrigation in the village. In the late sixties, STWs started appearing under private ownership. The first STWs in Samitigram were bought privately "from the *bazar*" by a few wealthier people before any of the large government and donor schemes for the distribution of STW equipment had started (cf. I.4.3).

Today, from the point of view of the Samitigram villager, there are four sources of STWs. The offices of the BADC in Singra *upazila* headquarters, the BRDB, the private STW dealers and agents, and the second-hand market.

Samitigram villagers were acquiring STWs from town-based private dealers and agents at least 5 years before official agencies made the equipment available in Singra. Since the mid-seventies and during the attempt to privatise the provision of agricultural inputs over the last 5-6 years, the BADC has become a major source of supply.

Another way of obtaining STWs is through the BRDB in Singra,

which operates the IDA 1147 programme under which village farmers' associations (KSS) can obtain STWs through a complicated procedure of application, verification, sanctioning and eventual delivery, which involves the KSS manager, BRDB *upazila* level staff, at least two bank officials and a private equipment supplier.

The majority of farmers and irrigation groups arranged a bank loan with the BKB and purchased a STW from a private supplier. Elaborate marketing networks, which reach down to the village and field (see VII.3), and assistance to the farmer with loan application procedures distinguish Singra's commercial STW suppliers from the public agencies.

Whether acquired through BRDB, BADC or directly from a commercial supplier with a bank loan, the supply of new STWs always involved bureaucratised, non-market access conditions for the villager. This is not the case for the second-hand market which operates on a cash basis. In recent years, the secondhand market has expanded partly as a result of increasing default rates on bank STW loans. Although obviously difficult to trace in individual cases, the practice of acquiring a STW through a bank loan, reselling it and defaulting on the loan was clearly a common method of raising finance for households with access to bank loans (see also V.2).

III.5.2 Command Area Differences

Every STW irrigator's land forms part of a command area. There were important differences between the 31 STW command areas ⁹⁾ around Samitigram in terms of productivity and distributional implications. Map III.3 shows all 31 command areas on Samitigram lands and conveys an impression of the density of irrigation in the village (agricultural land irrigated). At least 75% to 80% of the village's agricultural lands were

under STW irrigation.

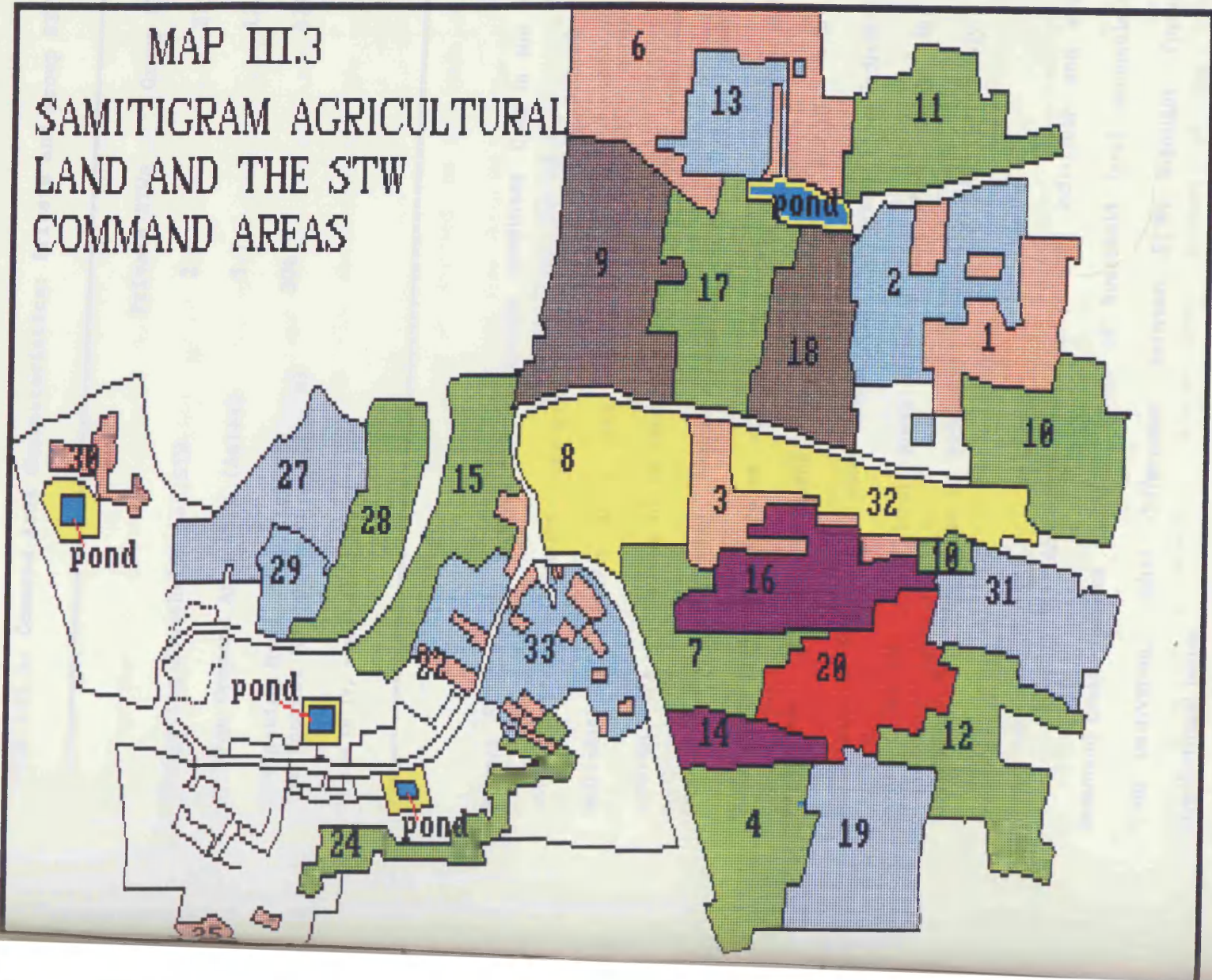
Of the total of 103 surveyed households in Samitigram, 96 were involved in STW irrigation as landowners or tenants in the surveyed command areas. The households not involved were either landless labourers without own cattle or female-headed households where cultivation had passed entirely into the hands of a male relative.

There were 25 irrigation groups and 6 privately owned STWs on village lands. As shown throughout the thesis, the distinction between STW groups and individually owned STWs is the most important for the productivity and distributional implications of STW irrigated cultivation.

Originally, STW irrigation in Samitigram had started on the basis of individual STW ownership. In 1985, the five individually owned STWs belonged to the members of the top two household categories (the 'rich' and the 'well-off'; see Table IV.1). STW owning households were also involved in irrigation groups but tended to have consolidated a large amount of land around their own STW. Individually owned STWs irrigated mainly or even exclusively the land of the STW owner. If water was sold, the recipients were either rich kin or poor households for whom irrigation formed part of a multi-stranded patronage relationship with the wealthier STW owner. The richest household of Samitigram (Malik IV.2.1) refused to sell water when the formation of irrigation groups lowered Samitigram water charges to between 20% and 60% of those in the surrounding area.

Table III.2 indicates the different effects of Samitigram's irrigation groups and individually owned STWs. Private command areas were considerably smaller than group command areas and served fewer and wealthier households. Poorer households who did receive water from

MAP III.3
SAMITIGRAM AGRICULTURAL
LAND AND THE STW
COMMAND AREAS



In 1989, 47% (59) of Samitigram STW were operated by...

TABLE III.1: Command Area Characteristics: Private and Group STWs

	Private STWs	Group STWs
Irrigating Households per STW	2	21
Average Command Area Size (Acres)	5.7	12.4
Irrigating Households from the two Poorest Household Categories a)	30%	47%

a) see Ch IV, especially Table IV.1

private STWs usually enjoyed less favourable conditions than in the group command areas. Irrigation charges were higher and agreements with individual STW owners of a very temporary and arbitrary nature. In contrast, the membership of an irrigation group was stable over time. The fact that the distributional impact of private STWs is less regressive in Samitigram than in the seven villages (see VI) is to a large extent attributable to the influence of the irrigation groups. With the appearance of the groups, water prices even for water from individually owned STWs fell to a level lower than in any other village in the surrounding *beel* and access to irrigation water increased particularly for poorer households.

Although the distinction between private individual and group command areas remains major in terms of household level accumulation from cultivation, other differences between STWs highlight further distributional issues.

In 1986, 61% (19) of Samitigram's STWs were operated by

electrical pumps. At 1986 prices, electrical STWs operated at half the pumping costs of diesel STWs in Samitigram. When asked about the most important distinction between command areas, the majority of cultivators mentioned the cost difference between electricity and diesel. Diesel pumps were regarded as a second choice by all interviewees. Operation and maintenance costs are higher, the carrying of fuel from the *bazar* to the fields is tedious and time-consuming, and locally available supplies of fuel tended to be of inferior quality thus shortening the life span of the diesel engine.

Electricity lines in Samitigram concentrated on the lands of the two richer *paras*, Purbopara and Poscimpara (see Map III.2). The lands of the poorest *para*, Uttorpara, were not connected. During a survey of the impact of electrification which was conducted during my own fieldwork and which covered Samitigram (see Timberg, July 1986), village interviewees constantly asserted that the most striking improvements due to electrification lie in the irrigation field. The construction of better housing, the purchase of radios, bicycles, watches and even televisions was attributed to the impact of electrification on returns from agriculture. Investments into new income sources such as shops and fish breeding ponds were also reported as post-electrification results.

However, cross-research interference may have somewhat overemphasized the electrification issue in interviewees' responses. Also the direction of the cause - effect relationship is unclear. Irrigation and electricity may have occurred later in Uttorpara because it was a poorer area; or Uttorpara is poorer today because of the later introduction of these productivity-enhancing innovations. Either way, it is clear that the presence of electricity lines conveys material advantages

on to the irrigator and that these accrue predominantly to the lands of wealthier households in Samitigram.

The average command area of diesel driven STWs was 8.97 acres while electric STWs had an average command area of 10.77 acres. All the larger command areas in the village had electric pumps. Furthermore, land connected to electricity lines appeared to be more intensively irrigated 12) than unconnected land, which had to rely on diesel pumps only. All the command areas which suffered reductions in size or the total breakdown of the irrigation group were irrigated by diesel-powered engines.

III.5.3 The Shallow Tubewell Groups

The formation of irrigation groups was part of the general drive towards group-based economic activities in Samitigram. After some wealthy villagers had used STWs on an individual basis, the landowners in the potential command area of private STWs started to form groups shortly after 1971. STW owners sold their wells to these groups. This happened at the initiative of the *jubok samiti*, the members of which were the first STW owners to sell their equipment to groups (e.g. Saidur, IV.2.1). Later, the owners of other unirrigated blocks of land also formed groups and bought STWs. Some of these group STWs were bought for cash on the second hand market, but most were obtained with a BKB bank loan in the name of one group member but repaid by the whole group in annual instalments.

Although legally, group ownership of these STWs is insecure at best, Samitigram villagers had no doubts about its *de facto* validity. There was no strong tendency for richer households to obtain group loans in their name. In one case, a rather poor household mortgaged land to the bank for a group loan. The son of this household was then employed as

pump operator by the group.

It is important to note that Samitigram's irrigation groups were privately initiated and not assisted in their operation by any external state institution, foreign donor or NGO. Wade's (1988b p.107) comment that to the state institutions which have internal sanction mechanisms only, are invisible, applies fully to the Samitigram case.

Samitigram groups evolved over time and remain flexible in functions and procedures. Rules are devised and altered in meetings as problems arise. This stands in contrast to externally initiated "water-users groups where constitutions and regulations tend to be developed and introduced by outsiders. In Samitigram, irrigation groups members argued about and took votes on procedures such as the keeping and signing of minutes and the charging of interest on overdue payments. These procedures were thus understood and backed by group members.

Although groups had no formal constitutions, the rules by which they operated could be traced in the minute book which many groups had maintained since their inception. Group meetings decided on issues such as who is employed as their STW operator, on the operator's salary, on the annual instalments to be repaid to the bank by the landowner/group members and on the water fee which is payable by owner cultivators and tenants.

Group command areas were irrigated by rotation through a network of earth trenches (drains) excavated by group members or hired labour at the beginning of the irrigation season in February/March when paddy seedlings are transplanted into the fields. The rotational system largely avoided 'tailender problems' and achieved relatively equal water distribution between command area plots. A STW operator (locally called

"driver") is employed from mid-February to June to run the pump, distribute water between command area plots and guard the equipment at night.

Cultivators (owner-cultivators and tenants) paid for irrigation water on a seasonal basis according to irrigated land area. For STWs not yet paid for, group members (owner cultivators and landlords) paid an additional seasonal capital instalment.

Groups managers kept accounts, called and led group meetings and maintained external connections for the group such as with the electricity company and with dealers of spare parts and mechanics. The village's 25 irrigation groups were managed by a total of 13 people. All group managers belonged to the top two household categories (see Table IV.1) and managed between one and four groups each. The majority of irrigation group managers belonged to the circle of early *jubok samiti* founders (see III.4.1). Two irrigation groups broke up during the fieldwork period and one manager lost his position. None of the managers of these failed groups were part of the *jubok samiti* whereas all successful group managers were.

The group manager has considerable power to decide which land to include in the command area. Although group command areas were larger than private command areas, and although there was a significantly larger percentage of poorer households in group command areas than in private command areas (see Table III.2), there were some water access problems for poorer cultivators. If water runs short, such as when in 1986 a late monsoon required initial irrigation of the early *amon* seedlings, many small cultivators did not sow *amon* because they expected to bear the brunt of the water shortage. In one case, an irrigation group manager did

not give water to the land of several poor households in a command area even though the capacity of the STW was not fully used. The irrigation group in question had originally been formed to counteract a rich land-cum-STW-owner's attempts to charge high water prices 10). Now, however, the manager of the 'new' group refused water to several cultivators within the potential command area. His water refusal made the cultivation of those plots less profitable and increased the likelihood of land sale. Due to their greater control over command area composition, STW managers are thus in a better position to buy land in their groups' command areas. They can use the threat of water refusal to deter other prospective buyers. This, and a number of other ways of extracting economic benefit from the position of irrigation group manager (overreporting of costs and of irrigated land of others, underreporting of own irrigated land) made the position of irrigation group manager attractive even though it carried no direct remuneration.

There were a number of differences between the 25 group command areas in the village. The socio-economic composition of an irrigation group influenced the type of group management and the distribution of income from irrigated cultivation. This was most clearly revealed by two groups (Nos 1 & 6, Map III.3) which were managed by the richest household in the village. The membership of these 'pseudo-groups' consisted mainly of sharecroppers and poorer cultivators with little land, many of whom depended on Malik's household. These groups rarely held meetings, and it was common knowledge that the manager misappropriated the members' bank loan repayments. Sharecroppers were forced to pay not only the water fee but also instalments for the STWs although this contravened accepted group regulations. Multiple links of power and dependency connected group

manager and cultivators in these two command areas. Many sharecropped in the manager's land in the command area or elsewhere, were employed by the manager's household or in debt to them. As a result, members were hardly ever able to insist on the implementation of group rules. These two 'pseudogroups' directly reproduced and enforced existing relations of domination and dependency.

In contrast, irrigation groups with a more even internal distribution of wealth or formal education contained a stronger element of mutual control between manager and group members, some of whom were themselves managers of irrigation or other groups in the village. A relatively high level of education among group members, growing familiarity with group management procedures, and the confidence which the *jubok samiti* generally inspired in the village, maintained groups which appeared to enforce their rules largely irrespective of the socio-economic standing of the individual members concerned. The loan repayment records of these irrigation groups were far above the national average and better than the repayment records of Samitigram's individual, private STW owners ¹¹).

With 75% to 80% of agricultural land under irrigation, irrigable land is running short in Samitigram. The more recently formed irrigation groups (1-3 years) tend to have smaller command areas than the older groups (4-10 years). In 1986, the management of an irrigation group with one of the largest command areas (over 16 acres) initiated the formation of a new group to irrigate some of the original group's land and some previously unirrigated land in the same area. The formation of the new irrigation group was agreed on by the managers of the adjoining command areas and some other *jubok samiti* notables. The majority of landowners in

the command area were merely told afterwards to which STW their land now belonged.

STW groups involved a larger number of landowners, larger command areas and lower water costs than individually owned STWs. Water charges had fallen as a result of group formation in the seventies, so that Samitigram water charges in 1985/86 were only 20% to 60% of those in 'the seven villages' (see Ch.VI) and other villages in the area. Lower irrigation charges are only partly explained by the lower level and higher fertility of the Samitigram agricultural lands. Although Samitigram lands required less water and yielded more crops than most of the surrounding *beel* lands, examples like that of Malik's failure to sell water at inflated charges (IV.2.1 point 10) show that the irrigation groups have clearly reduced the scope for private STW owners in Samitigram to charge extractive water rates. In contrast, in villages with individual STW ownership (cf. Baluabasua VI.1) private STW owners were able to inflate water charges to and beyond the point where irrigated cultivation remained profitable to water purchasers. In Samitigram, the availability of water through irrigation groups reduced such extractive practices.

Irrigation groups influenced the distribution of direct gains from irrigated cultivation to the advantage of poorer cultivators. The groups reduced the extractive power of the rich STW owners and thus gave poorer cultivators some access to new economic opportunities. The rise of a 'new elite' of younger village leaders, who have control over groups is a concurrent development. These young leaders' reliance on village groups partly arises from a generational conflict for leadership. From this arose a new form of patronage which aggregates clients in groups and which is therefore more adapted to the requirements of new agricultural

technology, production methods and to an expanded population. The groups of Samitigram and the attendant socio-economic changes may indicate a new way of adapting socio-economic incorporation mechanisms to a changed technological and demographic context. This stands in contrast to the impoverishing effect of market mechanisms in situations such as in the seven villages (see Ch VI) where diverging degrees of power for different rural classes are enforced by the introduction of a new technology.

NOTES

- 1) Cropped area per annum / cultivated land.
- 2) All statistical information above from Bangladesh Bureau of Statistics (BBS), January 1985 and May 1986.
- 3) Asaduzzaman, 1984.
- 4) Master Plan Office (MPO), December 1985.
- 5) Low land is flooded to more than 6 feet during the rainy season.
- 6) Personal communication during village fieldwork from H.P. Müller P.h.D. Göttingen, forthcoming.
- 7) The question of the 'viability of the family farm' under new production conditions in rural Bangladesh was first raised by Wood (1986); see also Lewis (forthcoming) on the new networks around a number of agricultural technologies.
- 8) Also found in ongoing research by Jabbar (1988 May 6 University of Bath Seminar)
- 9) 31 STWs (Nos 1-4; 6-20 & 22-33 on Map III.3) were surveyed in Samitigram.
- 10) No.32 Map III.3; see the structure of the C.A., complementary to the rich private C.A. (no 22) which results.
- 11) Information from union and upazila level bank managers.
- 12) Irrigation intensity is here understood as total irrigated land/total cultivated land.

CHAPTER IV: VILLAGE PEOPLE

IV.1 Household Categories

The household categories used here to distinguish Samitigram households attempt to capture the essential distinctions between village households in the eyes of household members. Section IV.2 introduces 11 village households using 9 points identified as crucial distinctions between households (see Table IV.1). This is done in order to achieve comparability between household situations, and to demonstrate the rationale behind my household categorisation. The case studies are referred to in the discussion of agrarian relations throughout the rest of the thesis in order to make use of the contextual knowledge gained by the reader. This should not be misunderstood as a limitation of the argument to the case studies.

IV.1.1 The 'Rich'

Of 103 surveyed households, 5 (4.9%) were 'rich'. Families with several married sons and their children resided in the same homestead. Household division before the death of the father of the extended family is rare. The household is headed by the oldest male although his eldest son may eventually take the decisions in the household and represent it to the outside. Land is registered in the names of several household members including senior women so that land taxes are avoided and access to bank loans is increased. Marriage links are formed with the government bureaucracy and the business circles of the nearby towns. Families often include a *haji* (Muslim devotee who has undertaken the pilgrimage to Mecca).

Families live in large mud and brick buildings with tiled or tin roofs. A number of cattle (water buffaloes, cows and oxen) is owned and the residential area contains several animal sheds as well as storage space for crops. A variety of consumer durables (bicycle, watches, television, electric fan, radio cassette)

and a STW or a small LLP are owned.

'Rich' households buy land annually, often during the post-*boro* harvest period for the winter *boro* paddy. All households reported that they were better off with more land than under the previous household head. Some land is sharecropped out to a number of local poorer tenants in small plots. These tenants usually rely on the landowner in several ways such as for credit, mortgages, contacts to government bureaucracy or employment.

At least one household member, normally male and from the younger generation, is educated up to SSC standard or beyond. For younger sons the Bachelor of Commerce acquired at Rajshahi University often leads to business activities or a job in local government. Pressure on land is thus reduced and important links to business and state are formed. Agriculture is a main occupation in which the household head or his oldest son usually takes a supervisory function while also occasionally providing his own labour in the fields. 'The Rich' are also usually engaged in some trading such as in a roadside shop, paddy trading, fish farming and sale. This may employ another one or two of the sons of an extended family. While the land keeps the family together in one economic unit, business and government service prevent the exclusive reliance on land as an income source.

The 'rich' own a total of 114.8 acres (34 % of operated land) but only operate 81.5 acres (22% of operated land). Average owned land per household is 22.97 acres but only 16.3 acres are operated. The average effective landholding (see II.4) per household is 19.4 acres and the per head effective landholding varies between 0.74 and 1.90 acres with an average of 1.57 acres per household member.

Households employ at least one all-year-round permanent labourer and several seasonal labourers for agricultural work. Day labourers are called in for

specific extra tasks in the fields or the homestead. Female labour may be employed for household work and post-harvest processing. Migrant labour gangs from other areas of the country are employed to harvest the winter *boro* in May to June.

Bank loans are readily accessible to the 'rich' and are taken up eagerly. Some of these bank loans may be recycled as short-term high interest loans to the poorer households of the village. Closely related poorer village households may be supported with temporary interest-free loans.

The political affiliations of the 'rich' tend to be well-known and extend to a group of poorer followers. Frequent business is conducted in government offices at *union* and *upazila* level. 'The rich' (and some of the 'well-off', see below) are the window to the wider world for the rest of the village in more than one sense. They provide the point of contact to the officers of government and parastatal organisations such as the BADC, BRDB, DAE and the banks. They bring, or at their choice do not bring, information about opportunities and developments in the rest of the country to the village. They hold key positions in the local political structure such as that of *union parishad* member or chairman.

IV.1.2 The 'Well-Off'

25% of households (26 households) in Samitigram were 'well-off'. The prominent feature of these households is the variety of occupations and income sources through which any one household maintains itself.

There is no established household structure. Extended families may live together and keep joint accounts or families may be nuclear both economically and residentially. Often one or several sons have separated from their parental household and sharecrop their father's land. Although brick houses are rare, homesteads are substantial. A family usually owns enough cattle for cultivation

purposes, a country boat and maybe a cart or a bicycle. Assets necessary for the non-cultivation occupations of the household such as for example a shop, a sewing machine or tools belong to the household.

Most of the 'well-off' households take some land (0.3-0.6 acres) in mortgage while a few also mortgage out some land to raise money to buy other land.

64% of 'well-off' household heads stated that their fathers had had more land than themselves. Of these 73% reported to have bought land during their own time as household head and 33% reported to have sold land (land sale and purchase categories are not exclusive). A total of 62% of the 'well-off' stated to have bought land under the current household head and not sold any. Only just over 10% of the 'well-off' (3 households) had sold land but not bought any. Among these, one household sold land in order to invest in a shop for electrical spare parts. Another main reason for land sale in this category were crop failures before the introduction of irrigated winter *boro* (on this see also III.3).

Households usually have one male family member educated up to SSC level.

The occupational structure of the 'well-off' is the most varied among the four household types. One household combined 6 different income-generation occupations inside it. (farming, biscuit and tea stall, village defence force leader, mosque caller, date palm juice sale, *madrassah* teacher). Other common non-farming occupations among the 'well-off' are STW operator, paddy parboiling and trading, mechanic, tailor and storekeeper (dry goods, electrical spare parts). Due to these multiple occupations there is no fixed pattern to the relation between operated and owned land and the crop basis among the 'well-off'. A household may derive a major part of its income from activities other than cultivation and sharecrop out some of its cultivable land or it may concentrate on

cultivation and sharecrop in land in addition to owned household land.

The 'well-off' own 142.23 acres, (42% of operated land) and operate 152.8 acres (41% of operated land). Their average owned area is 5.47 acres, operated area 5.87 acres and the average effective landholding is 5.73 acres. As outlined above these values hide large differences as some households either sharecrop out most or all of their land and others make the sharecropping-in of large amounts of land one of their economic strategies (see also V.3). The per head crop basis for the 'well-off' varies between 0.3 and 1.55 acres with an average of 0.72 acres per head.

The 'well-off' employ seasonal workers and family labour for *amon* cultivation and pre-harvest *boro* cultivation activities. During the rainy season resident labour is very rarely employed. Migrant labour gangs are hired to harvest the *boro*. Female labour is not hired for post-harvest crop processing but done by the women in the household.

Formal loans are taken for cultivation purposes as well as for recycling to the poorer households of Samitigram. Several households engage in high-interest moneylending.

The *union parishad* member is among the 'well-off'. Several other household heads from this category are among the usual faces in the *union* and *upazila* headquarters. An active but not necessarily leading role in local politics based on an understanding of access strategies to the resources disbursed by the state perhaps best describes the role of these households in regional politics.

IV.1.3 The 'Coping'

30% (31) of households in Samitigram were in this category, best described as "those who can just make ends meet". Nuclear households reside and keep accounts separately. Only 2 of the 31 households 'coping' live as joint families. Usually a son's marriage is soon followed by the division of the family

into nuclear residential and economic units.

'Coping' households live in mud houses in contrast to the prominence of brick among the wealthier and of straw and jute stick constructions among the poorer categories, with often only one or two rooms. 84% of the 'coping' (all but 5 households) own a country boat and a *hal*. Of those households who do not own a *hal* one is headed by a woman who does not cultivate herself, one household bought fishing equipment with the proceeds of a land sale and two sold their *hal* to redeem some mortgaged land. One household had just taken a bank loan to purchase a *hal*.

67% of 'coping' household heads stated that they had less land now than in the previous generation, 30% stated that they had gained land over the last generation and 2% reported no change. As many as 59% reported having bought land in the last generation but 22% of these were involved in a circular buying and selling process in accordance with the life-cycle of their family (e.g. sale for daughters' weddings or to feed young children, land purchase with received dowry from sons' wedding). 48% of the 'coping' households reported land sales. The main reasons for land sales were floods and consequent food shortages and diseases in the family. The disaccumulation of land over the generations, which is prevalent among households in this category must thus be attributed at least as much to multiple inheritance as to land sales.

When it can be obtained, land is sharecropped-in according to family labour availability. 69% of 'coping' households sharecropped-in land. For some households long-term sharecropping contracts with outsiders (absentee landowners) helped to avoid sale of family labour. Two household heads said they occasionally sold their labour when sharecropping land was not available. The degree of security of a household's sharecropping contracts often indicated a 'coping' household's economic security in general. Households with short-term

sharecropping contracts tended to own and operate less land and were economically more vulnerable. They often sold or mortgaged out their land in order to compensate for lost sharecropping land.

32% of households gave some of their land in mortgage and 29% took some land in mortgage. 39% had no involvement in the mortgage market at the time of fieldwork. With the nuclear family as the standard household type in this category, sharecropping and mortgaging often serve as a means of income redistribution between close relatives. Sons sharecrop the land of their widowed mothers, or sisters mortgage in the land of their poorer brothers and then sharecrop the same land out to them. Among 'coping' households the mortgaging in of land owned by poorer households is desired as an avenue to possible eventual ownership of the land.

Only in one case was a household member in this category educated beyond primary school level. Adult men tend to leave primary school after 1-3 years. Children of these households are often needed as family labour and therefore not sent to school. Generally girls attend school somewhat longer than boys, who are employed to herd cattle or work for wealthier families. In other areas of Bangladesh (compare White, 1987 on Tanore) the restrictions on female labour apply less strongly. As a consequence in those areas young girls of poorer households do not obtain longer periods of primary education than boys.

Outside the rainy season young sons of 'coping' and 'poor' households (see below) often work for richer village households. Grown males are usually engaged in cultivating their own and sharecropped land. During the rainy season household income is often supplemented by fishing. 'Rice business', the purchase of paddy, its husking and resale of the rice is undertaken by a few families (see Chapter VII). There are also two tailors in this category and some STW operators. One household head, an old former teacher, sharecropped out all his land and

relied on sign-painting and the repair of radios, watches and similar for his family's daily income. Agriculture is the main and often the only occupation of this type of 'the coping'. Other income sources have supplementary character. Especially for the households who are annual net purchasers of paddy (48% of category) and have to finance 2-6 months of their family's rice needs, non-cultivation income is an essential supplement.

The 'coping' own a total of 62.44 acres (18% of reported owned land). They operate 97.5 acres (26% of operated land). The average owned land per household is 2.01 acres but 3.15 acres are cultivated. Effective landholding is 3.01 acres, i.e. slightly less than the operated land per household as it reflects the incidence of sharecropping. Per head effective landholding varies between 0.1 and 0.83 acres with an average of 0.42 acres of land per head from which crops are received.

Family labour is relied on for most agricultural operations outside the harvest. Planting and weeding are often undertaken inside the local system of inter-family labour exchange, *gata* (see V.3). During the *boro* harvest, one migrant labour gang harvests several 'Coping' households' land in succession.

Although all households in the category are members of the farmers' cooperatives (KSS) few of them take part in local politics. From an almost violent denial of participation in party politics to the vague reply that 'at election time I might follow a political party' the indications are that political involvement is slight. Four members of the category stated to belong to BNP (Bangladesh National Party).

IV.1.4 The 'Poor'

40% (41) of Samitigram's households were 'poor'. Unable to obtain further residential land or to afford house construction materials, extended families often live in the same homestead (*bari*) but are economically separate. A

widowed mother or a divorced sister may form a separate subunit for cooking and eating but live in the same house as the rest of the family.

Houses are small and made from mud or, among the very poorest, from jute sticks with straw roofs. In slightly better-off households, houses may have tin roofs. The homestead land is not always owned by the household, but may sometimes belong to a richer neighbour or may be *khas* (government) land. Households do not usually own a *hal*, although the renting out of a pair of water buffaloes constituted one household's main income source. Fishing boats, a main income-generating asset, are often rented in from wealthier village households. The monthly cost of this is equivalent to 7 to 10 days' average fishing income.

68% of 'poor' households had not sold any land under the present household head. As 65% also said that there was more land in the household under the previous head it is clear that land sales were not a predominant cause of reduction in sizes of owned holdings among 'the poor'. Multiple subdivisions through inheritance and splitting up of joint families into nuclear households were the main cause of reductions in owned land per 'poor' household. The long-term landless, who had no more land to lose, formed the majority among those 25% of the 'poor' who said that their land situation had not changed over the last generation. Among the 10% who stated that they had more land than in the previous generation, no-one had gained land through cultivation. There were two *ghor jamais* who had received land through their wives, one full-time fisherman and one operator for small diesel surface pumps. All had bought very small plots of land from the proceeds of these occupations. Agricultural land, once lost, is very rarely regained by the 'poor'.

The main reasons for land sale by the 'poor' were food shortage and daughters' weddings. Land was also sold to undertake house repairs and in one case to buy a fishing boat as the household moved out of cultivation as its main

income generation strategy. As indicated above, however, multiple inheritance rather than land sales is the main reason for the reduction of landholding size among 'the poor'

62% of the 'poor' sharecropped-in some land at the time of the survey. Several households reported that they had lost their sharecropping land after the previous season. The ownership of a *hal* was a main precondition to obtain sharecropping land. Many sharecropping contracts were entered between relatives of unequal economic standing. In some cases, a sum of money ("security") was demanded by the landowner in return for the provision of sharecropping land (also noted by Rahman 1986 p.162). Sharecropping contracts were mostly short-term and insecure. Often a sharecropping contract was only one part of a more complex relationship between the owner and cultivator of a piece of land. Among the 'poor' who sharecropped in, 32% of households owned a *hal*. None of those who failed to obtain any sharecropping land owned a *hal*.

One 'poor' household mortgaged in with the proceeds of a small biscuit stall by the road. Those who mortgaged out did so for consumption needs and tended to mortgage their land in small parcels to several different mortgagees over time. This pattern was especially noticeable in households with generally downward economic development.

The great majority of adults were illiterate and children were only sent to school for one or two years if their labour is not required. Boys from the age of about nine were in annual employment with richer village households or earned a small amount of money for cow herding.

All 'poor' households had an annual deficit of paddy consumption over requirements. Many had to buy rice for all or most of the year. Those who are able to eat their own produce for some of the year are forced to purchase paddy or rice during the pre-harvest high-price period. All but one household (who

recently opened a roadside biscuit stall and was probably upwardly mobile through this), sold the labour of their adult males for agricultural work. The very poorest sold female and child labour also.

The income sources of the 'poor' show a high degree of seasonal variation. Fishing in the *beel* for at least part of the year occupies an important place in annual household budgeting. Most of 'the poor' households engage in fishing and fish sale in the local *hats* and *bazars*. Netmaking for sale is also common. The majority of men spend the autumn and cool season (September to January) with occasional day labour in the village (house improvement and construction, digging up of bamboo roots for sale as firewood, the excavation of ponds) or they work for the Food For Work programme and supplement this income by some fishing. The demand for full-time day labour from January onwards when *boro* transplantation begins and agricultural work continues until after the *boro* harvest in early June. 'Poor' women may do occasional work in richer households such as preparing *murri* (puffed rice), cooking for large occasions and crop processing. Only the old women of the poorest households and divorced or widowed women work outside their own homesteads.

The 'poor', 40% of Samitigram households, own a total of 20.06 acres of land. This is less than the 23 acres, which are owned on average by each household of the 'rich' of the village and under 6% of reported owned land. With a total of 41.53 acres the 'poor' operate more than twice the area they own. This reflects the considerable importance of sharecropping-in for 'poor' households. Also, for the 'poor' the difference between effective holding (indicator of income from land) and operated holding (indicator of expenditure on cultivation; see II.5.2) is greatest. Their total effective landholding of 31.25 acres is about 50% less than total operated land. This is caused by the $\frac{1}{3}$ sharecropping arrangements under which over 50% of 'poor' households' operated land was

cultivated. Per head effective landholding varies between 0 and 0.37 acres with an average of 0.11 acres per household member. This is a clear indication that cultivation cannot be the main basis for the 'poor's' survival in Samitigram any more.

Household labour is the mainstay of agricultural production by the 'poor'. The *gata* labour exchange system between families of similar labour endowment is used during the pre-harvest season. Unlike the wealthier categories, 'poor' households did not substitute household labour with hired labour inside the *gata* arrangements. Some of 'the Poor' cultivators shared migrant labour gangs for the *boro* harvest. Others harvested their crops with household labour supplemented by locally hired day labour at peak periods of agricultural activity.

With a recurrent annual paddy deficit and the need for cultivation credit for *boro* cultivation, many 'poor' households are locked into a dependence on consumption and production loans. Most households who have a little land received or had in the past received cultivation loans from the local commercial bank. A greater number received loans from the Farmers' Cooperative (KSS) and especially the Womens' Cooperative (MSS). Formal bank loans are used to cover cultivation costs. A great number of households rely on informal loans from village sources. While some of these loans are no-interest between relatives or friends, most of them involve interest rates of up to 230% per annum. A common practice is to loan 100 Taka in the pre-harvest season and then to demand 1 maund of paddy in return after the harvest three months later which sells for between up to 200 Taka. Another practice is to loan 1 maund of paddy and demand 1½ maunds back three months later (see V.2).

The 'poor' enter the picture of regional politics at election time mainly. They then tend to join the followers of one of the powerful local figures.

Table IV.1: Composite Picture of Household Categories (Samitigram)

<u>THE RICH</u>	<u>THE WELL OFF</u>	<u>THE COPING</u>	<u>THE POOR</u>
1. HOUSEHOLD STRUCTURE			
joint residentially & economically	mixed	nuclear residentially & economically	joint residentially & nuclear economically
2. MAIN ASSETS			
brick house several cattle storage buildings stables shop STW	mud or brick house boat shop cattle	mud house boat	mud or jute stick house
3. LAND			
annual land purchase no sale	frequent land purchase, little sale	land sale and purchase	little land sale or purchase
increase in holding over last generation	increase or decrease in holding over last generation	disaccumulation through inheritance	disaccumulation through inheritance
sharecrop out to large number of tenants	sharecrop in larger plots on longer contracts	sharecrop in household labour	may sharecrop in small plots on short agreements
give mortgages	give and take mortgages	take mortgages for life-cycle needs	take mortgages for consumption
4. EDUCATION			
beyond class 10 often B.A.Commerce	up to class 10	mixed mostly class 1-3	illiterate
5. OCCUPATIONS/INCOME GENERATION			
supervisory agricultural trade local administration & government	multiple agricultural & non-agricultural	agricultural petty trade (fish & paddy) occasional labour	day labour (men & women) child labour fish sale
6. CULTIVATION			
operated land less than owned land	operated land more or less than owned land	operated land more than owned land	operated land more than owned land
e.l a) more than operated land	e.l.more or less than op.land	e.l. more than owned land	e.l.more than owned land
7. LABOUR USE (irrigated cultivation)			
annual & seasonal migrant groups	seasonal family labour exchange migrant groups	family exchange groups	family exchange & day labour
8. CREDIT			
poor repayment of formal loans give high-interest loans	take formal loans for investment & re-lending	dependent on cultivation loans	dependent on cultivation & consumption loans
9. RELATION TO REGIONAL POLITICS			
prominent in local politics	active in local politics	shifting or no allegiances	may join political following

a) e.l. = effective landholding for definition see II.4.3

When asked about their political affiliations more than one householder in this group replied "What is X's party? I support that". Political affiliation is commonly seen as a means to achieve economic benefits.

Table IV.1 summarizes household categories by the nine major characteristics which were worked out as the main distinction between household types. With the help of these nine points a classification of the 103 households in the initial survey of Samitigram was undertaken.

Classification was an ongoing process throughout my fieldwork in the village. It involved countless discussions with the villagers during which I was able to check how relevant my categories were to village concepts. Thus household categories here represent an intermediate research finding and, at the same time, the basis for further, more specific investigations into the role of irrigation. The question of how different composite situations of 'rich', 'well-off', 'coping' and 'poor' interact with the irrigation factor can only be tackled after complex household situations have been identified and reduced to manageable categories.

A few households changed to a different category as I got to know more about them. In borderline cases, where there was no obvious cluster of attributes locating a household into one category, I decided on an eventually intuitive basis. This was the case for 3 households where my information remained incomplete. The great majority of 'poor' households hired out adult male agricultural labour whereas only one or two 'coping' and no 'well-off' and 'rich' households did so. There was also little variation in the type of credit and land market involvement inside categories. Other aspects such as 'assets' (2), 'education' (4) and 'relation to regional politics' (9) formed a continuum across household categories with some intra-category variation but combined into very different opportunity situations for households of different categories.

IV.2 Household Profiles

In the following sections (IV.2.1-5) specific households (case studies) are introduced along the lines of the above household categorisation, analysed for their resource strategies and for the specific role irrigation plays in this.

In order to understand the complexity of factors, which affect the rationale behind a household's economic strategies a more detailed description and analysis of 11 households from the four categories introduced above is given in this section. It outlines the differences between household types and shows how and why an individual household differs from its category in some points (see Table IV.1) without actually falling outside it.

Different types of relationships, such as economic, political and kinship are outlined in their significance for the individual household. Where possible, income sources have been quantified. In order to calculate income from paddy sales the season's average price of Taka 175 was used unless specific information about sales of the household at different points in time throughout the season was available. In cases where information was not available this leads to an underestimate of the profits of larger sellers who are able to speculate, take advantage of seasonal market price fluctuations and sell to government stores at fixed above market prices during the low-price periods. It also overestimates small cultivators' profits who are often forced to sell at very low post-harvest prices to repay loans and finance their cultivation costs and are mostly denied the opportunity to sell to government stores.

This research takes the household level as the smallest unit of analysis. The resource strategies of the household unit and the way the household relates to its socio-economic environment are the prime focus. Although this reflects the male bias of Bangladeshi society and of a lot of research, households are here introduced through their heads who are mostly male. Irrigation in Bangladesh is

part of male territory. It is introduced and executed by men in an environment where women are hardly ever seen. This does not mean that women do not have an effect or are not affected (see White, 1988). But it does mean that the strategies and processes, with which this research is concerned, originate primarily in 'the men's world' (see II.3.1) and are thus introduced.

The household 'story' is first introduced along the nine points which make up the composite picture. Thus it is clarified why the household was considered part of its category. Each case study is complemented by an assessment of how the household situation changed after the introduction of STW irrigation. The case studies of each household category are followed by an analysis of strategies and change among households of the category and of the general effect of this on the village's agrarian structure and political economy.

IV.2.1 The 'Rich': Malik and Saidur

MALIK

1. HOUSEHOLD STRUCTURE

Malik is about 55 years old. He, his wife, three married sons with their wives and children and one young, unmarried daughter form a joint household of 16 members. They live together in one homestead and keep joint accounts for everything.

All of Malik's daughters-in-law come from other villages of houses of lesser wealth than Malik's. One of his own daughters is married into a rich household in a village nearby. Malik irrigates some of his land from the STW owned by his son-in-law's father. One of his daughters is married to an officer of the BADC at the district level in Rajshahi. This connection is much emphasized by the family and the son-in-law often comes to visit as an especially honoured guest.

2. ASSETS

Malik is the richest man in the village. He and his family live in a large brick house, the first of its kind in the village, built only a few years ago. It includes grain storage spaces and a central courtyard around which the rooms for the nuclear families are grouped. There the household life goes on. The women of the household hardly ever leave the compound. The youngest wife, married for three years had not even visited the neighbours yet.

Malik owns two water buffaloes, eight cows and four calves. There are also two sheep, six ducks and a number of chickens in the household. One of the six privately owned and operated STW's on Samitigram land belongs to Malik's family. There is also a bicycle, a radio and a television set and a sewing machine in the household. They opened a dry goods store by the metalled road in 1982. In

1986 there were rumours in the village that Malik was planning to install a rice mill.

3. LAND

With over 44 acres, Malik owns the largest amount of land in Samitigram. The household's per head crop basis is with 5.78 acres also the highest in the village. Malik inherited 28.5 acres from his father about 25 years ago and has bought land almost every year since then. Before the appearance of irrigated HYV *boro* many village households had to sell land if an *amon* crop failed. More often than not it was Malik who bought this land. He never sold any land.

Malik has about 35 sharecroppers from Samitigram and from other villages where he owns land. About 21 of his 44 acres are sharecropped out. His sharecropping contracts with Samitigram households are usually short-term and rarely last longer than one or two years. He sharecrops out small plots of land rarely larger than 0.33 acres (1 *bigha* according to the local unit of measurement). Even where he owns a continuous, larger plot of land, he sharecrops it out to several households in smaller pieces rather than as one plot. Many of Malik's sharecroppers are from poor households and most are connected with him in several other ways, such as employment, kinship, political support.

When questioned about mortgages Malik says: "I don't bother with mortgages. I just buy the land directly." It is known in the village though that during his politically active time he used to give small pieces of his own land in temporary mortgage to poor village households in return for their votes and political support (see Hanif, point 3.).

4. EDUCATION

Malik went to school up to class 8. His youngest son now holds a B.A. Commerce degree and is studying for a Masters degree at the nearest university in Rajshahi town. This son will not return to live in the village but plans to take up government service. The three sons who live in the village have not studied beyond class 10. All the women of the household have less formal education than the men. All the children are sent to school.

5. OCCUPATIONS / INCOME GENERATION

At 55 years of age Malik now spends his days running a *korbiraj* (homoeopathic) practice from one room of his house. He can be found there most of the day either treating people from Samitigram and the surrounding villages or spending his time sewing for his family on their sewing machine. Along with a few other less educated 'rich old men' he retired from local politics several years ago when the *jubok samiti* (see III.4) took over most of the leading roles in the village. His oldest son Ashraf now runs the affairs of the household assisted by the third son and represents the household to the outside. The second son operates the shop by the road which sells dry goods and STW fuel. He does only occasional farming work.

6. CULTIVATION

In 1985/86 Malik cultivated 13 acres of HYV *boro* and sharecropped out at least another 13 acres of *boro* land. With an average yield of 26 maunds per bigha this gave him about 1100 maunds of paddy from own cultivation. A further 500 maunds were received from sharecroppers. About 13 acres of *amon* were also sown from which 400 to 500 maunds of paddy will be harvested if the crop is successful. The household consumes about 150 maunds of paddy annually.

This leaves between 1450 and 1950 maunds of paddy for sale every year. Cultivation costs come to about 1140 Taka per bigha for *boro* and 215 Taka per bigha for *amon* which comes to total cultivation expenses of about 55,000 Taka. Malik can expect a total return of 260,000 to 350,000 Taka from the sale of his paddy. If he stores until the prices rise later in the season he may realize up to 400,000 Taka return. His minimum profit will thus be 200,000 Taka but he may reach up to 350,000 Taka. This is equivalent to the price of 6 - 10 acres of irrigated land. These calculations do not include any paddy that may have been obtained through loan transactions.

On some of his other land Malik grows jute, sesame, wheat and sometimes potatoes and vegetables for home consumption.

7. LABOUR USE

The household employs two male and one female live-in workers. Poorer, local women are employed for specific tasks in the house such as sowing and *murri* (puffed rice) preparation (e.g. Sahera, V.2.5). Male local day labour is called in for specific one-off tasks which overtax the capacity of the permanent labourers. Malik's household is not involved in the local labour exchange system (*gata*). Throughout the year the household employs different kinds of hired labour for various cultivation and crop processing tasks. Seedbed-making, transplanting and weeding of the *boro* is done by the permanent labourers and local labour gangs. The *boro* is harvested by migrant labour gangs of up to 50 people. Poor women (often divorced or widowed) from Samitigram and other villages are employed for parboiling and drying the paddy. Malik is the largest employer in Samitigram.

The *amon* is broadcast with household and permanent labour and weeded and harvested by local labour gangs.

8. CREDIT

Malik has taken loans from his Farmers' Cooperative (KSS) and several local banks. He has defaulted on the KSS loan and at least one of the bank loans. With his annual income he is not dependent on recurrent cultivation loans and he tends to regard the repayment of bank loans as an unnecessary extra. He derives an income, - difficult to quantify for the outsider in a society where the taking of interest is considered illegitimate, - from giving loans of money and paddy to poorer villagers at high interest rates.

9. RELATION TO REGIONAL POLITICS

Together with his adopted brother, who is now also his brother-in-law and the village's 'ex-member' of the *union parishad*, Malik used to form the leadership of a powerful faction in the village. This faction lost its influence with the rise of the *jubok samiti* (see III.4). Today Malik can still command a sizable following, the poorer members of which profess political support to 'his' party often without even being able to name the party. He is always called to attend a *shalish* (village court) but neither he nor his sons play a central role in the proceedings of *shalish* or other *samiti* meetings. Malik's family has lost its local power to the group around Saidur (see IV.2.2 below).

10. THE ROLE OF IRRIGATION

Malik owns an electric STW which irrigates about 7 acres of his own land. He neither sells water nor sharecrops land in or out there. The command area is broken up into several disjointed plots (No. 22 Map III.3). Malik also owns land in 18 of the 31 surveyed command areas. Some years ago he was manager of four irrigation groups. At that time he appropriated a STW which he

had bought with a loan obtained through his Farmers' Cooperative without the members' consent. He then defaulted on the loan. When this became known the *jubok samiti* took action and Malik and his son were divested of their leading positions in the irrigation groups and various other village *samitis* by a village *shalish*. Since then some of his attempts to exercise power in the village have failed. When he refused to let one irrigation group's channel pass through his land in 1985, he was threatened with water refusal from all irrigation groups and finally had to give in. His attempt to sell water from his private STW to surrounding cultivators at inflated rates was countered by the formation of a new irrigation group by Saidur, which now complements his command area into a continuous block of land (see C.A.s Nos. 22 & 33 Map III.3). The water charges in the new command area formed by Saidur are about half the level Malik had attempted to charge.

The irrigation groups in Samitigram have cost Malik some of his power. The villagers, organized in groups and led by a younger generation of better-educated men are no longer helpless in the face of his family's attempts at extractive exploitation. However, new advantages have also arisen for Malik. Ashraf, his oldest son is the manager of two irrigation groups (Nos 1 & 6, Map III.3), which irrigate 13 and 15 acres respectively. It is widely known in the village and confirmed by the bank that the instalments, collected by Ashraf annually to repay the loan for the STW never reach the bank. Malik's family gains about 5000 Taka per year in this way. As a large number of the cultivators in these two command areas are dependent on Malik for employment and sharecropping land the instalments continue to be paid - even by the sharecroppers who should not have to pay according to group rules.

Malik also owns some land in a village two miles down the road and irrigates it from a STW which is owned by his son-in-law's father, who lives there. Malik is the only party who receives water from this STW as its owner, in line with the common practice in his village, refuses to sell any water or form an irrigation group.

SAIDUR

1. HOUSEHOLD TYPE

Saidur is the second oldest among five brothers who live in a joint household. He is the household head and controls its finances apart from the dowries which his brothers' nuclear families received from their in-laws and the income the women make through poultry and egg sale. With Saidur's mother, his youngest unmarried brother and the four married brothers' wives and children, the family has 17 resident members. Saidur's father lives in poorer circumstances elsewhere in the village since he married a second wife. He is partly maintained by the household's land, which belongs to Saidur's mother. Saidur's father has exercised no control over family affairs since he moved out with his second wife.

Saidur had a 'village wedding'. His wife's parents live in Samitigram and are much poorer than Saidur's family. Through his marriage Saidur has acquired a large following of poorer relations in the village who rely on the kinship connection to him for economic support, access to land and agricultural inputs, help with dealings with the bureaucracy and the banks and similar matters. In return his position in the village is very strong. In his early thirties he is one of the most respected men in Samitigram. Two of Saidur's brothers are married to women from neighbouring villages in the *beel* and one of his sisters-in-law comes from Natore, the district headquarters where her father is employed in a government department. Saidur's two sisters are married to teachers and live in their husband's villages.

2. ASSETS

The present brick and mud-made family house was built only a year ago with a number of grain storage spaces made from mud and jute sticks it forms a courtyard which is enclosed on all sides. The household also owns two ponds, a share in a third one and they planned to excavate a further fish pond. There are two country boats in the household used for fishing and transport. One of Saidur's brothers bought a radio-tape recorder with his dowry and another bought an electric fan. There is a small low-lift pump (LLP) which is used to pump the fish ponds dry, to extract all the fish and to irrigate the surrounding fields at the same time. Four bullocks, two cows and three calves are kept in stables outside the homestead, two goats roam through the courtyard and 31 ducks and 18 chickens, which are owned by the women of the family, complement the picture.

3. LAND

Saidur's mother originally inherited 19.5 acres from her father, who had no sons. While her husband ran household affairs, large amounts of land were sold and some economic decline set in. Land was sold before the introduction of irrigated HYV *boro* when the *amon* crop failed through flooding. For Saidur's grandfather's *haj* (pilgrimage to Mecca) in 1970 more land was sold. Now, ten years after Saidur took over as household head, the family has 18.5 acres again, almost its former landholding size. There is a vegetable garden of 0.7 acres and almost 2 acres of fishponds. Saidur bought land annually whenever there were no other large expenses such as the excavation of a new fish pond or the construction of the new house. In 1986 Saidur bought 1.3 acres of land and also built and equipped a shop for homoeopathic medicines and a dry goods store which two of his brothers will run by the road.

About 4 acres of their land are sharecropped out. This land is mainly marginal land either irrigated by traditional means or unirrigated and merely used for *amon* cultivation. Some small plots of very fertile irrigated land are also sharecropped out. Saidur sharecrops out and mortgages in land from his wife's poorer relatives (e.g. Kamal, G below).

One of Saidur's younger brothers bought some land with the proceeds from the sale of his wife's jewellery. This land is not held jointly and its proceeds go to this brothers nuclear family only. Another of Saidur's brothers took some land in mortgage with the money from the sale of his wife's jewellery and is cultivating it for his own nuclear family.

4. EDUCATION

Saidur and one of his brothers have studied up to SSC level (class 10). As his older brother is disabled Saidur, left school to take charge of household affairs when his father left the household. Although everyone including Saidur's 60-year-old mother went to school at least up to class 4 noone in the family has studied beyond class 10. This is a source of some discontent in the family and all the children are sent to school and continuously encouraged to study. Saidur's oldest son in particular is expected to succeed at school and his family hopes to see him at university one day.

5. OCCUPATIONS / INCOME GENERATION

The four grown-up brothers all farm for at least part of their time. Each of them has their own particular further occupation. The oldest brother produces homoeopathic medicines and sells them in the *hats* and from the house. The small income he realizes from this he keeps for himself. Because of his disability he does not work in the fields much and tends to incur the wrath of his

brothers with this and his general loquaciousness.

A lot of Saidur's time is spent in village and regional politics and dealings with the bureaucracy (see point 9. below). In the post-harvest period he is involved in buying paddy from Samitigram and the neighbouring *hats* and villages and selling it through the paddy trading group, of which he is a member (see III.4.10). For several months after the *boro* harvest he spends a few hours every evening in the teastall by the road selling paddy to traders who arrive with lorries or settling accounts with the other members of the paddy trading group. He earns around 25.000 Taka per year through the paddy trade. Saidur's immediate younger brother, also a member of the paddy trading group, takes charge of transporting the paddy to a rice mill in the district town for processing and also does the work connected with the fishponds such as putting fry in, guarding the fish, fishing and selling the catch. The youngest of the married brothers works in the fields for most of the time and also supervises the hired agricultural labourers. During the irrigation season he operates the family's small LLP, which is rented out in order to pump fish ponds empty and so to irrigate the surrounding fields and to extract all the fish. Their average income from fish sale is 30.000 to 35.000 Taka annually.

The five women of the family sell eggs and vegetables in the village and through children or male relations in the *hat* and *bazar* whenever there is a surplus over household requirements. In this way they have an independent income of a few hundred Taka per year.

6. CULTIVATION

The household harvested 600 maunds of *boro* paddy from the cultivation of 8 acres in 1986. They achieved an average yield of 75 maunds per acre with large variations between plots (20-30 maunds). From the 4 acres of *boro* land, which was sharecropped out, another 150 maunds of paddy were received. This gave the household a total of 750 maunds. With an annual consumption of about 125 maunds, 625 maunds of paddy remained for sale. This is less than half of what Malik's household could sell. A total cultivation cost of 32.000 Taka (1330 Taka per bigha) leaves a net profit of about 109.000 Taka per winter season from *boro* paddy not taking into account the additional gains from sale during high-price periods (see Table VII.3). With a successful *b.amon* crop there will be a further 180 maunds of paddy at an average cultivation cost of 145 Taka per bigha. The sale of this will yield a further profit of 29.000 to 30.000 Taka. This makes a total annual profit of 128.000 to 129.000 Taka from paddy sale even if gains made from storage and speculation are discounted.

The household also grows 3.5 acres of wheat and some sesame, jute and mustard for their own consumption.

7. LABOUR USE

There is usually a live-in worker who stays for a year at a time and receives food, clothing and a monthly salary of 250 Taka. Two to three workers stay in the household for eight months returning to their own homes for the rainy season. No female labour is hired. The *boro* is transplanted in labour exchange with Adom's family. (see IV.2.2 below). Inside the labour exchange arrangement with his neighbours Saidur sometimes uses hired rather than household labour. *Boro* weeding is done with family and live-in hired labour. Day labour is occasionally employed. For the harvest, a migrant labour gang of 20-25 members stays for about a month. The *b.amon* is sown by household and permanent labour and weeded and harvested by live-in labourers.

8. CREDIT

Saidur takes six-monthly cultivation loans from the local commercial bank and has taken several loans from the Krishi Bank in the nearest *upazila* headquarters. He repays these loans quite regularly. With two other households from Samitigram, Saidur formed the credit *samiti* (see III.4.6), which recycles an annual bank loan on a fixed deposit account to Samitigram villagers at a higher interest rate. Saidur also gives loans of money and paddy sometimes interest-free and sometimes using the village's current usurious rates of up to 100% interest for three months.

The women of the family recycle loans which they receive through the Women's Cooperative (MSS) to poorer village households since they themselves do not require the loans for their poultry raising any more.

9. RELATION TO REGIONAL POLITICS

Saidur is a central figure in local politics. He is a well-known face in the *upazila* offices of the BRDB, BADC and DAE. He is a 'model farmer' in the DAE's 'Train & Visit' scheme and has gone to their training programmes in other areas of the district. Recently elected 'block director' by the KSS, he has gained influence on the BRDB loan allocations for several *unions* including his own. In collaboration with an absentee landowner from Samitigram, Faruque, who is also on the BRDB loan allocation committee, Saidur has thus the possibility to channel considerable funds towards the KSS' of his village. Saidur is involved in most of the connections of his village with the state bureaucracy. He was one of those who started the *jubok samiti*, the school *samiti*, the credit *samiti*, the jute *samiti* and the new KSSs (see III.4-5). He is also a prominent member of the mosque *samiti* and is always called to the sittings of the *shalish*. He is the manager of five irrigation *samitis*.

Saidur's sense of national history and politics is strong and he can spend long evenings talking about the independence struggle in 1971, the history of the village or criticising the present government. Although he gains both materially and in status from his political involvements, it is also a certain amount of idealistic desire to achieve improvements for his village that motivates his and his friends' activities in the *samitis*.

10. THE ROLE OF IRRIGATION

Saidur was manager of two irrigation groups at the beginning of the fieldwork for this research and took over a further three groups during my time in the village. Because of his close connections with the other founding members of the early *jubok samiti*, he exercises influence over at least another nine irrigation groups. His family's land is spread over nine command areas, three of which Saidur manages. The family used to own a STW about eight years ago from which they only irrigated their private land. Saidur then sold the STW to a newly formed irrigation group and command area expanded.

Saidur does not appear to derive direct financial benefit from his manager position. An incident around the sale of a plot of land illustrated how his potential for gain is nonetheless increased: - The sale of a *bigha* of land (0.33 acres) in one of the command areas managed by Saidur had been agreed at a price of 12,000 Taka. It then became known that Saidur was interested in the land himself and might refuse irrigation water to anyone who bought it. At this point, the original offer was withdrawn and neither the villagers of Samitigram nor of any of the neighbouring villages made any further offers although many were interested in the land. The owner of the land offered it to Saidur for 10,000 Taka. After a long period of hesitation Saidur made it known that he did not wish to buy the land after all. His decision may well have been prompted by my

friendly relations with the seller of the land and consequent knowledge of the case. After repeated checking with Saidur a poorer villager from Samitigram (Ali's son IV.2.3) eventually bought the land for 11,000 Taka. The whole affair lasted several weeks and caused considerable distress to the person who sold the land, a Hindu from an adjacent village. It indicates how control over a group command area can bring considerable economic benefits to the manager even if he neither owns the equipment nor engages in underhand 'accounting manoeuvres'. Saidur's enthusiasm for the irrigation *samitis* and his plan of forming a new *samiti* to include some of the neighbouring villagers must also be seen from this angle.

IV.2.1.1 The 'Rich': Strategies and Change

Malik and Saidur's households are probably the two most different cases among the 'rich' of the village. Malik is an example of the old 'exploitative' approach to production and appropriation while Saidur has a much more productivity-oriented attitude, which allows others to gain in the process of increasing productivity and output. However, differences are relative. Both families relate to a common great grandfather and beyond their struggles for power and the dissimilarity in outlook and strategies there is the common background of being part of the elite of the same village and in the same position towards the outside world.

For both households the joint family is the mainstay of their social position and economic and political strategies. In Malik's household strict control of individual family members in terms of ownership of assets is exercised. The diverse occupations of Malik's sons and his own early retirement are only possible on the basis of the joint family household. Labour is divided inside the household and individuals can specialize in different areas. The diversification into trade and bureaucracy of some of the men in the household provides important connections for the household. The marriages of Malik's daughters fulfil the same function, the extension of the kinship network to include people and professions useful to the household as whole.

Saidur's family, though it is joint residentially and economically, is much more obviously marked by the indicators of household division than

Malik's. Both male and female members of the household have income sources which flow towards their nuclear families rather than the common household fund. The women buy jewellery and household effects from their income and the men buy or mortgage in land on their own account. There are quarrels among the brothers as to who does more work and who contributes most towards the economic improvement of the household. All of Samitigram's 'rich' households are joint and through this they are able to engage in various activities simultaneously and so to realize economies of scale and to keep the resource flows, which are usually involved in the interaction between business, trade and bureaucracy, inside the household unit.

Both Malik and Saidur have only seen improvement for their households during their time as household heads. For Malik it has been a continuous expansion of land and other assets since he was born. Saidur, on the other hand, had to take over the leadership in his family when things were deteriorating. A lot of land had been sold and a definite change in strategy was needed to save the household from further decline and to recover its former position of economic strength.

Malik and Saidur are central figures in the 'old' and 'new' village elites. A comparison of their economic strategies - and the concurrent ideology and terminology - shows some fundamental differences. Malik has based his gains on the weakness of others. He has taken advantage of lean periods and failed harvests to buy more land. His use of sharecropping and mortgaging relationships displays all the marks of a textbook 'traditional patron', who uses multiple strands of influence to cement his overall position in the locality in disregard of direct economic returns to his productive assets. Malik's behaviour in the credit market shows the so-called 'zero-sum game mentality'. He uses exploitative terms of credit and keeps his hold over poorer farm households. On the other hand he

does not sell irrigation water at prices which could ensure gains for him and the water buyer.

Like Malik, Saidur also has a village following of poorer 'clients' who depend on him in various ways. But the principles and the rationality behind Saidur's activities are different. The mortgaged land Saidur takes from poorer village households is usually returned to its owner. Saidur is the initiator of the credit *samiti*, which has decreased the cost of informal loans in Samitigram and enabled a larger number of poorer households to engage in irrigated cultivation (e.g. Ali IV.2.3). He is also one of the first STW owners who sold his irrigation equipment to a group. He explains that the reasons for this were economic: lower irrigation costs and the possibility of irrigating fields where no single landowner would have bought a STW. Malik treats a bank loan as a 'one-off' handout, which does not need to be paid back. For Saidur the banks are a means to obtain capital inputs on a regular basis and therefore - so he says - he complies with their repayment rules. Saidur works inside the framework of the state bureaucracy and channels the resources it provides to himself and other village households. His attitude, which is also that of a group of other villagers around the *jubok samiti* (see III.4.1) is that "If we all work together we all gain". It carries the day in Samitigram at present and is one of the reasons why the organisation of irrigated agriculture in Samitigram has in productivity and distributional terms been more positive than in other areas (see Ch. VI).

As hard as it is to pinpoint the causes behind this clash in rationales, it is here that the fundamental factor for the variety of distributional and productivity outcomes of irrigation is rooted. A generational difference plays a role. Saidur and his generation are better educated than Malik's. The younger leaders have learnt to understand and use the state bureaucracy for themselves and to connect into the wider exchange networks which reach out to Samitigram.

They have witnessed the birth of Bangladesh as a new nation and carry over some enthusiasm from that period. Significantly, it was the 'youth cooperative' (*jubok samiti*) at independence, which started the changes in Samitigram. Things have moved on from there. Today, young leaders have taken over and the spirit of 'cooperation rather than exploitation' is recognizable in the village as a whole. An exposure to the development rhetorics in politics and media may also have played a part in this change (see the T.V. *samiti*, III.4.2).

It is not argued here that distribution is equitable, nor that there are no poor and disadvantaged households or no exploitative uses of power in Samitigram. However, resources are generally not withheld by those who have the power to command them when there is a choice between cooperation with - differently sized - gains for everyone and exploitative extraction through the denial of access to productive resources. This raises the question whether this type of 'rationale' is an exception or whether it can be regarded as part of future agrarian developments in Bangladesh (see VIII.2).

Irrigated agriculture in Samitigram is developing towards productivity and away from extraction-oriented agrarian relationships. The differences between Malik's private command area and the group formed by Saidur in reaction to Malik's extractive pricing of water (Nos. 22 and 33, Map III.3), the differences between the private and the group command areas on village lands (see III.5) and the differences between Samitigram and the 'seven villages' in the irrigation sector (VI.2 below) result from different types of household strategies, based on different perceptions of economic opportunity.

By virtue of belonging to the village 'rich', Malik and Saidur share certain opportunities, which arise from the introduction of mechanised irrigation. Both households sell STW fuel from their roadside shops. Both make large gains from trade with the substantially larger volumes of paddy yielded by the

irrigated *boro* crop through their own and their sharecroppers' cultivation. The fact that the paddy trading group, which Saidur belongs to, buys Malik's spoilt paddy to adulterate produce which is then passed on to long-distance traders shows some of the complexity of relationships in the village, which affect the generation and distribution of irrigation-related income in Samitigram. It also demonstrates how village alliances overlap and indicates the fragility of the productivity-oriented 'populist' interest alliance, led by the young village leaders. The opportunities from new technologies which are captured by Samitigram's poorer households depend on the continued adherence of this new elite to the groups and the rationale behind them.

If the young leaders turn to more extractive modes of appropriation once their position in the village is consolidated, the present relatively favourable situation for small irrigator-cultivators could turn out to be temporary. In future it may be replaced by an interest alliance of 'the rich' which leaves small cultivators excluded. On the other hand, as is argued here (see Ch.VIII), the 'new rationale' in Samitigram's irrigated cultivation could be the starting point of a larger process of transformation in production processes, relationships and value systems.

IV.2.2 The 'Well-Off': Adom and Mujibur

ADOM

1. *HOUSEHOLD STRUCTURE*

With 21 members, Adom's household is the largest in Samitigram. There are four brothers, their wives, 12 children and their paternal grandmother. Three married sisters have left the household. Three wives come from slightly better-off families in villages a few miles away and one wife is the daughter of a 'well-off' Samitigram household from the 'irrigation group-manager circle' (see III.5). Adom is the second oldest son and, since he is considered the most able son, he has been household head since his father died. The accounts of the household are joint and even the proceeds from the sale of wives' jewellery flow into the common fund.

2. MAIN ASSETS

They live in a substantial two-storey mud building with a small courtyard closed off by a wall of jute sticks and mud. They own two bullocks, three cows and three calves. These are kept in jute stick shelters outside the homestead. There are seven goats, seven ducks and eight chickens. A small LLP is used for irrigation of low *beel* land from the household's own fishpond. The third brother, Alum owns an assortment of tools for his work as a mechanic. The family has two wooden country boats.

3. LAND

Since the death of Adom's father six years ago they managed to buy 2.3 acres so that they now own 6 acres in total. They have never sold any land. In addition to cultivating their own land they sharecrop-in around 5.3 acres almost all of which belongs to residents of other villages. Their sharecropped plots are large, between one and two acres, and sharecropping contracts are secure and long-term. Sharecropping-in is an essential component of the household's economic strategy and of their recently achieved economic improvements. One *bigha* (0.33 acres) of low fertility *amon* land has been sharecropped out to a poor household of Samitigram for the last eight years. A son of this household is employed by Adom's family. No land is mortgaged out, but one of Adom's sister-in-laws holds a small plot of land in another village in mortgage and has it cultivated by a relative.

4. EDUCATION

The best educated member of the family is the third brother, Alum, who studied up to class 10 (S.S.C.). The remaining three brothers studied up to between class 5 and 8. All the children are sent to school.

5. OCCUPATIONS / INCOME GENERATION

Two brothers are involved in farming full-time. The third brother, Alum, trained as a STW mechanic by working in various private workshops in different areas of the country. He recently learned how to repair electrical STWs. The oldest brother acquired some of the mechanical skills from him and helps in the mechanics business. In 1986 Alum had 52 seasonal contracts for the maintenance of STWs in Samitigram and the neighbouring villages. He receives a seasonal fee of between 300 and 500 Taka per contract. In exchange he guarantees prompt repairs throughout the irrigation season. Spare parts are provided by the customer so that he earns a profit of 20,000 to 25,000 Taka per season. Alum planned to open a shop for STW spare parts.

During the rainy season the youngest brother fishes in the *beel* to cover family consumption and to sell some of the catch in the daily *bazar*. He realizes between 50 and 100 Taka daily through this. With a fishing season of three months this comes to about 7000 Taka annually. The sale from the household's fishpond brings about 15,000 Taka per year.

The women of the family realize some income through goat and poultry raising. Some, but not all of this income flows into the common household fund.

6. CULTIVATION

The household cultivated 10 acres of winter *boro* in 1985/86. Of this 5.6 acres were their own land and 4.4 acres were rented in. Of the rented land 2.5 acres were in fixed in-kind rent on a five year contract from Faruque, an absentee landowner resident in Singra town. This land yielded 82 maunds per acre. Average yields on their own land are 68 maunds per acre. The fertility of their sharecropping lands is therefore high.

Cultivation costs come to an extremely low 2010 Taka per acre

(compare Malik and Saidur with over 3300 Taka per acre). There are several reasons for this. No cash costs arise for *boro* transplanting as labour exchange (*gata*; see V.3 below) is used. For rented and sharecropped land no capital cost for the STW is paid and the small amount of hired labour, which the household uses for *boro* cultivation is the cheapest kind, seasonal live-in labour (see Chapter V.3). As the land they cultivate is low and fertile, little fertilizer is required. During the 1985/86 season the household also cultivated 2.3 acres of *b.amon*. They received 50 maunds of *amon* paddy and 500 maunds of *boro* from their own cultivation. They consume about 150 maunds per year and around 400 maunds are sold. A total annual cultivation cost of 22050 Taka leaves an approximate annual profit of Taka 48.000 from paddy cultivation. They sell part of their surplus paddy in a large *hat* about five miles away. This involves a transport fee of Taka 5 unless they use their own two buffaloes and a market-tax of Taka 0.5 per maund. No significant gains from storage and sales during high-price periods are realized. They also sell some of their paddy to Saidur's paddy trading group.

One *bigha* (0.33 acres) of wheat and 0.5 *bigha* of sesame is grown for home consumption.

7. LABOUR USE

The household employs two seasonal live-in labourers from Samitigram and from the neighbouring village. They use own labour and *gata* (labour exchange) to sow and transplant *boro*. Seasonal live-in labour and occasional day labour is used to sow and transplant the *boro*. The harvest is carried out by a migrant labour group of about 20 members who stay in the homestead for about one month.

B.amon is cultivated by household labour with the assistance of the seasonal live-in labourers during the harvest. After the paddy is separated from the straw by the migrant labour gang, parboiling and drying is done by the women of the household. No female labour is ever employed by Adom's family.

8. CREDIT

The household has had loans from all possible formal sources, the local commercial bank, the BKB and the Farmers' Cooperative (KSS). In 1985/86 they took a six-monthly loan of Taka 4000 at 16% annual interest from the local commercial bank and a loan of 18500 at 19% annual interest from the KSS. They give occasional loans of money or paddy inside the village. Rice, oil and salt is loaned between the women of the family and neighbours. This occurs on a mutual, no-interest basis.

9. RELATION TO REGIONAL POLITICS

Adom and his four brothers are an integral part of the village's various *samitis* and one of them is usually found at every meeting. They assume mostly a participatory rather than a leading role. Through their marriage connection to another 'well-off' family and their labour-exchange connection with their next door neighbour, Saidur, they have influence on village politics but rely on mediators for any connections beyond the village.

10. THE ROLE OF IRRIGATION

The household cultivates land in 9 of the village's 31 command areas. Akram, the oldest brother and Alum, the mechanic, manage three command areas. Two of these are irrigation groups (Nos. 10 & 16Map III.3). The land and the STW of the third command area are owned by Faruque, the absentee landowner. Over half of the household's cultivated land is in these three command areas. They own land in

one of the command areas, and sharecrop or rent land in all of them. They hold a plot of 2.6 acres in Faruque's command area. This is 30% of the total command area and the largest plot rented out by Faruque in this command area. Their access to rented land is at least partly due to the household's control over water. The presence of a STW mechanic in the household also contributed. Interviews with the respective landowners in the command areas confirmed this. With a STW mechanic and an irrigation group manager, the household has clear advantages in the production of irrigated *boro*. It is therefore able to obtain fertile sharecropping lands which have become one of the economic mainstays of the household.

Irrigation is an important vehicle for economic improvement for Adom's household in several other ways. Through his work as a mechanic the third brother Alum contributes about one quarter of the household income. In 1985 he took some training as an electrician, which will increase the number of his seasonal contracts. With electrification on the increase in Samitigram and the area, his additional training will be a profitable asset in the future. By opening the spare parts shop, the family adds another irrigation-related aspect to their portfolio of activities and increases the variety of ways in which they are taking advantage of irrigation as a means to diversify their economic strategies out of cultivation.

MUJIBUR

1. HOUSEHOLD STRUCTURE

Mujibur is about 65 years old. His household has 14 members, his wife, three of his four married sons, their wives, children and a fifth, young unmarried son, who live together. His oldest son recently separated from the family and lives elsewhere in the village. He works as an agricultural labourer.

Mujibur's daughters-in-law are all from nearby villages and come from households which are better off than Mujibur's.

Although Mujibur has passed the management of the household to his second oldest son Hekmut, he still keeps some control over all the decisions, though.

2. ASSETS

The household had just completed the construction of a brick house when I arrived in the village. It leads onto a small courtyard and is closed off by a mud wall on the other side. They own four bullocks, a cow, five sheep, seven ducks and eight chickens. There is a radio in the house. All of the assets are in Mujibur's name. Neither his wife nor his sons or daughters-in-law admit to owning anything in their own name in his presence.

3. LAND

Mujibur now owns about 15 acres. His own father owned 1.7 acres in his youth and 5 acres when he died. Mujibur inherited 3.7 acres from his father about 25 years ago. He has never sold any land and buys new land every year nowadays. Since his father died he acquired a large orchard (3.6 acres) and over 5 acres of bamboo grove. The family's other land is gradually being consolidated in one area around their own STW (No 30, Map III.3). Recently Mujibur exchanged some of Faruque's land near this STW for some of his land in another area and bought a further plot in his command area from a poorer villager. The STW is situated next to a pond, which also belongs to Mujibur's family.

Mujibur is not involved in any sharecropping relationships. He used to mortgage in 0.66 acres of land from a poorer villager but returned the land

because he needed money to build the new brick house. His son attempted but failed to obtain land around their STW in sharecrop. This land, formerly irrigated from Mujibur's STW and cultivated with wheat by its owners is not irrigated any more because of quarrels in the former irrigation group.

4. EDUCATION

Neither Mujibur nor his wife ever went to school. All their children and grandchildren did and their 25 year-old son, Hekmut studied up to class 10 and passed his *S.S.C.* None of his siblings went beyond a few years of primary school.

5. OCCUPATIONS / INCOME GENERATION

Mujibur and his sons are farmers. The second son, Hekmut has some skills in housebuilding and works in the village and the area during the slack agricultural season. About 20,000 Taka annually are realized from the sale of bamboo and about 15,000 Taka per year from the sale of fish from their pond.

6. CULTIVATION

In 1986, Mujibur cultivated 6.4 acres of irrigated winter *boro*. In addition he had 10 acres under *b.amon*. A total yield of 400 maunds of *boro* and 150 maunds of *amon* and an annual household consumption of about 90 maunds leaves around 360 maunds of paddy for sale. Their *boro* cultivation cost is low with 2610 Taka per acre and their *b.amon* cultivation cost is also very low (480 Taka per acre) because mainly own labour and seeds are used. A total cultivation cost of 16758 Taka for *boro* and around 2250 for *b.amon* results. When I talked to them a few weeks after the harvest, 120 maunds of paddy had been sold at the low post-harvest price of 145 Taka, which gave them a cash return of 17400 Taka, just enough to cover cultivation costs. Taking into account the returns from the paddy sales during the rest of the year, their profits from paddy cultivation are approximately 42,000 Taka.

The household also has about 1.3 acres under wheat and cultivates some sesame and mustard seed for home consumption.

7. LABOUR USE

They employ two seasonal live-in labourers who return to their own, neighbouring village for the rainy season. In order to sow, transplant and weed the *boro* own, seasonal live-in and day labour is used. The *boro* is harvested by a migrant labour gang of 10 to 15 men who stay in a house near the family's pond but eat in Mujibur's household. The wives parboil, dry and store the paddy. Female labour is not employed. The *amon* paddy is sown by their own labour and weeded by hired labour. A labour gang from the next *upazila* did the weeding working 1986. Labour is also hired for the *amon* harvest.

8. CREDIT

The household takes regular cultivation loans from the local commercial bank and the Farmers' Cooperative (KSS). In 1985/86 they took a bank loan of 21,000 Taka. They reported that they neither give nor take informal loans in the village. In 1981 Mujibur took a STW loan for 20,300 Taka bank loan for an irrigation group of which his son Hekmut was the manager.

9. RELATION TO REGIONAL POLITICS

No-one in the household represents a major influence in local politics nor is anyone member of a political party. One of Mujibur's nephews, his older brother's son, is a member of the *union parishad*, though, so that there is a

connection to the local institutional system and a possible way for Mujibur's household to link into the resource flows which are accessible through the state.

10. THE ROLE OF IRRIGATION

The household owns land in 6 STW command areas. Two of these are on lands of the neighbouring village, three are Samitigram irrigation groups and one is a STW, which now irrigates Mujibur's own land only. Initially an irrigation group was formed in this command area and 10 acres belonging to six different parties were irrigated. Quarrels about correct water distribution and the payments of the instalments for the STW ensued. In retrospect it was difficult to get the story right. The outcome was that all former group members are not receiving irrigation water any more. Hekmut, Mujibur's son who used to be the manager of this irrigation group, failed to obtain sharecropping rights to the former group members' command area land. Wheat and some sesame is now cultivated on these plots. However, Mujibur was able to exchange some of his other land for one acre in this command area. He also bought a further small plot so that he now has 4 acres of his own land irrigated from this STW.

Mujibur and Hekmut are not part of the circle around the *jubok samiti* (see III.4). Although Hekmut tried to form an irrigation group and did not commit greater misdemeanours than for example Malik's son (see IV.2.1 part 10)), -- e.g. misappropriation of bank instalments -- his position did not allow him the same practices. Because he managed to consolidate a substantial amount of his land in the command area, Mujibur does not need to operate an irrigation group. He makes some profits from irrigated *boro* paddy even from a command area of only 4 acres and he is likely to have defaulted on his STW bank loan.

IV.2.2.1 The 'Well-Off': Strategies and Change

Some of the differences between Adom's and Mujibur's strategies correspond to those between Malik's and Saidur's. Whereas Adom's household is using all the possibilities offered by the various groups in Samitigram, Mujibur's household increases its income mainly by extracting as much as possible in any situation where they command power. While Adom's family diversify their occupations into various irrigation-related activities, Mujibur's household only uses irrigation as a way to increase returns from cultivation to a limited extent. They cultivate irrigated *boro* profitably but do not use the STW to its full income-generating potential. Adom, like Saidur, maximises returns by using his advantages to increase his share of the overall increased productivity and output brought about by irrigation. Mujibur, like Malik increases his own returns by extracting the surplus of other households in the process of blocking their access

to water.

Adom and his brothers manage three command areas. Mujibur's son Hekmut's irrigation group broke up because neither the members nor the group manager cooperated to allow gains for others. Saidur and Adom use new opportunities for themselves which arise in the process of increasing production and income for the majority of villagers. Malik and Mujibur regard gains for others as a threat. To Saidur and Adom, productivity increases are a major means for their individual improvement, to Malik and Mujibur the use of extractive power is the main path to get rich.

To some extent, this difference in perceptions and strategies may be a function of the age and education of the household head. Like most villages in Bangladesh, Samitigram is becoming more involved in structures and networks which extend far beyond the village. A household's economic fortunes depend to an increasing extent on the knowledge of how to use these connections. People like Saidur, who have some formal education and who are trusted by most villagers become the mediators between the village and outside business and government offices. People like Adom, with fewer resources to fall back upon, use their education to link into new income-generating activities and so to decrease their reliance on cultivation. Mujibur, like Malik, on the other hand is of an older generation for whom the 'zero-sum-game mentality' (Foster 1973) remains the frame of reference. This may be a transitional, generational issue. Although Mujibur lacks sufficient formal education to take advantage of new opportunities and retains his old strategies, his son's education provides the family with an avenue out of sole reliance on cultivation. Through their fish-breeding activities, undertaken with the assistance of the extension office of the Ministry of Fisheries and through the bamboo business, they realize some of this potential.

A prominent feature of the 'well-off' is their diversity of occupations and income sources. Particular occupations, which arose with the introduction of irrigation, are found predominantly among 'well-off' households. Adom is an example of how irrigation can decrease reliance on cultivation. Several other such households exist in and around Samitigram. For them, irrigation-related diversification does not merely defer pauperisation until the person/land ratio has deteriorated further, but it initiates a move away from the predominance of land as an income source (see also V.1.1). With multiple inheritance and high population growth, this is their only alternative to impoverishment in the longer term.

The case is different with Mujibur. At present, his household has some diversity of income sources and their economic security is not in immediate danger. Irrigation has an only supplementary role in their economic strategies. However, when the household land is subdivided among the next generation of heirs, the household's present extractive strategies will become less viable. Mujibur's family may well maintain itself increasingly by income from fish-breeding in the future.

For both 'the well-off' and 'the rich' of Samitigram, irrigated *boro* cultivation has assumed a central position in their income generation strategies. For these households (unlike for some of 'the coping' and 'the poor'; see below), *boro* has taken over from *b.amon* as the main crop. *Amon*, the previous main crop, on the other hand, has turned into an additional 'bonus crop', which may be consumed by the household as its taste is preferred, but upon which the main annual budget of the family does not depend on any more.

IV.2.3 The 'Coping': Ali and Toslin

ALI

1. HOUSEHOLD STRUCTURE

With over 35 members Ali's household was the largest in the village until late 1985. Since his father died and Ali is now not only economically and residentially separate from his three brothers, but also one of his own sons, Ahmed, has formed an independent economic unit with his wife. Although they still live in the same house, Ahmed and his wife eat and keep all accounts separately.

The household as an economic unit (i.e. excluding Ahmed) now has ten members. Ali, who is about 50 years old, his wife and two married sons with their families. There are a further three unmarried sons aged 12 to 18 in the household. Ali and his wife have no surviving daughters. His wife and daughters-in-law are all from homes of about equal economic standing to his own in villages a few miles away from Samitigram. Ahmed and his wife, who are part of the residential unit, spend part of the week in her parents' house to - as they say - eat there and thus save money to buy their own land.

2. ASSETS

They live in a small, low-built mud house with a tin roof and own four cows, two calves, two goats, a duck and a chicken. They also share tend in a sheep from Malik. This has recently added a lamb to the household.

3. LAND

Ali's father owned 4.3 acres. Ali now has 2.2 acres. Of this, 0.7 acres were inherited. After a successful *boro* crop in 1985, one *bigha* (0.33 acres) of land was bought in for 11,000 Taka (see B, 10) and a further two *bighas* (0.66 acres) for 15,000 Taka each. They sold a water buffalo and used part of the youngest wife's dowry to raise the money for this land. There is conflict between the four sons who remain economically joint to their father's household and Ahmed, who separated, about the ownership and inheritance rights to this newly purchased land.

Ali's household sharecrops in 5 acres of land under agreements with two absentee landowners and with Malik. These agreements have lasted between 2 and 6 years so far. They stem from the period when Ali's household was comfortably in the group of the 'well-off'. It remains to be seen whether they will last under present straightened circumstances or whether the household will join the ranks of the seasonal sharecroppers with little or no permanent tenancy on any land. During my fieldwork period the household was not involved in any mortgage relationships. When I left, Ahmed took 0.4 acres of his father Ali's land in *khaikalashi* mortgage (see V.1.4).

4. EDUCATION

Ali studied up to class 4. One of his sons has studied up to class 3. After failing his second year exam Ali's youngest son of about 11 years of age had to leave school because his older brothers refuse to pay for his books.

5. OCCUPATIONS / INCOME GENERATION

All male household members work predominantly in cultivation. One son engages in seasonal rice business with one of his cousins from the village. They buy paddy, take it to a rice mill and resell it at a profit of about 20 Taka

per maund. The household sells cows' milk in the *bazar* and earns about 25 Taka daily through this.

6. CULTIVATION

The household cultivated 5.7 acres of *boro* paddy in 1985/86. Of this 5 acres were sharecropped in and 0.7 acres were own land. Average yield per acre was 77 maunds for the sharecropped land and 81 maunds per acre for their own land. The lower yield for the sharecropped land was caused by an engine breakdown, which affected the water supply for one acre of land. Generally the yield of the household's sharecropped land is higher than that of their own land because of differences in land quality. The household obtained a total of 250 maunds of *boro* paddy. They sold about 200 maunds to the village paddy trading group. With an average cultivation cost of 2760 Taka per acre they realized about 19150 Taka profit from *boro* cultivation. Ali also cultivated 6.6 acres of *b.amon* of which 4.6 acres were sharecropped in and 2 acres his own land. If the *amon* crop succeeded the household met their annual consumption needs fully through this crop. The year before only 30 maunds of *amon* could be harvested, and they had to eat some of their *boro* crop.

0.4 acres of sesame and 0.7 acres of wheat are cultivated for the household's own consumption. All but 0.1 acres of this land is sharecropped in. There is also a small bamboo plot and a vegetable garden for household consumption.

7. LABOUR USE

Neither annual nor seasonal labour is hired in. All *boro* cultivation except the harvest is done by the household and *gata* labour exchange with a cousin's household. For the harvest a group of 10 to 12 migrant labourers stays in the household for about two weeks. The cultivation of *amon* is also mainly undertaken with household labour. Only very occasionally is local day labour hired in. The household never hires female labour.

8. CREDIT

During the 1985/86 season the household had 6700 Taka of loans. Of this, 1200 Taka were from two private sources in the village, whose identity Ali would not disclose. 100% and 200% annual interest was taken by these two village households. Ali also received 1800 Taka from the credit *samiti* at 45% annual interest, 2200 Taka from the KSS at 18% p.a. and 1600 Taka from the local commercial bank at 16% annual interest. These are of central importance for his HYV *boro* cultivation. He had to pay a total of 1320 Taka in interest for the whole *boro* season. Of this 1000 Taka (76%) went to private moneylenders for only 45% of the total loan. Ali's involvement in the credit market is complex and carefully arranged to support his household's cultivation activities. Although he does have some access to cheaper bank loans and to the credit *samiti*, he is forced to resort to informal high-interest loans to maintain liquidity for *boro* cultivation.

9. RELATION TO REGIONAL POLITICS

Since he is neither a member of a political party nor obviously among the followers of any of the local 'big men', Ali and his household hold a marginal role in local political life. Furthermore, after the recent multiple household subdivisions in the family. Ali can no longer fall back on the strength of the joint household. A running deafness among the men of the family does not help matters either (nor does it facilitate the researcher's task...)

10. THE ROLE OF IRRIGATION

The household cultivates land in 5 STW command areas. In two of these all their land is rented, in one command area some of their land is sharecropped and some is their own, and in the remaining two command areas all the land they cultivate is owned by Ali's household. Jointly with one of their relations in the village they cultivate one entire command area of 4 acres under a fixed-in-kind rent agreement. The land and the STW is owned by Faruque, an absentee landowner. In 1986, Faruque announced his intention to convert his diesel STW to electricity. This would have reduced irrigation costs by about fifty percent. His tenant Ali expected his land rent to be raised as a consequence and therefore to be neither better nor worse off as a result. Ali is also a member of Malik's son's 'pseudo-group' (see III.5) about which he comments: "...there is never a meeting for that group and nobody will say anything because they (Malik's household) are big people." Ali has repeatedly found himself faced with the alternative to either pay the instalments for a STW as a sharecropper, which is against the rules of the irrigation groups, or to lose his sharecropping land to another, more willing tenant. Ali's household does not have an influential position in the village's irrigation groups. It is tempting but not sufficient to explain this by the chronic hearing problems among its men. The break-up of the former large joint household after the death of Ali's father brought a decline of his socio-political standing. It is probably not a coincidence that Ali's younger brother was divested of his manager post in one of the STW groups only a few months after the break-up of their joint household.

TOSLIN

1. HOUSEHOLD STRUCTURE

Toslin and his wife have three sons between the ages of one and eight. Toslin is about 30 years old, a child of his father's second wife and hardly acknowledged by his five older, wealthier half-brothers. His wife is from the neighbouring village. She has fifteen brothers and sisters from her father's three wives. Her mother, the oldest wife was divorced. As a result neither Toslin nor his wife can fall back on any support from their family. They set up their own household as soon as they were married.

2. ASSETS

They live in a tiny one-room mud house. There is a partly sheltered cooking area. It is built on raised land, slightly removed from the rest of the village. During the rainy season it is only accessible by boat to all but the next door neighbours. Toslin's household owns a boat, six chickens, one cockerel and two ducks. They sold their bullocks and plough a few years ago to redeem some mortgaged land. There are also some nets and other fishing implements in the household.

3. LAND

Toslin's father was wealthy with more than 36 acres. Toslin inherited 3.3 acres about seven years ago. Since then he sold land several times so that he has less than 1.5 acres left. Some of this land has been mortgaged out in little pieces over time to cover the household's recurrent shortages of cash.

Toslin used to sharecrop in land, but has done so only occasionally since he sold his *hal* (a pair of bullocks and plough). His sharecropping contracts, some of which are with his wealthier half brothers are all short-term, rarely longer than a season or two. Toslin says that with the cost of renting a *hal* it is no longer profitable for him to sharecrop in land.

4. EDUCATION

Toslin has attended primary school up to class 3. His wife never went to school. They are sending their eight-year old son to school but say the child has no interest in it and does not usually go there.

5. OCCUPATIONS / INCOME GENERATION

As soon as there is enough water from the monsoon rains Toslin goes fishing in the *beel*. The family eats some of the catch, but most of it is sold in the daily *bazar* to provide for their cash needs. He gets an average of 75 Taka per day for three to four months per year. These earnings, 7000 to 8500 Taka annually, are central to the family's economic planning and survival. Without them Toslin could not pay back his cultivation credits.

Toslin's wife sometimes sells chicken or duck eggs or a few vegetables grown on a vegetable frame in their homestead.

6. CULTIVATION

In 1985/86 Toslin cultivated 0.7 acres of his own land with HYV *boro*. Of this, 0.6 acres were irrigated by STW and achieved a total yield of 47 maunds. Toslin also irrigated a small plot (0.1 acres) with the traditional *seti* (swing bucket) and received another 5 maunds. 0.33 acres of *b.amon* cover consumption requirements unless the crop is spoilt by the monsoon floods, as it often is. They consume about 25 maunds per year but had to sell 40 maunds immediately after the harvest to cover cultivation costs. In 1985, when their *amon* harvest failed, household paddy supplies ran out two months after the harvest although initial stocks were almost twice as high as annual requirements.

Toslin's cultivation cost is 2985 Taka per acre for STW irrigated *boro* land. The total cultivation cost of his 0.7 acres of *boro* land came to 2140 Taka. From the post-harvest sale of *boro* he realized 5600 gross (3460 Taka net of costs). Fishing is thus his main income source.

7. LABOUR USE

The household neither sells labour nor does it hire in any live-in or adult day labour. Occasionally Toslin's wife calls in the ten-year old daughter of the destitute widow of a landless labourer (Sahera) to work in exchange for a meal.

Seedbed-making, transplanting and weeding of Toslin's *boro* crop is done through labour exchange with three other village families. Only at harvest time will an outside labour group work on Toslin's crops for a short time before moving on to harvest for other small landholders in Samitigram. His migrant labourers are usually from neighbouring villages rather than from other *upazilas* as are the migrant gangs which work for the richer households of the village.

For the cultivation of his *amon* Toslin works alone in his fields until the harvest. He then hires day labour because as he says "everyone is busy for the *amon* harvest and no one is interested in labour exchange".

8. CREDIT

To cover cultivation costs (food for group labour, day labour, material inputs, irrigation costs) Toslin is dependent on credit. For the 1985/86 *boro* season he took 1000 Taka from the local commercial bank and 1000 Taka from a private source in the village. He paid back 1600 Taka to the private moneylender but defaulted on the loan to the bank. This means that in the coming year he will be totally dependent on the expensive private moneylenders unless he can somehow manage to repay the bank loan through his income from fishing during the rainy season. If he has to rely totally on private moneylending sources he will

in all likelihood have to mortgage out some more of his land with an even smaller chance of obtaining the money to recover it.

9. RELATION TO REGIONAL POLITICS

Toslin does not appear to be involved in party politics at all. He is a member of a KSS and once received a loan through it. He does not attend meetings.

10. THE ROLE OF IRRIGATION

Toslin owns land in four irrigation group command areas but only cultivates himself in three of these. His land in the fourth command area is mortgaged out. His irrigation costs are high because as a landowner he has to pay both the water charge and the seasonal instalment. If he does not pay the STW instalments for his mortgaged out land, it may be paid by the mortgagee and added on to the total sum repayable by Toslin. This makes it even more difficult for Toslin to recover his mortgaged land.

Toslin hardly ever participates in irrigation group meetings. He does not seem to distrust the proceedings in the meetings but says "I have things to do. They don't need me there." His household is caught up in a downward economic spiral. This can be partly attributed to Toslin's particular economic strategies, which turned out to be a disadvantageous choice. After the sale of his *hal*, Toslin's cultivation costs rose to the extent that he did not consider sharecropping worthwhile any more. Nor is he likely to obtain much sharecropping land without owning a *hal*. With the fall in the general water table in the area, his returns from open-water fishing are decreasing, and the higher yields from his small amount of *boro* cultivation do not cover his cultivation costs and other cash needs. Indirectly irrigation is the cause for Toslin's decreased fish catch as it has caused the fall in the general water level. The method of paying for irrigation in Samitigram is costly to a small landowner like Toslin who has land mortgaged out. Nonetheless, the household's situation is also the result of his choice of economic strategies under a new set of conditions, rather than of the absence of opportunities for Toslin in the new, irrigated situation. For reasons of status Toslin does not sell his labour, and because he decided to sell his *hal* he can no longer profitably sharecrop in land. Although irrigation may not have improved the opportunities open to Toslin's household, it has not been the sole or even main cause of its economic decline.

IV.2.3.1 The 'Coping': Strategies and Change

The nuclear or a truncated form of the joint family household is the rule among the 'coping'. In Ali's case the break-up of the joint household precipitated some economic decline for all the successor households. A joint rice business between Ali and his brothers was discontinued. Economies of scale in cultivation for household consumption, division of labour in the fields and between the women inside the house were lost.

Toslin, on the other hand, (because of the internal structure of his father's household -- two wives and conflict between their offspring) never had a joint household with his brothers. He thus never had some of the opportunities which Ali and his household had and still have as a result of their former position. Ali's household is able to sharecrop in 5 acres of good-quality land on long-term contracts. This is retained from their 'well-off' position of the time before the household divided. Even after the division, Ali's household is still large enough to pool resources in order to buy land.

Toslin, in comparison, is unable to obtain any longer-term contracts. He used to sharecrop in under temporary agreements and eventually gave it up completely. Since the children are very young, Toslin's household is at an economically difficult stage. When his sons start to work in the fields, cultivation will be less expensive for Toslin. It is doubtful, though that he will still own any land then.

Ali's and Toslin's household are at opposite extremes of the category of the 'coping'. What they have in common is that they are both in an unstable transitory position. Ali's household has recently emerged from a large joint family household, where activities extended into various economic and political spheres. Some of these activities (e.g. long-term land tenancy and rice business) have been retained or taken up again in an altered form in the smaller successor households. These may provide the momentum to tip the precarious balance of household fortunes towards improvement.

Toslin's household has also suffered economic deterioration over the last few years. Toslin's father was very much better off than Ali's father and Toslin inherited more land than Ali did. As a nuclear household with little labour supply and no important kinship or political connections to fall back on, Toslin's possibilities to engage in profitable cultivation are limited. His decision to sell his

hal and to abandon sharecropping altogether leaves him with an even less promising set of options: Open water fishing in a situation of declining water table and fish population and in competition with fast expanding sales of pond-bred fish. It seems only a matter of time that his family joins the ranks of 'the Poor'.

For both households, education has played a minor role. Neither puts much emphasis on school attendance for their children. Ali's older sons are hardly literate and his youngest son was even taken out of school against his wishes. Toslin is of the same generation as Saidur and Adom. Unlike them he has not had, or sometimes not recognised, the possibilities which have opened up in recent years. Lack of education plays a role in this although, as Kamal's case (IV.2.4 below) demonstrates, education is not necessarily the decisive factor for flexible adjustment to new opportunity conditions. Individual characteristics, family history and household structure play a role in how new situations are approached and strategies devised.

Ali's household has carefully pieced together loans from all available formal and informal sources. Through the credit *samiti* their total costs for credit are lowered considerably. In order to cultivate irrigated *boro* they have had to get deeply involved in the formal and informal credit markets and incur considerable costs. Toslin was also pushed into taking credit. If he continues unable to repay his bank loans the expensive informal village loans will probably lead to the eventual loss of his land. Both households borrow from the village's moneylenders in order to cultivate irrigated *boro*.

Both Ali's and Toslin's household need to sell their paddy at post-harvest low prices and Ali sometimes and Toslin always have to buy back at high prices later in the year to cover their families' consumption needs. This circular annual buying and selling process involves a transfer of surplus value to the paddy traders of the village. Ali's household tries to link into this resource by running their own small seasonal rice business.

As the productivity of irrigated cultivation increases, households like Ali's and Toslin's find that most of the extra surplus value created does not reach them. A cost reduction of fifty percent through the electrification of a STW simply means that Ali has to pay higher rent to the owner of his sharecropped holding. The appropriation of increased surplus by the owner of productive assets, rather than by those who actually produce, manifests itself in other areas, too. For example, sharecropping for irrigated land in Samitigram gives a smaller crop share to the tenant than in most other villages in the area (see V.1.3). Due to exceptionally high yields in Samitigram (see V.4), this still means about the same absolute returns for Samitigram sharecroppers as for those of other villages. The landowners of Samitigram, however, are able to appropriate much higher absolute, and higher relative crop shares than those of other villages. Households like Ali's are able to cope with the help of sharecropping contracts but they have not increased their relative gains inside such contracts (see VI.3 for the distributional issues around land tenancy).

The 'coping' are in a transient situation. Strategies, which 'just make ends meet' only work for a limited period of time. The two case studies here have outlined some of the factors which combine to determine which way the scales turn for any one household.

V.2.4 The 'Poor': Kamal and Yussuf's Sons

KAMAL

1. HOUSEHOLD STRUCTURE

Kamal's household has seven members, himself, his wife and five sons between the ages of sixteen and one. A further three of their children died. Kamal's wife Shuki is from the village. She is the half-sister of Saidur's wife (IV.2.1). Kamal has no brothers or sisters but his family are from Samitigram.

2. ASSETS

Two cows, two calves and two chickens form the household's animal stock. They also own a plough and a country boat. Their one-room house is made of mud and has a small verandah. Shuki cooks in front of the house in an unsheltered position.

3. LAND

Today the household owns 0.66 acres of land. Kamal inherited no land because his father predeceased his paternal grandfather so that he was not legally entitled to any land inheritance. His uncle, who lives next door, received his father's share. His wife Shuki inherited 2.3 acres about fifteen years ago. Of this they sold 1.7 acres to Malik (IV.2.1) and Faruque, an absentee landowner, after a failed *b.amon* crop. This was about 13 years ago, before the introduction of STW irrigation in Samitigram. Soon after their marriage Kamal sold Shuki's jewellery to buy 0.4 acres of land. Later this land was sold again to a wealthy relative "to feed the family" as Kamal says.

Kamal now sometimes sharecrops in the land that he and his wife used to own. When he cultivates the land that he once sold to his rich relative, an engineer who works in a different part of the country, he does not have to give any crop share. He does not get access to this land very often, though. His sharecropping contracts are short-term, rarely longer than one or two seasons. None of the 0.66 acres of *boro* land which he sharecropped in 1985 are among the 1.3 acres which he sharecropped in 1986. In 1986 he also sowed 4 acres of *b.amon* land. Sharecropping is one of the mainstays of Kamal's economic strategies. Nonetheless he has no long-term agreements with any landowner and thus faces a new round of negotiations and insecurity before every season.

The household's own land has been entirely mortgaged out to and cultivated by Saidur for the last three years. For the money obtained through the mortgage Kamal bought a *hal* (two cows and plough), which he now uses to cultivate sharecropped land. He also rents out himself and his *hal* to plough other people's land.

4. EDUCATION

Kamal never went to school. His wife attended the village primary school for two years. Their oldest son studied up to class 5 but had to give up in order to work.

5. OCCUPATIONS / INCOME GENERATION

Kamal ploughs land for others with his *hal*. He also works as a day labourer whenever someone calls him. At big village functions he is usually among the paid helpers. Once he attempted to set up a business with oil, salt and dry goods but gave it up after a few weeks.

Kamal's oldest son occasionally joins a labour gang to look for work in the towns or in other areas with different cropping seasons. The second son, about 11 years old, works as a servant in wealthier village households for his food and a monthly wage of about 30 Taka. He usually works in the same household for eight months and returns home for the rainy season. During the 1985/86 period he worked for Saidur's (IV.2.1) household. A third son, aged eight, works as a cowherd for other village households and receives his food from them in return. Shuki used to work for other village households before she fell ill and had her children.

6. CULTIVATION

The household's main economic strategy centres around the decision to mortgage out their 0.66 acres of land in order to buy a *hal*. With the *hal* they have sharecropped in 1.2 acres of land during the 1986 *boro* season. This is twice the amount they own. On the current $\frac{1}{3}$ sharecropping terms this leaves them with roughly the same annual crop they would have received from their own land. In addition, Kamal is able to sharecrop in large amounts of low land during the *b.amon* season with the *hal*. With the 4 acres he sowed during the 1986 *amon* season, Kamal hopes to recover his mortgaged land. If, as is often the case for the low land, the floods spoil the crops, Kamal will sell a cow to redeem his mortgaged land. The two cows he originally bought as part of the *hal* have borne two calves so that his

cultivation activities would not be undermined. Risks are high, though. Any unexpected occurrence such as his wife's recent cholera attacks and his children's persistent fever, which incurred medical costs of over 500 Taka, unbalances the precarious planning.

For his 1.3 acres of sharecropped *boro* land Kamal incurred a total cultivation cost of 3550 Taka. He achieved a below average yield of 53 maunds per acre. This was partly due to low fertilizer application and partly to water refusal to Kamal's land in one command area (see below). He received 29 maunds of paddy as his crop share. Of this he had to sell 5 maunds immediately after the harvest to cover labour costs. He realized 625 Taka (125 Taka per maund), the very lowest annual paddy price. Two months later, when Kamal had nothing left to sell, paddy prices had risen to 200 Taka per maund. He makes up the remainder of his cultivation costs and about half the household's annual food requirements by renting out his labour and his *hal*.

7. LABOUR USE

The sale of labour makes up a large part of household income. But in order to cultivate *boro* Kamal also hires day labour. The transplantation and harvest of *boro* are done by Kamal with occasional hired day labour. Kamal also weeds the *boro* and cultivates the *b.amon* with some help from his sons. Kamal is one of the few cultivators in Samitigram who does not use a labour group (cf. V.3.1.1) for the *boro* harvest. As Kamal's wife Shuki is chronically ill and cannot cook for large numbers of people and because they do not have the space to accommodate large numbers of people, he has to incur cash costs for the harvest day labourers rather than paying in crop shares as is done with the labour groups.

No annual or seasonal labour is ever employed by the household. Shuki, her mother and one of her sisters, who is married into a poorer Samitigram household help each other with the more arduous household tasks.

8. CREDIT

Kamal took no formal or informal loans in 1985/86. In the past, they had two loans from the MSS and the Krishi Bank both of which they defaulted on. Formal loan sources are now closed off to Kamal. Through very tight planning and almost unceasing work he has been able to meet the cash requirements of the household and its cultivation activities without taking any credit in 1985/86.

9. RELATION TO REGIONAL POLITICS

Since he is neither a member of any political party nor a Farmers' Cooperative (KSS), Kamal keeps a low profile in village politics. Union politics is hardly open to him as an illiterate, poor man without shoes and in ragged clothes. Through Saidur, his wife's half-sister's husband, he occasionally gains some information and maybe a channel of access to the *union* and *upazila* bureaucracy. Another of his wife's sisters holds a prominent position in one of the two Women's Cooperatives (MSS) in Samitigram. Their MSS loans may have been obtained through this connection in the past. After defaulting an MSS loan, this connection does not help them any more.

10. THE ROLE OF IRRIGATION

Kamal irrigates 0.8 acres of sharecropped land in two STW command areas and a further 0.4 acres by the traditional *seti* (swing bucket). His own land is all irrigated and distributed across a further three command areas.

In the last *boro* season Kamal was refused water on half of his sharecropped STW-irrigated land (0.4 acres) because the land owner had failed to pay his water dues for the previous year. Kamal, unaware of this when he entered the sharecropping agreement, was left with only about 60% of the expected yield from

the land after investing fully into the cultivation of it. As he had received no water, he refused to pay any water charges to the manager of the command area, Ashraf, Malik's son (IV.2.1). As a result, he lost another plot of sharecropping land in the following season, which he used to share in from Malik. The land was given to someone else after the dispute about the water payments.

Kamal's strategy is to sharecrop in as much land as he can get for the *b.amon* season. He regards the high risk of crop failure as the evil which accompanies the opportunity to achieve a good crop with minimum cash outlays. This strategy is only possible since the wealthier households have centred their economic strategies around the cultivation of irrigated *boro* crops so that they are not willing any more to take the high risk of crop failure for the lower-yielding *b.amon* crop. As Kamal neither hires in labour nor applies fertilizer to the *amon* crop it is only his own labour and the cost of the home-produced seeds, which he would lose if the crops fail.

Thus Kamal's household has improved its situation through the introduction of STW irrigation in an indirect way. They have gained greater access to sharecropping land during the *amon* season. They do not make large gains as Malik and Saidur, but they do stand a chance to make occasional good profits. A failed *amon* crop no longer means land loss and hunger. Employment in irrigated agriculture and other areas (house construction, transport) is available to Kamal and his sons. Their limited access to *boro* sharecropping land is an addition to *amon* cultivation rather than the central element in their cultivation planning. Kamal has also successfully converted the increased demand for tillage into an income source for himself. He mortgaged his land to invest in two cows, which although less good for ploughing purposes give his family some milk and through the new calves a further productive asset which carries the possibility to retrieve their land from mortgage. A hard and precarious but not hopeless future lies ahead of the household. When Kamal's sons grow up there may be further improvement but this also depends on whether they manage to maintain a joint household.

YUSSUF'S SONS: HAKIM, HANIF AND RAHMAN

1. HOUSEHOLD STRUCTURE

Yussuf is an old man and his sons are all married and have separate nuclear households. His oldest son Hakim is around forty years old. He separated from Yussuf's household 15 years ago. He and his wife have four children between eleven and three years of age and one married daughter. Hanif, Yussuf's second son separated from his parents' household 10 years ago. He and his wife have three children between six and two. Yussuf's youngest son Rahman separated four years ago before his wife had their two children. Yussuf also has two married daughters. The oldest is married to his older brothers' son and lives in the village in another *para*. The younger daughter, Mukhi, is married to a deedwriter in the next town. She is well-off now and provides economic support to her parents. She often comes to stay in her parents house with her husband.

Yussuf is not one of 'the poor'. His father owned 12 acres of which Yussuf inherited 4.3 acres. Throughout his life various shortages forced him to sell 3.3 acres of which 2.3 acres went to Malik (A). Today he owns one acre of land and he and his wife live of the proceeds of this and his seasonal fishing income. Yussuf used to sharecrop in land with his sons but now they have their separate households and Yussuf is too old to take in any land by himself. He never sold his labour. In this research he belongs to the category of 'the coping'.

Yussuf's three sons' households fall among 'the poor' in the village. The whole family lives in the same homestead in different rooms which are assembled in a haphazard fashion around two little courtyards connected by a narrow path. The

homestead land belongs to Yussuf but each nuclear family has 'their space' in it and all the cooking and other work is done separately.

2. ASSETS

The oldest brother, Hakim owns a plough and one bullock. Since his other bullock died he has shared a *hal* (two bullocks and a plough) with his main employer, one of the 'well-off' of the village. He does not own a boat as do his brothers.

The middle brother, Hanif owns two cows and a country boat. For the rainy season the cows are given to a relative because Hanif cannot feed them, and his children are too young to graze them.

Rahman, the youngest merely owns a boat, two fishing nets and six chickens.

3. LAND

None of the brothers has inherited any land yet. They can expect about 0.3 acres each if their father does not sell any more land. Hakim bought a small plot (0.17 acres) with the proceeds from the sale of his wife's land which was located in another village. He has sharecropped in 0.5 acres from Malik (IV.2.1) for the last four years. Recently he has taken a small plot (0.08 acres) of *boro* land in *khaikalashi* mortgage from Toslin (IV.2.3).

Hanif also owns 0.17 acres, bought with the proceeds from his wife's jewellery. As he owns a *hal*, he sharecrops in 1.3 acres of land from one of 'the Rich', Malik's brother-in-law, the 'ex-member' of the *union parishad* for Samitigram. This agreement has lasted for four years. A few years back Hanif took 0.3 acres of land in mortgage from Malik (IV.2.1) in exchange for a vote. Now Malik has taken this land back.

Rahman also owns 0.17 acres acquired with his wife's jewellery. He sharecrops in 0.4 acres from Malik (IV.2.1) and used to share in 0.25 acres of land from his widowed mother-in-law who lives in the neighbourhood. Later she gave the land to someone else for cultivation but she has taken Rahman's and her daughter's oldest child to stay and eat with her on a permanent basis.

4. EDUCATION

Only the oldest brother, Hakim, went to school. He studied up to class 5. Hanif and Rahman did not go to school at all and are illiterate as their parents are.

5. OCCUPATIONS / INCOME GENERATION

Hakim works as a labourer in the village most of the year. He is the *sardar* (leader) of a group of young 'poor' men of Samitigram, who hire themselves out as construction workers in the area throughout the year and as agricultural labour in the village for the *boro* harvest (see V.3.1.1). He also farms his own and his sharecropped land. During the rainy season he completely relies on employment with the labour gang or as an individual day labourer. He does not go fishing in the *beel* like his brothers.

Hanif mainly works as a day labourer. He is not member of a labour gang. During the rainy season his main income source is the sale of fish from the *beel*. Even at harvest time Hanif does not work in a labour gang. He hires himself out individually for ancillary harvesting tasks (e.g. haystacking) instead. He gets paid a higher daily rate for this work than the members of the harvesting gangs receive. This arrangement also leaves him enough flexibility to cultivate his own crops. He rents out himself and his *hal* to plough the land of others.

Rahman is the *sardar* of the other labour group in Samitigram. The two groups do not work together. Like his brothers, Rahman also farms his own plot and his sharecropped land. Some of his household's paddy is processed into rice by his wife

and exchanged for household provisions in the *hat* when cash runs short. Rahman also fishes and sells the catch twice daily during the rainy season.

6. CULTIVATION

Hakim cultivated a total of 0.6 acres in 1986 of which only 0.17 acres are his own. He reported his *boro* yields as between 60 and 90 maunds per acre on STW-irrigated land, and as 24 maunds per acre on a small plot irrigated by a small surface lift pump (*futfuti*) rented at twice the price of STW water. In 1986 he kept 38 maunds out of his total harvest of 61 maunds. He sold 10 maunds to cover cultivation costs and the cost of attending weddings and giving the usual presents. The household eats 50 maunds per year. He had sown all the *boro* land with *b.amon* in 1986. If this crop succeeded the household would have been able to eat its own produce all year. If the crop failed, as in 1985, they had to buy in paddy for about six months of the year. This Hakim has to finance through hiring out his labour. In 1986 he also received 15 maunds for his work in constructing a house in the village.

Hanif cultivated a total of 1.2 acres in the 1986 *boro* season. He harvested 79 maunds and received 40 maunds as his crop share. His *boro* yields are high, between 72 and 90 maunds per acre. Like his older brothers', his cultivation costs are high, at over 1100 Taka per bigha (3330 Taka per acre). His total *boro* cultivation costs came to 4750 Taka in 1985. From the sale of 10 maunds of paddy he realized 1700 Taka. The rest of the cultivation costs have to be made up by day and group labour, fishing and renting out his *hal* throughout the year. He also needs to sell another 8 maunds of his crop share to cover wedding attendance expenses and to repay a loan (see point 8). He sowed 0.66 acres of *amon* in 1986 of which he received 16 maunds of paddy if the harvest succeeded.

Rahman cultivated 0.7 acres of *boro* land in 1986 with a yield of just under 60 maunds per acre. His crop share was 19 maunds of which he sold 4 maunds very soon after the harvest. His household consumes about 15 maunds per year. As the household also uses rice as a means of payment in the *hat* they have use up their crops before the next harvest and have to buy paddy for at least two months of the year. Rahman did not sow any *amon* in 1986 because all his *amon* was flooded and spoilt the year before.

7. LABOUR USE

Hakim and Hanif only do the weeding for their *boro* and *b.amon* by themselves. They hire labour for all other cultivation tasks. For the *boro* harvest they use *dols* (labour groups). They do not engage in labour exchange with each other or anyone else.

Rahman does all his cultivation by himself and thus incurs no cash labour costs at all.

8. CREDIT

Hakim says he "does not need any credit". He engages in mutual interest-free loans in the village and finances the little cultivation he does with his income as a labourer.

Hanif's and Rahman's wives are members of the Women's Cooperative (MSS). They save 5 Taka weekly and have received loans of 1200 and 800 Taka respectively. Their husbands used this money to cover cultivation costs and intended to repay it with their profits from fishing during the rainy season.

9. RELATION TO REGIONAL POLITICS

Hakim is a follower of one of the village's 'well-off' farmers who, in turn, is a firm supporter of Faruque, one of Samitigram's absentee landowners. Faruque is involved in *upazila* politics and especially the BRDB (see IV.2.1 point 9). Hakim is a

member of one of a KSS but never received a KSS loan.

Hanif claims that 'he does not understand politics'. He displayed an astute understanding of politics though when he exchanged his vote for a plot of mortgaged land from Malik.

Rahman does not seem connected with local politics at all and is not a member of a KSS. His relatively long-standing sharecropping contract with Malik may be an indication that he provides political support.

As *sardars* of the village s two labour gangs, Hakim and Rahman hold a position of some respect in the village. Hakim carries himself with an authority unusual for a practically landless man and he appears to command some influence in Samitigram.

10. THE ROLE OF IRRIGATION

Yussuf and his sons only started STW irrigation three to four years ago when Samitigram's 'well-off' and 'rich' had been using STWs for several years. Like other 'poor' cultivators they were absorbed into command areas after the better-off villagers had initiated groups.

All three brothers have some sharecropping land in Malik's son Ashraf's 'pseudo-group' (No. 1 Map III.3 & III.5). Recently, Malik took one plot of sharecropping land in this command area back from Hakim. Hakim also used to sharecrop some land in a group command area (No.24 Map III.3), but the land is now cultivated its owner. Besides, Hakim irrigates 0.2 acres of *boro* land with Saidur's (IV.2.1) small LLP, which he rents at an hourly rate of 30 Taka. The irrigation costs for this land come to about twice as much as the average STW irrigation price in Samitigram. As Hakim sharecrops in the land, his cultivation profits from it are small.

Hanif cultivates land in two command areas which are managed by Ashraf. Like many others he says that group members in these command areas pay the STW instalments although they know that Ashraf misappropriates the money.

Rahman is in the same situation since he also cultivates land in Ashraf's command areas. At the time of my departure from the village he had also started cultivating some of his father's *boro* land in one group command area (No.4 Map III.3).

IV.2.4.1 The 'Poor': Strategies and Change

The situation of Yussuf's sons is very different from his own a generation earlier. In terms of landownership their position has worsened enormously. However, since land is an increasingly unlikely means to retain economic security in Bangladesh today, different household categories develop different complementary strategies. 'The poor' have their own particular room for manoeuvre and have developed a corresponding set of strategies. In accordance, the debate on rural development in Bangladesh increasingly needs to ask which of these non-land based strategies can become a viable income source for the increasing numbers of land- and assetless in future.

The four 'poor' households in this section vary in their central economic strategies in several ways.

Kamal has seized the chance of obtaining *amon* land. At considerable risk to their few assets he has invested in a *hal* to cultivate and to increase the price of his own labour by renting himself out with his *hal*. In Samitigram a man needs to work two days to make up for one day's rent of a *hal*.

Hakim has made labour in its various forms his main economic support. He is one of the most educated people among Samitigram's 'poor' and has used his potential in the labour market well. As the *sardar* of a labour gang he negotiates with the wealthier households in the village from a position of more strength than he could command as an individual labourer. His education may well have helped him to gain this position. Own cultivation takes a very secondary role in Hakim's economic strategies. Sometimes he cultivates some land to feed his family and he owns a cow and a plough. However, he does not take any cultivation credit. Most of the time he is seen engaged in negotiations and working for others. Furthermore, he does not fish. This may be a reflection of his recognition that fish yields are falling or simply a personal distaste for the occupation. It adds up to a high reliance on employment. The availability of this employment (cultivation and construction) is closely connected to the introduction of irrigated *boro* into Samitigram (cf. III.3 & VII). Neither Hakim nor any of his brothers engage in the traditional *gata* labour exchange. This indicates a high degree of monetisation of exchange relationships.

In contrast to his brothers, Hanif does not work in a labour group. He cultivates quite a large amount of land, works as a day labourer and fishes. His strategies are similar to Kamal's although less purposefully planned and less energetically executed.

Rahman is the youngest and poorest among the 'poor' household heads introduced here. His household is at an economically very difficult stage with only one income earner and several small children. Due to his young age Rahman is not yet as able as his older brother to take advantage of his position as a *sardar* in a society where age determines status to a large extent. Rahman's household relies on the support of his mother-in-law. She provides it despite severe quarrels with Rahman in recognition of the tight economic circumstances of her daughter's household. This is one of the few instances of non-monetized inter-household family support I encountered among the 'poor'. It is perhaps significant that it is given by a woman, who is much less, if at all, involved in monetized exchange relationships and more reliant on her "good relationships" or "social capital" (see White 1988) as a subsistence insurance. Her conduct shows some similarities with that of Yussuf's daughter Mukhi and differs significantly from that of his sons.

Boro cultivation is not a main strategy of the 'poor'. Limited access to *boro* land, higher cultivation costs, limited access to formal, cheaper credit and lack of own tillage capacity reduce the potential profit from irrigated agriculture for 'poor' cultivators like Kamal and Hanif. So they divert their attention to the former main crop of the area, rainfed *b.amon*. The effect of the highly likely event of *amon* failure is softened by the availability of employment on the land of those who do cultivate *boro* and in new occupations (construction, transport) which have expanded in the area (see VII).

Other 'poor' households take a conscious decision to move away from the ideal of producing enough paddy to meet household consumption needs and enter the labour market on a full scale. Among the 'poor' it may well be these households who gain most through irrigation. It is they who are the leaders and organisers of the labour groups in the village and it is they who can therefore

use the new position of strength which labourers can find now themselves during parts of the *boro* seasons in after the intensification of agriculture through irrigated HYV *boro* in Samitigram (cf. V.3).

IV.2.5 ... and the Destitute: Sahera and her Children

The 'destitute' are the poorest of the 'poor', those who have practically no assets to lose. Female-headed or very old single-person households form the majority of the destitute. The case of Sahera shows how some of those most in need arrange for their survival and what changes are taking place for them.

1. HOUSEHOLD STRUCTURE

Sahera is a widow. She is about forty years old. Her two daughters of ten and seven years and a baby son are living with her. A married daughter is in a village about ten miles away. Sahera's husband Mahmud died in March 1986, during my stay in Samitigram and half-way through the interviews for this study. He was a landless labourer and had come to Samitigram to stay with Sahera's parents as a *ghor jamai* in 1972. They lived in Samitigram because of better prospects for work and better wages for Mahmud there.

Today Sahera's parents and her husband are dead. She has four half-brothers, who are landless labourers and several more distant relatives in the village.

Even before Mahmud's death the household was one of the three poorest in the village. Now Sahera and her children are the poorest household of Samitigram.

2. ASSETS

They never owned any cattle nor a *hal*. There is no boat. Even the land on which their hut is built does not belong to the household but is *khas* (government) land. Their hut is made of dried jute sticks and mud. It is too low to stand up in. Sahera has two chickens and there are some clay pots in the house.

3. LAND

There has been no land in Sahera's or Mahmud's households of origin for the last two generations. They have never sharecropped or mortgaged in any land. Mahmud said that he never had enough money to afford to cultivate.

4. EDUCATION

No-one in the household ever went to school.

5. OCCUPATIONS / INCOME GENERATION

Sahera has a variety of ways to meet their daily needs. She sharetends chickens and eventually acquired her own two chickens from this. With these she sometimes earns some cash by selling eggs or chicks. During the harvest period she sometimes helps with the crop processing for a wealthier household, often for

Malik's (IV.2.1) for one or two months in exchange for daily food, one maund of paddy and maybe also a new *sari* at the end. In 1986 she spent two months gleaning the fields of the 'rich' of the village after the *boro* harvest and obtained 2½ maunds of paddy this way. She does occasional day labour in the households of her better-off relatives in the village. Sometimes her ten-year old daughter works in other village households such as Toslin's (IV.2.3) in exchange for a meal. This daughter also once worked for a family in a nearby town but returned home after a short time. Often Sahera does not have enough food in the house to feed her children. She and her daughters usually only eat one meal of rice and a little curry a day, but she feeds her little son twice a day. Sahera's husband Mahmud used to work with one of the village labour groups until he collapsed in the field and died one day.

After his death Sahera has often had to beg for food. When they do not have anything to eat, she goes to her relatives or to other village households. Sometimes, she works in exchange for food, sometimes she simply asks for it. There are twelve households in Samitigram who are taking turns to help her and her children when they are in need. Some but not all of them are her relatives. Saidur (IV.2.1) is one of those who occasionally helps her. He comments with some pride "In our village we have no beggars because we take care of our people. That is why there are no thieves either". There indeed appeared to be no-one in Samitigram who went begging elsewhere, but a string of outside beggars regularly visited Samitigram.

6. CULTIVATION

The household does not cultivate any land. Mahmud's wages as an agricultural labourer used to be its main income.

7. LABOUR USE

The household never employed anyone.

8. CREDIT

When Mahmud was alive he used to take loans from other village households to tide his family over lean periods. The going rate was 10 days work to repay a loan of 100 Taka. At a daily wage rate of 20 to 25 Taka, Mahmud would thus need at least twice as many days' income to repay a loan than it would have taken him to earn the same amount. Sahera does not take any loans. The chances that she would be able to repay and feed her children and herself at the same time are extremely slim, so that no-one in the village gives her a loan.

9. RELATION TO REGIONAL POLITICS

Mahmud was not member of any of the *samitis* or political parties. Sahera is not member of the MSS but relies totally on support from her relatives, employers and patrons.

10. THE ROLE OF IRRIGATION

Shallow tubewells brought an additional cropping season and a substantial increase in the demand for employment to Samitigram. Like several other long-term landless men, Mahmud came to the village to take up these new employment opportunities. Some brought their families. Mahmud married a woman from Samitigram. After a few years in Mahmud's home village, the family came back to Samitigram and Mahmud settled down as a *ghor jamai*. Mahmud and Sahera said that their situation became better in Samitigram than it used to be in his village, because he could always find work in Samitigram. It is hard to imagine what Mahmud's household's situation would have been like

without the irrigated *boro* crop. Perhaps a spontaneous comment by one of the other landless men expresses it best: "Without the *boro* we would all have died..."

IV.2.5.1 The Destitute: Strategies and Change

By no stretch of the imagination can it be said that Mahmud's household was prospering before he died. He was landless, sometimes working with a labour group and sometimes on his own. He was in a subservient, client position towards several village households who occasionally employed him. His age (around 55) and lack of education made it difficult for him to act along anything but the traditional strong patron versus weak, dependent client framework. He relied on usurious consumption loans and had no access to any external resources.

After Mahmud's death Sahera is locked into the female labour market with little chance of cash payment for her work. All she can hope for is to provide subsistence for herself and her children. In order to marry her daughters she will need help with the dowry. Sahera cannot earn cash except by selling poultry or eggs, and even for this she needs male intermediaries if she wants to sell in the *hat* or *bazar*. Some of her income-generation activities such as post-harvest processing and field gleaning are an upshot of the introduction of irrigated *boro*. Even the fact that Sahera receives help from other village households may be connected with the increase in prosperity that followed the introduction of HYV *boro* in these households.

Sahera's hopes are with her baby son. As women, she and her daughter have been excluded from the cash nexus of the labour market. At present this means that women like Sahera become less willing to work for only food in exchange. As Sahera says

"I can glean the fields for a meal, I don't have to work for anyone for that".

As a consequence a scarcity of female labour may be developing. It is possible that the female labour market is on the way to monetisation and that opportunities for Sahera and her daughters to earn cash incomes increase in future.

When he is older, Sahera's son will bring in some cash income as an agricultural labourer, or more if he manages to acquire and use some education. However, the household has no great future to look forward to whatever absolute positive effects irrigation may have had for them.

IV.3 Some Indicators of Change

STW irrigation has brought a number of changes in Samitigram. An additional crop with higher yields than the previous main crop (see V.4) has taken over the agricultural cycle. Cultivation costs have risen (see Tables V.13 & V.14) and additional labour for cultivation is needed (see III.3 and V.3). With irrigated cultivation, new types of inputs are required (fertilizer, seeds, bank loans etc.) and connections to state bureaucracy and markets outside the village have become more diverse and frequent (see VII).

All this has gone hand in hand with a shift in the attributes of the village leaders. The new younger leaders can be distinguished by their higher level of formal education and their ability to function in spheres outside the village.

Finally, the formation of groups in the village (see III.4-5) is an important element in the way agricultural production has changed. This has particularly affected the quantity and direction of resource flows from irrigated cultivation. The village's irrigation groups are clearly the most important determinant of who gains how much from irrigation in Samitigram.

The consequences of these irrigation-related changes have been

different for each of the four household categories. The case studies in this chapter indicated some of the category specific changes and, more importantly, they showed how the different aspects of a household's resources, status and strategies are interdependent and cumulative in their effects. The changes in the context and meaning of different agrarian production and exchange relations for the four household categories are taken up in more detail, and based on the larger number of households in the village survey, in chapters V to VII. This chapter concludes with a summary of irrigation related changes for the four household categories, which is based on both case study and survey material.

Higher yields and crop security have meant the largest absolute increases in income to 'rich' case study households. This has allowed for investment in non-cultivation activities, such as shops and rice mills but also particularly in education. Some diversification of income sources has alleviated pressures on land. With higher crop security for *boro*, longer term fixed-rent tenancy contracts provide the opportunity for wealthy absentee landowners such as Faruque to sever connections to their land while still deriving income from land. Faruque is thus able to eliminate his cultivation supervision time and costs and to concentrate on other activities.

Irrigation is a new source of patronage for some of the 'rich'. Irrigation command areas such as Malik's (IV.2.1) form part of unequal relations in interlinked markets which bind poorer households to the 'rich'. On the other hand, the irrigation groups have curtailed 'rich' households' ability to employ extractive practices. If particular production or exchange relationships around irrigated cultivation are examined in more detail, it usually emerges that most of the additional surplus created is appropriated by the 'rich'. The changes in the terms of sharecropping contracts and the incidence of various types of land tenancy with irrigation by household category in Samitigram (see V.1.4) are a

case in point.

Every 'rich' household in Samitigram dominates at least one STW command area. The private STWs in the command area study (see Table II.1) are all owned by the 'rich'. A 'rich' household also usually owns a small LLP (locally called *futfuti*), which is used to irrigate very low *beel* land from excavated fish tanks. Renting out the LLP to other fishbreeders provides a good income as does the sale of the fish in the nearby towns.

On average a 'rich' household has land in 12 (between 6 & 18) of the 31 surveyed village command areas.

The 'well-off' have probably undergone most of the occupational diversification among all household types. Occupations such as that of mechanic and spare parts dealer are a direct consequence of mechanised irrigation. The position of irrigation group manager, although unpaid, provides many opportunities for financial and political gains. In Samitigram it is almost exclusively occupied by 'well-off' young men.

As they have a lower margin of economic security and less land to fall back upon than the 'rich', the 'well-off' need to make greater efforts at diversification and increased agricultural productivity. The highest yields are found among these households, and it is the often more productivity-conscious 'well-off' and 'coping' households which obtain the longer-term fixed-rent and 'new' sharecropping contracts for larger plots of land from the 'rich' (see V.1.4.2-4). Cases such as Adom (C) demonstrate this, and show the central importance that irrigation has in providing an avenue out of cultivation for 'well-off' households. Education is a main resource in this new context.

The 'well-off' of Samitigram have land in an average of 6 (between 2 and 11) of the village's 31 STW command areas. The great majority of STW managers come from the ranks of the 'well-off' complemented by some younger

men from among the 'rich' (see III.4-5). Many of the STW operators are also recruited from the 'well-off'. For these households, irrigation has meant an opportunity to branch out into new non-agricultural occupations.

'Coping' and 'poor' cultivators generally gained access to STW irrigation with the formation of irrigation groups in Samitigram. The 'well-off' and the 'rich' started irrigating some years earlier with their own STWs. For a number of the 'coping' increased yields have staved off the need to sell labour. On the other hand, 'coping' and 'poor' households, who possess a *hal* (two oxen and plough) often enter the labour market with this equipment to respond to increased ploughing needs. The possession of a *hal* has turned into an important determinant for the type of involvement a household has in irrigated cultivation. As has been found elsewhere in Bangladesh, (c.f. Hamid 1982) the occupation of 'ploughman', i.e. the renting out of oneself and one's plough to work the land of others is becoming more important in irrigated areas. With a *hal*, a day's work brings more than twice the income of an agricultural labourer.

Even quite poor cultivators employ labour for the *boro* harvest season. This and other cash requirements for *boro* cultivation create new credit needs among the 'coping' which involve households more intensively in formal and sometimes also informal credit relations (e.g. Ali, IV.2.3).

All 'coping' households own or sharecrop some land irrigated by STW. On average 'coping' households cultivate land in four command areas. For a large number of these households the higher yields and greater crop security achieved with irrigated cultivation has - so far - obviated their reliance on labour sale.

For both the 'coping' and the 'poor', access to sharecropping land during the *amon* season has increased considerably since many of the wealthier households now concentrate on irrigated *boro* and are no longer willing to take the risk of crop failure through flooding. This provides both a chance and a risk

for poorer households. People like Kamal (IV.2.4) are able to develop a strategy which carefully calculates and takes the risks involved. Others borrow and invest into *amon* cultivation only to lose their crops to the early rains.

The main change for the 'poor' is on the labour market. Quite a large number of 'poor' households moved to Samitigram because of the good employment opportunities there. A number of men came to the village to live in their parents-in-law's houses for this reason since STW irrigation started. Many of the adult men of 'poor' households of Samitigram are organised in the village's two labour groups and, similar to the migrant labour groups which arrive for the *boro* harvest, they command some strength in the negotiations on remuneration (see V.3).

An indirect but important change for the 'poor' comes with the fall in the general water table through irrigation. The decrease in the water table endangers the essential seasonal income from open-water fishing. This is likely to enforce the client status and exposure to extractive market interlinkages of 'poor' households and has potentially very serious consequences for their survival chances during the latter part of the rainy season from August to October, when employment is scarce.

Finally, a change in work patterns for 'poor' women is also recognizable. Rice husking with the *dheki* used to be the only opportunities to earn cash income for the women of the poorest households. With the emergence of mechanised rice mills to manage the larger crop quantities, a decrease in *dheki* work has occurred. This has been observed in many parts of Bangladesh (see DeVyllder 1982; Greeley 1984; McCarthy & Feldman 1983). Simultaneously an increase in other types of female work such as parboiling and winnowing has occurred. A further part of crop processing (i.e. husking) has thus been absorbed by the male monetized sector while increased crop volumes continue to occupy

poor women in low-paid and largely non-monetized employment relationships.

The changes indicated by the case studies and the village survey will be discussed in more detail in chapters V to VII.

CHAPTER V: IRRIGATED CULTIVATION AND ACCUMULATION

This chapter constitutes the main part of the thesis. It analyses production and exchange relationships around cultivation and relates changes to the introduction of STW irrigation. Survey findings on relationships for the three main production inputs into cultivation, land, credit and labour are presented.

Section V.1 analyses the land market. The relative importance of land for the economic position of different types of household is demonstrated (V.1.1), the incidence and meanings of land sales for different household categories (V.1.3), and the changes in price structure and price level for different types of land with irrigation are discussed (V.1.3). Sections V.1.4 (land tenancy) and V.1.5 (land mortgaging) examine changes in production relations around land. Section V.1.6 relates these changes to the introduction of STW irrigation.

Section V.2 examines changes in formal and informal credit with irrigated cultivation. The role of credit relationships in the agrarian structure, in particular their distributional impact and their impact on agricultural productivity is examined.

Section V.3 presents the complexities in meanings and functions of Samitigram labour relations.

Section V.4 collates the main elements which affect cultivation costs and crop returns at household level. Returning to some of the case studies of chapter IV, examples of cultivation cost differentials between householders of different categories for the main irrigated and rainfed crops in the village are discussed.

Two main findings emerge from the chapter:

Firstly, in the context of more secure higher yields, irrigated cultivation in Samitigram has passed a threshold beyond which surplus appropriation by producers and rentiers alike relies on output and productivity increases. Agrarian relationships are thus becoming increasingly subject to the considerations of productivity.

Secondly, the emergence of more productivity-oriented agrarian relations under

irrigated conditions has not displaced market interlinkages and patron-client relationships. Rather, patron-client relations have adapted so as to promote agricultural productivity while allowing some increased 'room for manoeuvre' for the poor and maintaining the advantages of the powerful through market interlinkages.

This chapter is concerned with changes in agrarian relationships and with the way these changes affect the development chances of different household categories. The analysis refers specifically to the introduction of STWs. However, rather than attempting to 'isolate' irrigation entirely, the discussion sets it in the context of other factors of rural change.

V.1 The Land Market

V.1.1 Land Holding and Household Category

National statistics for Bangladesh usually describe the rural household through some measure of its landholding. Many of the academic studies also use some form of landholding as a measure of relative and absolute household position. A village level study over a relatively long period of time offers the opportunity to go beyond the limitations of the land-centred approach to household classification. I have presented a picture of household position as composed of a variety of elements of changing centrality, one of which is landholding (see Table IV.1). The relative importance of these composite elements of household type varies between households in one category, between household categories, and over time.

In this section, landholding is introduced in terms of its importance for different household categories and for individual households within categories. On the one hand, this expresses the economic and demographic realities which necessitate alternatives to land as the major economic base for the population in Bangladesh. On the other hand it expresses a concern to

... explore the part played by land in the operation of types of household economy (own emphasis)... One would

expect to find a wide range of possible patterns - from a situation where the household plot constitutes the major source of income for the family to one where land becomes subordinate as a source of income in relation to various non-agricultural activities...these two situations may be identical in terms of the size and quality of their land base and in terms of the demographic and labour composition of the households, yet nevertheless represent different livelihood solutions.

(Long 1984 p.7)

Figures V.1 and V.2 show the ranges of owned land and effective landholding (for definition see II.4.3) of households of the four categories in Samitigram

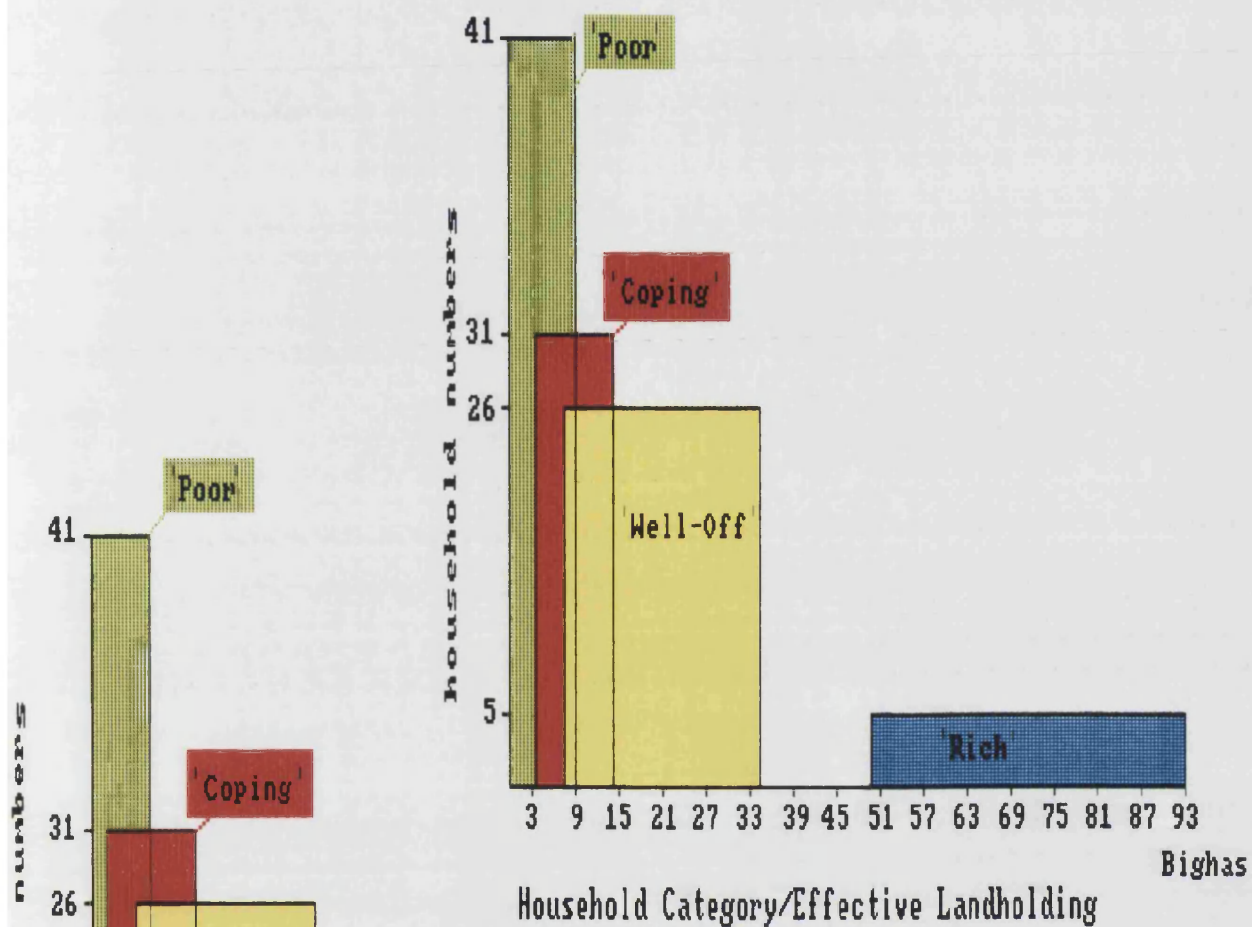
It is shown that within categories, households own and derive crops as landowners or tenants from a wide range of landholding sizes. As household category rises, the width of its landholding range increases. The importance of land for household position thus varies more inside the household category for better off households. This indicates that land has lost its central importance as a base of wealth for wealthier more than for poorer households.

The landholding ranges of the bottom three household categories, the 'poor', the 'coping' and the 'well-off' overlap. Apart from the 'rich' for whom tenancy relations reduce effective landholding compared to owned land (cf. Tables V.5 & V.6), landholding ranges by household category do not vary much between owned and effective landholding (cf. Figures V.1 & V.2).

The examination below of the factors which determine the position of households with landholding sizes at the extreme ends of their category's ranges, shows the variable effect of land on household position. With obvious exception of some of the 'poor' (for whom there is no lower household category), the households at the bottom end of their category's landholding range always have at least one strong advantage in another area to outweigh their relatively low landholding size.

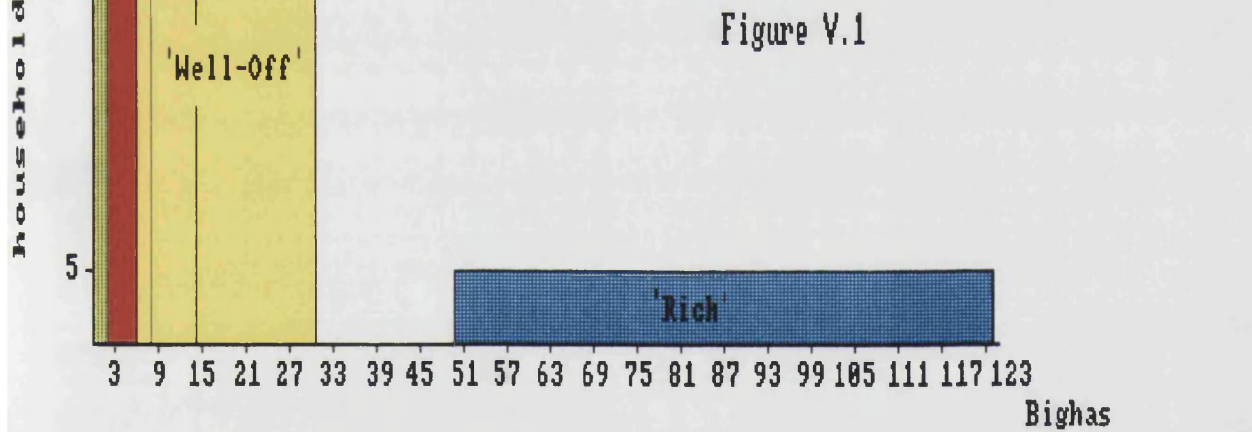
Figures V.1 and V.2

The Relation between Household Type and Landholding Size



Household Category/Effective Landholding

Figure V.1



Household Category/Owned Landholding

1 bigha = 0.33 acre

Figure V.2

The 'rich' are in a landholding 'class' of their own. There is a substantial difference between the smallest landholding among the 'rich' and the largest landholding among the 'well-off'. The landholding range of the 'rich' is the only one which does not overlap with that of any of the other household categories. All five 'rich' households in Samitigram have managed to increase household land over the last generation. Only for the 'rich' is land still an adequate shortcut to distinguish the household category because only the 'rich' still have the capacity to transform household surplus into land purchases on a regular basis.

Thus the 'rich' household with the lowest landholding inside its category (Saidur IV.2.1 with 18.5 acres) had a diversity of income sources (fish-breeding, long-distance paddy trade, a roadside shop). The household head, Saidur is a leading figure in the village *samitis* from which he derives a variety of material advantages, which can only be partially quantified but not determined precisely through interviews and observation.

The 'well-off' household with the lowest landholding (1.65 acres) belonged to a strong faction of brothers, which included the village's *union parishad* member. A variety of extractive practices by this alliance of brothers appeared to furnish considerable income to this household. Akbar, the head of this most 'land-poor' 'well-off' household, was the manager of an irrigation group, which broke up over his alleged misappropriation of group funds. The *shalish* (village court) which was convened to judge on the dispute between the manager and the group members was dominated by Akbar and his brothers. Eventually Akbar kept the money from the sale of the group's STW, which had been bought on a bank loan. The implications of this for the question of accumulation through irrigation are taken up elsewhere (V.2). Surplus appropriation through irrigation is one of the material expressions of Akbar's strong position in local politics. Eventually, but not necessarily, his gains may manifest themselves in land. Nonetheless, his kinship network and his relatively high level of education (class 10) and not land are the basis for Akbar's economic position.

The 'coping' household with the lowest holding only owns 0.33 acres, not enough to feed the nine household members and considerably less than the 2.65 acres of the most 'land-rich' 'poor' household. The household head, Djomshed is the brother of Faruque, the village's absentee landowner. Faruque lives in the *upazila* headquarters and is one of Samitigram's central links to the outside. Through his brother, Djomshed has a certain status in the village. Djomshed also works as a 'deedwriter' in land mortgaging and sale transactions. The income he realizes from this depends at least in part on his connections to the bureaucracy through his brother Faruque. The total situation of Djomshed's household locates it comfortably within the 'coping' rather than among the poorest of the village where conventional statistical measures of landholding or asset structure would have placed it.

For the households at the top end of their category's range of landholding the question of why a household is not considered part of the next higher household category becomes relevant. For these households one or several of the factors, which make up composite household position represented a considerable disadvantage which outweighs the household's relatively large landholding.

The three 'well-off' households with the highest landholding inside their category all have 10 acres. This separates them from the lowest landholding size among the 'rich' (18.5 acres) anyway. But further factors outweigh these households' relatively high landholding sizes and make their households' positions more similar to those of the smaller landholders inside their category than to those of the 'rich'. In all three cases the household head is illiterate and old and has not ceded the leadership of the household to a son. The households' income is almost exclusively derived from cultivation. None of them is more than marginally involved in the village's *samitis* and all three households are marginal or hostile to Samitigram's dominant factions.

The 'coping' household with the highest landholding in its category owns 4.6 acres, more than twice as much as the 'well-off' household with least land. This household has

10 members, only three of whom do agricultural work. Village kinship connections are weak as the male household head only came to Samitigram through marriage. The household has to rent all draught animals. Although land is available, both labour and other inputs thus present considerable problems. Only about 9 months of paddy consumption requirements are covered by the household's own harvest and during the lean seasons the men occasionally hire out their labour. Only one household member ever attended school, where he barely learnt to read and write. Should the household split up into its constituent three nuclear families these would be firmly located among the 'poor' of the village as few advantages other than land are available to the present joint household.

The 'poor' household with the highest landholding in its category has 2.65 acres. This clearly takes it out of the landholding categories which conventionally describe the poorest among the rural population of Bangladesh. However, a more thorough look at this household's total situation brings to light the poverty of its circumstances. The household is residentially and economically joint, a very unusual occurrence in its category. It consists of four nuclear families with a total of 14 members. Only three of these are adult males who are able to work on the land and to hire out their labour. The household has to purchase its paddy requirements for at least two months of the year. There is a history of infant death and nutrition deficiencies in the household. None of the household members has ever gone to school so that their potential involvement in new income-generating activities and participation in village *samitis* is restricted.

On the whole, the variations in the relation between landholding and household category show that it is no longer adequate to use a single factor, even one as central as landholding, in whichever form, as an indicator of the economic position and mobility of Bangladeshi rural households.

V.1.2 Land Purchases and Sales

Land transfers and land use affect a household's economic position and security in

a major way. Table V.1 gives some indication of how land transfers over the last generation of household heads have influenced the land endowment of Samitigram's four major household categories.

TABLE V.1: Land Transfers and Changes in Holding Sizes (% of Household Category)

	Rich	Well-Off	Coping	Poor
1. Land Sale ^{a)}	0%	36%	48%	32%
2. Land Purchase	100%	92%	45%	23%
3. Less Land than under previous household head	0%	64%	67%	63%

a) present household heads

Table V.1 shows that some households from all categories except the 'rich' sold land during the present generation of household heads (line 1). Most land sales occurred from the 'coping' to the 'well-off' and 'rich' households. Two types of land sales by the 'coping' can be differentiated. The first and main one is part of a movement towards landlessness, which eventually propels the seller into the category of the 'poor' as land fragmentation, and a cluster of disadvantages reinforce each other (see Toslin IV.2.3 for a case example).

The second type of land sale is part of a land selling and purchasing cycle, which stretches across a generation and is mainly determined by changes in the household labour/consumer ratio and its expenses and incomes from dowries. In one such case, a farmer who started with two *bigha* (0.66 acres) of land managed to buy a further six *bigha* after his wedding and then had to sell six *bigha* throughout his life in order to provide dowries for his seven daughters. In his old age he is back to the two *bigha* of his youth. However, similarly high rates of land sales and purchases among the 'coping'

(Table V.1) do not necessarily indicate the cyclical recurrence of land purchases and sales in line with Chayanovian arguments. In Samitigram, land sale and purchase cycles over the last generation are more an indication of the particularly transient character of the situation of 'coping' households where land is either sold or purchased as the direction of household mobility becomes clear.

Only 16% of Samitigram's 'coping' households had experienced a circular land sale and purchase process in the last generation. Over half of these had achieved income increases through the introduction of irrigated *boro*. This contributed the essential economic momentum to repurchase land after previous sales. It is not a longer term stability in the socio-economic structure of Samitigram in the Chayanovian tradition (see Harrison 1977 for a critique) which is implied by most of the cyclical land sale and purchasing processes in Samitigram over the last generation. Rather, STW irrigation has brought a one-off increase in cultivation incomes (see V.4) which combined with favourable stages in the demographic cycle has maintained the socio-economic position of some 'coping' households over one household life cycle. These unique circumstances cannot be repeated in the absence of continued 'injections' of productivity-raising elements into the agrarian structure. At best a postponement of the eventual loss of land rather than the crossing of the threshold towards some degree of security of household position through income from land is the effect of irrigated cultivation for the majority of 'coping' households. Even high productivity increases in cultivation cannot avert a decrease in the role of land both as income source and as repository for accumulated surplus for the rural majority in Bangladesh.

There are two important points to be made about land sales. Firstly, until the introduction of irrigated *boro*, most of the present 'rich' households purchased land from less wealthy households during periods of economic distress after the frequent failures of the *amon* harvest due to the vagaries of the monsoon. With the more secure irrigated *boro*, such "ratchet type" distress sales which used to leave the seller of land in an

irreversibly worse position have decreased substantially. The decrease of distress land sales (as opposed to land sales with other reasons) as a result of reduced risk with irrigated cultivation has important development implications. It also emphasizes the point that before the quantitative incidence of an element of the agrarian structure is determined, its meaning for the actor household and for the agrarian structure needs to be investigated.

There seems to be a relatively low percentage of land sales by the 'poor' (i.e. 32% of category). However, over 50% of the 'poor', (17.5% of all village households), owned no agricultural land and thus had no land to sell. Land sales from the 'poor' occurred because of food shortages, daughters' weddings, diseases, the death of a main income earner and litigation expenses. One 'poor' household sold land in order to buy a fishing boat and nets. The land purchases by the 'poor' were mainly restricted to residential land bought by newcomers to Samitigram, who had sold their assets elsewhere in order to find employment in Samitigram (see V.3 on labour market conditions). Only very small plots of agricultural land were purchased by the 'poor' of Samitigram. These purchases were without exception financed through non-cultivation income sources such as pump operating, fish sale and trading (see table VII.1). A degree of land accumulation still occurs among some of the 'poor' not through irrigated cultivation directly but possibly through some of its 'upstream' or 'downstream' implications in exchange and non-cultivation production activities (see Ch. VII).

Land sales by the 'well-off' bear yet a different character from the sales by 'poor' and 'coping' households. The 36% of 'well-off' households, which sold land over the current generation of household heads may at first appear surprisingly high. The rationale with which land is sold by many 'well-off' households throws some light on this. While there were a few distress sales due to failed harvests before the introduction of STWs, most of the more recent land sales by the 'well-off' occurred in conjunction with land purchases in other areas and achieved a consolidation of landholdings around

irrigation command areas. Some straight land exchanges, not recorded as purchases and sales in Table V.1, also occurred among the 'well-off' and 'rich'. Land consolidation around STW command areas was a major feature of land transfers to and from the 'well-off'. Some marginal, lower fertility land was also sold by the 'well-off' in this process.

The function of land sales for the 'well-off' is thus one of rationalising farm production structures, or of re-allocating investment funds into more profitable non-agricultural channels such as a shop for electrical spare parts in one case. It is not, as for the 'poor' and 'coping', a means to provide for consumption and life cycle requirements. Table V.1 shows relatively equal proportions of land sellers among the three bottom household categories. It is now clear that this needs to be seen in conjunction with the specific meaning of these land sales for each household category.

92% of 'well-off' households bought land. Although land is not the only means to increase household income, land purchase is still a main way of investing household income. Only for the 'rich', (i.e. under 5% of all households in Samitigram), has landownership remained at or above the level of the previous generation of household heads (see Table V.1). For the future, other indicators of accumulated wealth will gain importance and may replace investment in land. The often rather uncritical equation between land sales on the one hand, and pauperisation on the other, in much of the literature on rural Bangladesh does not always help to distinguish rural mobility patterns which are increasingly determined by occupational diversification out of cultivation, and the use of land sales and mortgages as a way to raise finance.

As an enforcement to the argument, it needs to be stated that the total absence of land sales by the 'rich' (Table V.1) is not equivalent to an absence of land transfers from the 'rich'. There were a number of land exchanges between the 'rich', which were undertaken to consolidate irrigation command areas. These land exchanges, often accompanied by cash payments in order to compensate for differences in plot sizes and

land quality, also occurred between Samitigram 'rich' and inhabitants of other villages. "They don't give us water properly over there" was the most frequent reason given for these land exchanges. In contrast to earlier findings (Patnaik 1972 a&b; Wood 1981 on antediluvian uses of capital), we thus find the clearest association between land transfers and productivity increases among the 'rich' and 'well-off'.

Samitigram villagers tended to regard land sales as an expression of need. Those who had not sold land state this with pride. Those who did sell land in order to restructure household investment or production tended to explain this at length. 'Rich' household heads said they had not sold land because they had "no need to". A household which does not sell land maintains status in the village. Similar patterns were found for sharecropping and mortgaging (see V.1.3 & V.1.4).

However, in the context of STW irrigation, land sales and exchanges were also consolidating fragmented landholdings for the wealthier landowners. Samitigram cultivators of all household categories consolidated their operated holdings and realized economies of scale around STW command areas through land sales and exchanges (the 'rich' mainly) or tenancy or mortgaging arrangements (see V.1.3-4).

Another parallel change appeared among smaller landowning households at the point of inheritance and household nucleation: When *amon* was the main crop, the heirs to a farm used to subdivide every one of the farm's plots. This was done to distribute the risk of crop failure between heirs and to take into account variations in land fertility between plots. With irrigated HYV cultivation, the risk of crop failure diminishes. As a consequence, the heirs of farms with irrigated land in Samitigram started to allocate full plots to individual households rather than subdividing every single plot of land amongst all inheriting parties. Like the productivity-oriented land sales and exchanges of the 'rich', this slows down the land fragmentation process.

In contrast to Lipton's (1968) postulated choice between low-risk, low-yield production and higher-risk, higher-yield production options for near

subsistence farmers. In Samitigram the introduction of STW irrigated *boro* brought the new option of lower-risk, higher-yield production. Farm production structures are thus changing from multiple rainfed plots in different areas, which in line with Lipton's argument minimized the farm's risk of total crop failure, to fewer and larger blocks of land centred around irrigation command areas. Productivity increases and economies of scale are thus realized by many Samitigram cultivators.

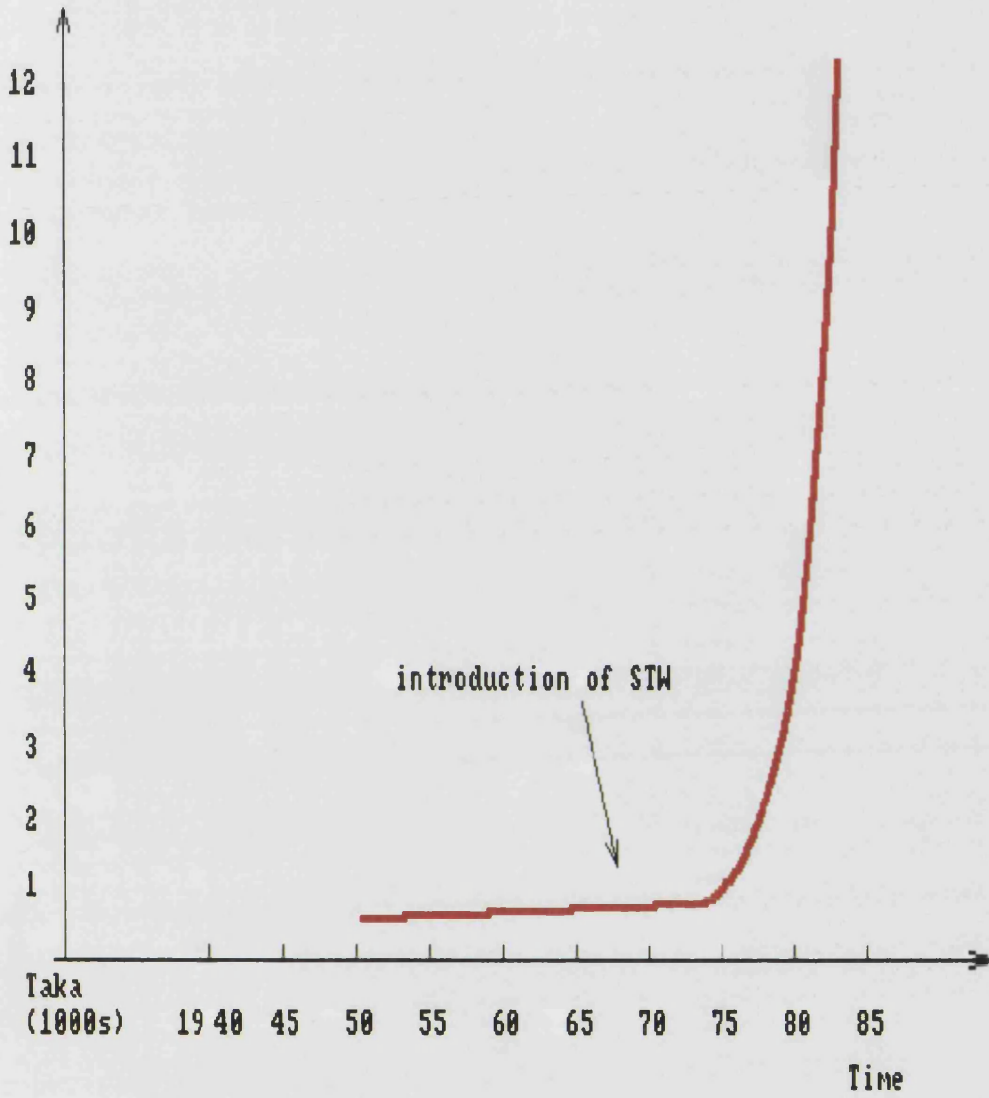
Access to water is essential for this. Samitigram's irrigation groups facilitate water access for poorer households in particular (see Table III.2). Without this secure access to water, the agricultural production structure and its influence on household level accumulation processes can take very different forms. This is shown for the 'seven villages' in Chapter VI.

All Samitigram 'rich' bought land regularly (Table V.1). One household, which used to belong to the 'rich' in the previous generation, split into eight separate households, two of which are now among the 'well-off', four among the 'coping' and two among the 'poor'. In all other previously 'rich' households, net land purchases were possible with the maintenance of the joint family household. Time and resources did not allow for an investigation of per capita changes in landholding size over time in Samitigram. Fewer children per couple compared to the previous generation combined with the increases in total household land are likely to mean a substantial increase in per capita landholding among the 'rich' and a decrease for other household categories ¹⁾.

Income sources leading to land purchase are clearly becoming more diverse for all household categories. Only one of Samitigram's 'rich' households relied exclusively on cultivation. Occupational diversification into trading, rice-milling and the service sector has become an essential element of upward mobility for all households. At present, land ownership still indicates economic security and status. However, differences in land sales and purchases between household types increasingly reflect returns from diversification out of cultivation rather than income from land only (see Ch. VII).

Figure V.3

Prices for STW irrigated Land in Samitigram 1940 - 85 (per bigha)



Clearly land purchases and sales also mirror the direct effect of irrigated cultivation. While smaller 'coping' and 'poor' landholders increased their economic resilience and avoided selling their labour through STW irrigated production (although temporarily in the absence of other income sources), larger landholders realized sufficient additional income from irrigated cultivation to purchase more land and thus to expand the productive base of their farms.

V.1.3 Land prices

The approximate development of land prices over the 45 years up to 1985/86 is shown in Figure V.3. Information was collected by asking household heads about past purchases of land in present irrigation command areas. For each point in time an average land price was then calculated. Although some recall problems may remain, it was found that the importance of land in the economic life of a household is such that the participants in a land sale are able to recall the terms of the transaction in great detail over decades.

In the mid-seventies, five to ten years after the first introduction of STW irrigation in Samitigram ²⁾, a steep rise in land prices occurred. This happened at a time when inflation was high. Although there can be no monocausal connection, an increase of at least 300% in paddy yields and output with the introduction of irrigated HYV *boro* (see Tables V.14 & V.15) cannot have failed to exert some upward pressure on Samitigram land prices.

Not only the level but also the structure of land prices altered with mechanised irrigation. Elevation determines land price in Singra's *beel* areas. Until the 1970s, the higher a plot of land, the higher would be its price. The lowest land, which was flooded for several months of the year, was mainly useful for communal fishing with no particular advantage to its owners. Higher land carried a single floodprone high-risk, low-yield *b.amon* crop and sometimes a winter *rabi* crop of vegetables..

Today most of this land carries *boro* paddy. At least 75% of Samitigram lands were under irrigated HYV *boro* cultivation in 1985/86. Irrigation brought a fall in the general water table. Irrigation costs increase with land elevation as pumping costs rise with the distance between aquifer and surface and because higher land dries up first and thus needs more water per irrigation season. As irrigated *boro* cultivation has assumed the dominant role in the annual crop cycle (see Ch.III), high land commands a lower price than lower land in Samitigram today.

This recent reversal of the land price structure may explain why the private command areas of Samitigram's 'rich' are on higher, 'worse' land than the command areas with a more mixed membership of all household categories. It appears that the distribution of high quality land was skewed in favour of the 'rich' households before the 1970s but that the reversal in the criteria for land price has not been followed by an appropriation of the high fertility-low, irrigation cost command areas by the village 'rich'. The availability of irrigation water to most households in Samitigram through Samitigram's irrigation groups has prevented this so far. In other villages in the area (see Ch. VI), land which appreciated through STW irrigation has been appropriated by the rich elites via their control over water. At present, much of the low land in Samitigram remains in the hands of poorer households because reversals in land productivity and land price structure have been accompanied by relatively favourable access conditions to water. Regular land buying by the 'rich' is likely to reverse ownership patterns if the initial economic resilience gained by poorer owners of high-fertility low land is lost through demographic growth and lack of opportunities for occupational diversification out of cultivation.

Land sales and purchases in Samitigram are of a distinctly seasonal nature determined by the cash requirements for the cultivation of irrigated *boro* and the timing and returns from its harvest. Between transplantation in January and the harvest in May/June, land sales are very low. In 1986, it was difficult to sell even high quality

land as cultivators were using their funds to purchase cultivation inputs and to cover the cost of labour. During the post-harvest period in July and August, on the other hand, land sales and land on offer are the constant topic of conversation. Any villager willing to sell land then faces no shortage of offers.

Reliable survey information on the amounts and seasonality of land sales in the period before irrigation was difficult to obtain. The low level of production cost for the former main crop (*b.amon*; see Table V.15) leads one to suspect that the seasonal nature of land sales in response to production requirements is a new phenomenon. According to a number of village informants, land sales in the pre-irrigation period ³⁾ peaked after failed harvests. Economic distress, rather than the agricultural production were the rationale of this earlier type of land sale seasonality. As another expression of the increased emphasis on productivity rather than on extractive appropriation disassociated from the agricultural production process itself, a new type of land sale seasonality has thus appeared. It is determined by the requirements of irrigated cultivation rather than by the distress needs of the poor and the extractive practices of the wealthy.

In this context the 'untimely' offer of a plot of land to one 'rich' household, which occurred in my presence, is a case in point. The 'rich' potential buyer replied to the offer that all money was needed for the cultivation of *boro* at present and added "I'd rather cultivate my land well than have another plot of 'dead' land now". Here, the aim to use available resources productively appears to be superseding 'antediluvian' accumulation objectives. It is argued here that a transformation of household strategies and agrarian relations in this direction is occurring in the context of productivity and output increases under irrigated conditions.

V.1.4 Tenancy

Not only ownership, but also land use determines accumulation patterns from cultivation. This section introduces and discusses the three forms of land tenancy identified in Samitigram ⁴⁾. It is argued that with irrigated HYV cultivation land tenancy agreements vary not only in contractual form but also in their function in the agrarian structure and in the rationale of the parties involved in the agreements. Differences in rationale between mostly rainfed 'traditional' and 'new' sharecropping agreements for irrigated land ⁵⁾ are shown to be reflected in landowners' choice of tenants, in the more general patterns of landowner-tenant relationships, and in variables such as input use and yields of sharecropped land (see V.4 Table V.13).

Approximately 18% of all cultivated land owned by Samitigram households and 16% of STW irrigated land in all the 31 surveyed command areas were cultivated under sharecropping or fixed-rent tenancy agreements.

Various combinations of the following led Samitigram landowners to sharecrop out:

-- Not enough household labour

("I don't want to hassle with hiring labour; 'rich');
("I am too old to work, so my sons sharecrop the land"; 'well-off');

-- Sharecropping as part of the agreement on a land sale

("I bought the land from them so now I give it to them for sharecropping for a while."; 'rich');

-- Provision of income to 'poor' households tied to the landowner in other ways

("I pay him a little wages and he sharecrops this piece of land so they can eat."; 'rich');
("Last year he sharecropped my land, this year I employ him as a labourer."; 'rich');

-- Alternative occupations

("My shop keeps me busy."; 'well-off');

Many 'poor' and 'coping' households reported not to sharecrop in because no land was available to them. For those who did sharecrop in, the following factors appeared important for their successful access to sharecropping lands:

- The availability of family labour and draught animals
- Particularly good chances to cultivate securely and productively (water and credit access, specific skills)
- Kinship connection to the landowner

Sharecropping contracts in the *beel* area around Samitigram vary. In one nearby village, the sharecropper of irrigated land bears full input costs and receives two thirds of the crop. In Samitigram, all cultivation costs, including water charges but not STW capital cost, are born by the sharecropper, and the crop is shared on a half and half basis between landowner and tenant. As yields in Samitigram are higher than in most other *beel* villages, and as irrigation charges are much lower than usual in the area, Samitigram sharecroppers realise approximately the same absolute gains as the sharecroppers in the village where two thirds of the crop go to the tenant. Surplus extraction from the tenants of irrigated land is thus higher in Samitigram than in the other village. Absolute returns to the tenants of both villages are about equal but profit shares of Samitigram landowners are much higher.

With the increasing dominance of irrigated *boro* cultivation in the annual cropping cycle, three types of land tenancy have evolved in Samitigram. These were investigated in detail in the main part and the follow up study in the village survey (see Table II.1). The differences in the contractual form and in the role of different tenancy contracts and the strategies of landlords and tenants are identified below.

V.I.4. 'Traditional' Sharecropping

Agreements cover small plots, mostly with land of low fertility or high cultivation costs. Sharecropping contracts are short-term, renewed and renegotiated seasonally or annually. A sharecropper rarely cultivates the same plot for longer than one or two years.

The parties to such sharecropping agreements are of very unequal social and economic standing and the sharecropper tends to depend on the landlord in multiple ways. Often an employer supplements the wages of his local labourers with small plots of low quality land for the labourer to sharecrop. One permanently employed labourer said that during some years he was employed by a particular 'rich' household and in other years, at the convenience of his 'rich' patron, he sharecropped in a little land from the same household. After a wealthier household bought land from a poorer one, the land was often sharecropped out to the former owner for some time after the sale as an informal part of the sale agreement. This helps the seller to adjust to the loss of the land as an income source over a longer period of time. It is at the same time the expression of a continuing or beginning relationship of dependence of a poorer (land-selling, sharecropping) household on a richer household expressed through market interlinkages.

Short-term 'traditional' sharecropping contracts are most frequent in the *b.amon* season in Samitigram (May to October). While, on the whole, HYV *boro* has assumed the dominant position in the village's annual cycle, a number of 'poor' and 'coping' households rely mainly on short-term sharecropping of *amon* (low yield, low cultivation cost)(see Tables V.13 & 14). These households try to obtain as much land during the *amon* season as possible. With a continuation of *amon* cultivation on most land and presently at least 75% of agricultural land under an additional crop of irrigated *boro* there has been a large addition to

Samitigram's gross cultivated area. As the 'rich' and 'well-off' are concentrating crop production efforts on *boro*, much of the more floodprone *amon* land is now available to 'poor' and 'coping' households under short-term 'traditional' sharecropping agreements. This brings a shift in cultivation risks to the poorer 'traditional' tenants. It also means potential economic improvement for those tenants for whom luck and careful balancing of the risks of sharecropping *amon* sometimes provides sufficient resources to expand the household's asset base. Kamal's example (IV.2.4) shows some of the hazards of such a strategy. Advantages like preferential treatment by a 'rich' village household and the absence of diseases and deaths in the household are necessary for success. In the long run, the majority of short-term sharecroppers will have to rely on hiring out household labour as a main income source. For most poorer households, the small plots of irrigated land during the *boro* season or floodprone *amon* land, which are usually sharecropped in under short-term contracts, achieve at best a postponement of the need to hire out labour.

18 % of 'poor' village households did not cultivate any land at all in 1985/86 and therefore did not obtain any of the larger amounts of *amon* sharecropping land. The majority of these households reported to be hiring out household labour because of their inability to obtain sharecropping land.

Short-term 'traditional' sharecropping relationships have been a well-known phenomenon on the Indian subcontinent for decades (see Bhaduri 1973). Byres writes:

a particular set of backward social relations (centring on sharecropping and 'the web of dependency' of which it is an integral part)". In this framework "traditional" sharecropping relationships are seen as an expression of and cause of the absence of technical progress.

(Byres 1983 p.19)

The 'traditional' sharecropping relationship is a form of extractive

appropriation by landlords from tenants which operates through market interlinkages. Sharecropping land is distributed among sharecroppers in small plots and large landowners often rent continuous plots of *amon* land out in small pieces to several tenants rather than in one piece, as might be expected under purely productivity-oriented decision making patterns.

V.I.2. 'New' Sharecropping

This kind of share tenancy in Samitigram is closely connected with the emergence of HYV cultivation and the introduction of STWs. Sharecropping contracts are longer term (3-10 years) and not re-negotiated annually. Landowners are often resident in nearby villages or have moved to service sector or government jobs, which prevent them from cultivating their land. Sharecropped land can be good quality and is often more fertile than the sharecroppers' own land. Land tends to be sharecropped out in larger plots and for the whole year rather than seasonally as for the 'traditional' sharecropping agreements.

A different kind of sharecropper has appeared in this context. The multiple ties of power and dependence between landowner and sharecropper typical for 'traditional' sharecropping were fewer and weaker in the 'new' agreements. The tenants were upwardly dynamic 'well-off' or 'coping' households whose access to sharecropping land was perceived to depend on their own favourable production factor endowment or better access to cultivation inputs. Landowners gave sharecropping land to STW mechanics because they would ensure STW maintenance with their own crops are at risk and to irrigation group managers because they would ensure water supply to their own crops. Knowledge of HYV production techniques and access to sources of fertilizer and seeds were other incentives which attracted landowners to particular tenants. This may not be

an entirely new development. Abdullah, Hossain & Nations (1976 p.211) found that between 1960 and 1967, the overall size of tenant farms increased especially for farms of 7.5 acres and over.

For some 'well-off' households, longer-term sharecropping contracts were part of a move towards a more secure economic position (Adom IV.2.2). These households could be described as an intermediate "sharecropper elite" (see also Wood 1981; Rahman 1984), which is neither 'rich' nor on the margins of poverty like the 'coping' and 'poor' sharecroppers. This "sharecropper elite" treated sharecropping as a single-market relationship under which the landowner benefits from the sharecropper's capacity to achieve high and secure yields, and the sharecropper obtains land because of his ⁶⁾ prospects of producing a good crop. The rationale of sharecropping relationships under conditions of increased productivity potential can thus change. Through its more secure, higher yields, irrigated cultivation has crossed a threshold in Samitigram past which landowners and sharecroppers alike can rely on productivity and output levels rather than on multiple extractive relations of power and dependency as the underlying rationale for their production relations and strategies.

Other studies have found lower levels of fertiliser application on sharecropped land and attributed this to a productivity-inhibiting function associated with sharecropping (Marshall 1961; Hossain 1977). In Samitigram a number of sharecroppers of the 'new' type said they applied more fertilizer to sharecropped land than to their own land in order to retain their hold on the sharecropped land. Sharecropping can thus also facilitate increased agricultural productivity. This is especially so when there is competition for sharecropping land so that the sharecropper is under some compulsion to satisfy the landowner with good crop returns. This point emerged repeatedly during fieldwork interviews. Although it does not imply equally free choices for tenants and

landlords (as assumed by Cheung 1969), it supports Cheung's rejection of a view of sharecropping as an impediment to efficient resource allocation in agricultural production. The frequency with which irrigated holdings were consolidated through sharecropping in the research area, enforces the point.

The predominance of longer-term productivity-oriented tenancy relationships with wealthier tenants on irrigated land, and the fact that less *boro* than *amon* land was sharecropped means that poorer households had in fact little access to *boro* sharecropping land. This was enforced by the new practice of some Samitigram landowners to demand a sum of money (300-600 Taka per acre) as a "security" for sharecropping land.

Productivity-oriented longer-term 'new' sharecropping has not displaced patron-client relationships and the role 'traditional' sharecropping of small plots of irrigated *boro* and *amon* land plays in these. 'New' sharecropping remains largely restricted to an 'intermediate elite' of upwardly mobile 'coping' and 'well-off' households. As a result, sharecropping implies a double role for 'rich' households. On the one hand, 'traditional' tenancy relationships make them powerful patrons towards a number of 'poor' or 'coping' households. On the other hand 'rich' households may be party - as landowner or tenant (cf. Ch VI) - to more single-stranded, productivity-oriented 'new' sharecropping contracts with other households. In the Indian context such householders have been described as "ambidextrous individuals" (Beteille, 1974), or "rural hybrids" (Rudra 1978) who are able to be simultaneously involved in two sets of agrarian relations to their advantage.

V.I.3 Fixed In-Kind Rent

Fixed in-kind rent tenancy has only evolved over the last few years in Samitigram. It is common in the Singra *beel* and a main form of land tenancy in several of the seven villages (Ch VI). In Samitigram, it was only practised by one

absentee landowner (Faruque, see Saidur IV.2.1 point 10). Although the terms for fixed-rent tenancy differ drastically from sharecropping agreements, the same local term, *borga*, was used for both types of tenancy. Fixed in-kind tenancy in Samitigram is a direct product of irrigated cultivation and has to be understood as such.

Most of the land under fixed in-kind tenancy in Samitigram was rented in under a five-year agreement by one 'well-off' (Adom IV.2.2) and two 'coping' (Ali IV.2.3 and one other) households in return for a fixed amount of paddy per *bigha* (0.33 acres) to the owner. The level of this rent was determined by land quality and cultivation costs which vary with the amounts of water and fertilizer required. Per acre rents fall between 24 and 30 maunds of paddy. As yields are between 60 and 75 maunds per acre, rents leave the tenant with more than half the crop before costs, which is more than Samitigram 'new' sharecroppers receive (see also Table VI.2). Faruque's land in Samitigram was entirely rented out and mostly consolidated in two STW command areas (Map III.3 Nos. 13 & 29) of a total of 13 acres. Both these STWs are owned by Faruque. Faruque also had fixed in-kind rent agreements with other Samitigram households for the land, which he owns in other command areas. During the *amon* season Faruque's tenants sharecropped the plots which they held in fixed-rent during the *boro* season and received two thirds of the crop, more than the half shares common for *amon* and *boro* in Samitigram. All cultivators regarded fixed in-kind rent as preferable to sharecropping agreements for irrigated *boro* land but not for rainfed *amon* land because of the risk of crop failure.

The advantages for the involved parties under fixed rent differ from sharecropping in several ways. With fixed rent, the landowner saves supervision costs as harvest and crop division do not need to be supervised. Samitigram's absentee landowner Faruque, who grew up in the village, had not come there for

several years by 1986. The *amon* harvest and crop division used to be supervised by Faruque's wife. For the irrigated *boro* crop, tenants delivered their rent to Faruque's house in the *upazila* headquarters. Although Faruque received fewer crops under fixed rent than he would from a sharecropping agreement, he had freed himself from supervisory involvement with his irrigated land. With the cultivation of high-yield paddy on his land, the rent he receives is still higher than the sale value of the entire previous rainfed *amon* yield from the land. However, Faruque could not set up fixed rent agreements for the *amon* season. As the risk of crop failure is high, tenants need a tie between yield and rental obligation who in order to free her husband for more profitable pursuits was released from Islamic restrictions on female mobility. In his tenants Faruque has firm allies and sources of information about village politics.

As Faruque's tenants for irrigated *boro* land are cultivating command areas under their own management, and as he (as the well-owner) is easily able to provide inputs and help in case of machine breakdown, the risk of crop failure is low and a fixed rent agreement can be entered without too much risk to the tenant. Rent payment is in kind, so tenants will not run into cash shortages due to their rent obligations. As under sharecropping no instalments for the capital cost of the irrigation equipment is paid by the tenant. Faruque's main fixed rent tenants, who are also the managers of his STWs were able to appropriate any differential between water cost and the price charged to other cultivators in the command area.

Fixed tenancy allows the tenant to appropriate all productivity increases above the rent. It does not carry the stigma of inhibiting productivity (see Hossain 1977; Ahmed in Khan & Zaffarullah, 1981) ⁷⁾. On the other hand landowners under fixed tenancy can invest and then increase rent levels in order to increase their returns from rented-out land. During my stay, Faruque decided

to convert one of his STWs from diesel to electricity. This halved pumping costs at 1985/86 prices. The tenants of the command area in question explained that this would increase their rental obligation so that their profit would remain the same (see Ali IV.2.3 point 10). As found for sharecropping in Samitigram above, productivity increases raise the rate of surplus extraction from tenants and the relative gains of landowners. The interpretation of sharecropping and other forms of land tenancy as primarily a form of appropriation of labour surplus (see Pearce in Byres 1983) thus becomes more plausible with technical progress in agriculture. Whether this means the eventual displacement of sharecropping by owner cultivation or its transformation to a form of fixed rent, is determined by micro-level conditions (c.f. VI.2.2.1).

V.I.4.4 Tenancy, Distribution and Change

How then have the distributional effects of land tenancy on different household types in Samitigram changed in the context of STW irrigation?

Clearly, not all tenancy relationships are explicable purely in terms of economic and political exchange relationships. In particular among the 'coping' and the 'poor', supportive arrangements among relatives were often expressed through sharecropping. Old parents sharecropped out to sons, sisters to brothers, often without claiming their share of the crop, and richer brothers to poorer ones. Often those who sharecropped out did not realize their full potential income from the sharecropped land. Sharecropping out allows households to transfer income to family members without letting go of land ownership. Thus an explanation of sharecropping in purely economic terms and the pinpointing of its relationship to the introduction of irrigation is difficult. Unquantifiables such as family cohesion play a role. The element of voluntary humanitarian action, which most would claim in themselves to some extent, is ignored in the literature which

abounds with structural, environmental, historical and economic explanations of sharecropping.

TABLE V.2: Land Sharecropped in and out per Household Category (acres)

	sharecropped in		sharecropped out	
	acres per h/hold cat.	acres per h/hold	acres per h/hold cat.	acres per h/hold
Poor	20.51	1.03	1.65	1.65
Coping	29.58	1.47	1.32	0.66
Well-Off	26.73	2.43	24.75	4.95
Rich	0	0	33.67	8.42
Total a)	76.83		61.39	

a) Differences between totals sharecropped in and out due to tenancy relations with outsiders and sharecropping out of some land twice per year, which was not taken into account during initial survey

TABLE V.3: Land Sharecropped in and out per Household Category (%)

	sharecropped in all h/holds	sharecropped out all h/holds
Poor	27%	3%
Coping	39%	2%
Well-Off	35%	40%
Rich	0	55%
Total	101%	100%

Nonetheless, tenancy relationships clearly redistributed land for cultivation from richer to poorer households except where a poorer household could not cultivate because of lack of agricultural

labour due to old age, disability or gender. In Samitigram, 29% of all the land owned by the 'rich' was cultivated by poorer households. 6%, 36% and 52% of the land cultivated by 'well-off', 'coping' and 'poor' households was not owned by the household ⁸⁾. This calculation contains the counteractive effect of mortgaging ⁹⁾. For 'coping' and 'poor' households, land mortgaged out exceeded land mortgaged in (see V.1.5 below). Therefore the redistribution of operated land from wealthier to poorer households through tenancy is even higher than indicated by the difference between owned and cultivated land.

Tables V.2 and V.3 show how sharecropping reallocates owned land for cultivation in Samitigram. 55% of total sharecropped land (*amon* and *boro*) belonged to four 'rich' households. A further 40% of sharecropped land belonged to five 'well-off' households. All but 5% of the sharecropped land was thus owned by nine of the wealthiest households of the village. The single 'poor' household, which sharecropped out, was without male labour and thus unable to carry out work in the fields according to cultural norms. One 'coping' household, which sharecropped out, is among the better-off in its category and sharecropped out a small plot to a poorer relative.

Relatively equal total amounts of land were sharecropped in by the 'poor', 'coping' and 'well-off' (Table V.2 column 1). However, column 2 shows that land sharecropped in per household is much less for 'poor' and 'coping' tenants. The 'coping' and 'poor' tenants used returns from sharecropping mainly to supplement food requirements. For 'well-off' tenants, on the other hand, the renting of larger amounts of land was part of a strategy to achieve longer-term economic improvements. No 'well-off' household sharecropped in and

out. Sharecropping was either part of a strategy to maximise income from irrigated cultivation, and cultivation was carried out at least as productively and efficiently as on own land; or land was sharecropped out because the household concentrated on another activity to generate income or had no male labour.

Some farm consolidation was achieved as households, especially the 'well-off', tended to sharecrop in *boro* land in those command areas where they also had own land (32% of all tenancy relations in Samitigram's command areas).

In contrast to the seven villages (see Ch. VI), no 'rich' Samitigram household sharecropped in so that a consolidation of 'rich' STW owners' irrigated land through tenancy did not occur. However, the 'rich' used other instruments such as mortgaging (V.1.5), land exchanges and land purchases (V.1.2) for the consolidation of their irrigated holdings.

Sharecropping was still viewed as a means to transfer subsistence income to the poor and as a source of patronage. The perception that sharecropping is only resorted to by poor and downwardly mobile households was still strong in Samitigram. This is the apparent reason that not all Samitigram households adopted sharecropping to consolidate farms and achieve economies of scale.

Although Samitigram's 'rich' claimed that to sharecrop was below their status, the continued 'traditional' attitude towards land tenancy could also be due to constrained choices. As smaller landowners are able to obtain irrigation water through the group system (see III.5), they are not compelled to sharecrop out their land, and due to land scarcity and lack of alternative incomes would

hardly choose to (cf. Baluabasua VI.1 for a contrary case). Other village studies in Bangladesh (e.g. Jansen's Bhaimara, 1986), found that even the richest households sharecropped in. The group organisation of irrigation in Samitigram thus operates through sharecropping to make accumulation patterns from cultivation less unequal. The maintenance of the traditional view of sharecropping-in as "a thing for the poor" may in this context stem from the inability of the 'rich' to appropriate the land of the 'poor' through tenancy.

Contrary to what may be expected in view of the productivity enhancing function of 'new' sharecropping relationships (see V.1.4.2), no-one in Samitigram rented land in and out at the same time. This may be due to land scarcity. A cultivator would attempt to rent in land to consolidate holding structure while land scarcity means that all own land would also be kept for own cultivation.

Due to an increase of about 75% in gross cropped area and lower risk and higher profit chances for irrigated *boro* (cf. Table V.13 & 14), the amount of *amon* land available to poorer Samitigram sharecroppers has increased. On the other hand, *boro* sharecropping lands is less accessible to poorer households since they have less draught power and finance for cultivation at their disposal. There was also increasing substitution of hired labour for sharecropping on *boro* lands. Nonetheless, in comparison to the period before STW-irrigation, there is a larger amount of land available for sharecropping in Samitigram. This has enabled poorer households to achieve some improvement through sharecropping high-risk, low-yield *amon* cultivation, which richer landowners are turning away from.

It was difficult to determine how the risk of flooding to

amon has changed with irrigation. On the one hand, the general fall in the water table has made more of the *beel* low land available for cultivation and decreased the risk of flooding. On the other hand, *boro* cultivation pushed *amon* further into the rainy season (cf. Figure III.1) and thus increases the risk of flooding for the *amon* crop.

Sharecropping may eventually be displaced by fixed-rent which leaves landowners free for other activities. In Samitigram, one 'rich' landowner rented out at fixed rents to concentrate his activities elsewhere. In other villages (see Ch. VI), fixed tenancy transferred cultivation income from poorer landowners to wealthier STW owner-cum-tenants, and pushed small landowners into the labour market. In both cases the transformation of sharecropping into fixed tenancy means a dissolution of ties to own land for a part of the rural population. However, the distributional implications are very different. In Samitigram, fixed tenancy means that some poorer households obtain more profitable conditions than available under sharecropping agreements. In some of the 'seven villages', on the other hand, fixed tenancy ousts poorer landowners from the cultivation of their own land and compels them to hire out their labour or engage in petty trade.

With continuing population pressure reliance on land as an income source needs to decrease. The questions of which rural classes lose their access to income from land, and of how much scope there is in the labour market and in the diversification of occupations out of cultivation to absorb this population are crucial. Some issues around occupational diversification are taken up in Ch VII.

Share tenancy has been classed as "semifeudal" (Bhaduri, 1973), "transitional" (Pearce in Byres, 1983), "precapitalist" (Bell, 1977) and "capitalist" (Rudra 1978). Its disappearance with the 'green revolution' has been reported for the Indian subcontinent (Byres 1981; Bardhan and Rudra 1980). On the other hand, sharecropping has shown remarkable persistence even in rural economies such as Spain, Italy and France (Byres 1983 pp.21).

The picture in Samitigram has been a transformation of the function and meaning of share tenancy under new production conditions in irrigated agriculture. At the same time, traditional forms of share tenancy continue to exist largely for rainfed paddy cultivation.

With irrigated cultivation, longer-term 'new' tenancy agreements where the tenants' production conditions determine access to sharecropping land have become predominant. Larger plot sizes, more secure contracts and pressures on the tenant to achieve high crop yields to ensure the continuation of the tenancy relationship all exercise a positive influence on productivity.

Finally, the increasing importance of agricultural wage labour and signs of a possible incipient transformation of sharecropping into fixed tenancy contracts indicate that in the longer term, share tenancy in Samitigram may indeed be replaced by more direct forms of appropriation of labour.

V.1.5 Mortgaging

This section introduces the two main types of mortgaging in Samitigram. It is shown how the form and function of mortgages has diversified with irrigation. It is argued that under conditions of higher productivity, surplus appropriation through land mortgages has shifted from extraction through usurious interest into the cultivation process itself. For the mortgagee, the mortgage is no longer a form of access to interest payments, but has turned into an avenue of access to income from cultivation. Although mortgagors still lose

land, this is more a part of overall household dynamics rather than the central function of mortgages in the strategies of mortgagees.

41% of all households in Samitigram reported to be involved in mortgage relationships. Of these, 22% mortgaged in and 19% mortgaged out. Land was not mortgaged in and out simultaneously, although the same households did mortgage land in and out in quick succession in response to temporary financial needs and surpluses. Land mortgages took two basic forms in Samitigram.

Under the first type of mortgage, *khaikalashi*, a sum of money is lent by the mortgagee to a poorer landowner (mortgagor). The mortgagee then cultivates the mortgaged land. Each year the principal of the loan is reduced so that, depending on the size of the mortgage and the agreed annual reduction, the land reverts to its owner automatically after 10 to 20 years. Earlier return of the land is possible if the principal is repaid at any point during the period of amortisation. Although traditionally known in the research area (see also I.2.2), was used for irrigated land mainly.

Under the second form of mortgage, *bondhok*, the full original sum of the loan has to be repaid to the mortgagee before cultivation rights revert to the landowner and there is no automatic annual reduction of the loan. As long as the principal has not been repaid in full the mortgagee retains cultivation rights to the land. The *bondhok* mortgage was predominantly used for rainfed *amon* land.

Either form of mortgage did not require interest in Samitigram. *Khaikalashi* even reduced the repayable principal annually through the usufruct of the mortgaged land. Notwithstanding a variety of means for richer mortgagees to retain control over land in disregard of the contents of a mortgage agreement, there is thus an inbuilt mechanism to ensure that the mortgagor has an automatic right to reclaim the land after a period of time even if no repayments have been

made. In contrast, under *bondhok* the full loan has to be repaid or the land does not revert to its owner. The usufruct of land under *bondhok* is thus equivalent to interest payments. Mortgage in Samitigram resulted in relatively low rates of land loss by mortgagors. This contrasts with other areas of Bangladesh (cf. Wood's *Bondokgram in Comilla, 1978*) where compound interest combined with usufruct of mortgaged land leaves mortgagors little chance of recovering mortgaged land. In Samitigram, a number of functions other than land transfer were associated with mortgages.

In the past, mortgage relationships in Samitigram were entered by verbal agreement. Now the engagement of a paid 'deedwriter' to formalize contracts has become the more usual arrangement. By fixing the mortgage terms in writing, mortgagors attempt to ensure the eventual return of their land. Stories of how mortgagees refused to return mortgaged land, even after repayment of the full loan, are recounted by villagers. The formalisation of mortgage contracts reduces the capacity of richer mortgagees to use their power in other markets to appropriate mortgaged land. It is also an expression of changes in the function of mortgages.

Usually in Samitigram mortgaged land is cultivated by the mortgagee until no more of the original loan is owed. In a few cases, however, the land continues to be cultivated by the owner (mortgagor) throughout the duration of the mortgage. Under this combined mortgage-sharecropping agreement, the loan per acre is lower than under simple mortgages (6000 rather than 7500 to 12000 Taka), and the mortgagee also receives half the annual crop. Only some of Samitigram's 'rich' and a few absentee landowners leave their mortgagors to cultivate under mortgage-sharecropping contracts. With an average yield of 60-75 maunds of paddy per acre (see V.4) and the 1985 average sale price of 175 Taka per maund, the seasonal income for the mortgagee in this case is between

5250 and 6600 Taka. The mortgagee can thus recover the original sum of the mortgage or more in one *boro* cropping season with the sale returns of half the crop yield. In the more usual case of cultivation by the mortgagee, the recuperation of a mortgage loan would also take approximately one *boro* season 10).

Thus in Samitigram, the mortgaging in of irrigated land has become an avenue of access to income from cultivation rather than to the ownership of land or to income through usurious interest rates. The cultivation of mortgaged land can provide the mortgagee with a secure crop and a cultivation income of 10 to 20 times the original sum of the mortgage during the 10 to 15 years duration of the mortgage. In Samitigram, surplus appropriation through mortgage relationships on irrigated land has thus become firmly connected with the productive utilisation of land.

A disaggregation of the incidence and functions of mortgage relationships by household category (Table V.4) shows that the total amounts of land involved in mortgage relationships in Samitigram are small. However, mortgages are a delicate subject, regarded as quite a private matter. It is therefore possible that there was underreporting both by mortgagors and mortgagees. Similarly, it proved very difficult to get more than very general statements on changes in the incidence of mortgaging over time. It appears that, mediated by class-biases in access to formal credit, land mortgages and one-to-one forms of informal credit (as opposed to the credit *samiti*, see III.4.6 & V.2) in Samitigram lost importance with the expansion of the formal credit sector. This appears to be the case despite expanded credit needs for HYV cultivation. The *credit samiti* provided finance to village households who might otherwise have mortgaged out land.

TABLE V.4: Land Mortgaged in and out by Household Category (acres)

	mortgaged in	no of h/holds	mortgaged out	no of h/holds
Poor	1.75	4	3.96	7
Coping	2.97	5	2.64	8
Well-Off	5.78	11	1.24	4
Rich	1.65	2	0	0
Total ^{a)}	12.15	22	7.84	19

a) Differences of totals of land mortgaged in and out due to mortgage relationships with outsiders

Most mortgaged land belonged to the 'poor'. In most cases consumption and emergency needs prompted a 'poor' household to take a mortgage. Households with several small plots mortgaged out at different points in time were typically involved in a process of asset disaccumulation. At the end of such a period of household decline, the sale of the land may follow as the household is again in need of funds but without further land to mortgage out. It is important here to distinguish this process from situations where land loss is built into the structure of the mortgage itself (c.f. Wood 1978 on Bondokgram).

Most 'coping' and 'poor' households mortgaged out to more than one household. This may be a safety device against conferring too much power on one mortgagee and thus an insurance against loss of the mortgaged land as well as unwanted linkages to other markets (e.g. labour, water, land tenancy).

Among the 'coping' it was considered desirable to mortgage in a plot of land, especially from a 'poor' owner. In the context of ongoing processes of land and asset disaccumulation, in which the mortgage relationship itself does not necessarily play a central role, the transfer of land ownership from 'poor' to 'coping' households through mortgages was not uncommon in Samitigram. Next to access to cultivation income, land transfer was an important incentive for the

'coping' to mortgage in land.

No household mortgaged in and out at the same time but almost the same amount of land was mortgaged in and out by the 'coping' (Table V.4). Random and life-cycle needs such as medical expenses and daughters' dowries were the usual reported reason for 'coping' households to take out land mortgages. Here mortgagors regarded the mortgage as an intermediary means of finance, the lesser evil compared to actual land sale. Although the loss of income to the mortgagor is the same as with a sale and he only receives 15 to 30% of the sale price of the land from a mortgage, he does retain the claim of ownership over the land and can recover it at a more favourable stage in the household life cycle.

Most mortgage relationships in Samitigram at the time of my survey had existed only two to three years, and a large number of households reported to have returned or received back mortgaged land recently. In particular for 'coping' households, the mortgage thus served to raise cash from land while retaining land ownership throughout periods when household monetary needs surpass income. At other times in the household life-cycle, the mortgage makes land available for cultivation and may open up the possibility of expansion of land ownership.

Almost half of all mortgaged land was mortgaged in and cultivated by 'well-off' households (see Table V.4). The function of mortgages to make more land for cultivation available to the household was clearest in this household category. As through sharecropping, the 'well-off' gain access to cultivation income through mortgaging. The mortgage here has become part of a strategy to increase income from agricultural (irrigated) production.

Mortgages between 'well-off' households were also used to finance further land purchases. Lower quality land was temporarily mortgaged out by

wealthy households in order to buy better land. An increase of income from cultivation through the acquisition of fertile land, and not the expropriation of the mortgagor through extractive mechanisms inside the structure of the mortgage relationship itself, is thus the primary function of these mortgages between 'well-off' households. A parallel between the functions of this type of mortgage and the functions of the long-term 'new' sharecropping agreements for 'well-off' and some 'coping' households becomes clear. With irrigated cultivation, a productivity threshold has been passed. This enables some households to transfer new meanings onto apparently traditional agrarian relations.

Mortgages could have yet a different function in the strategies of 'rich' households. Malik, the head of the wealthiest 'rich' household in Samitigram commented: "I don't mortgage in land. I just buy it directly." (see IV.2.1). Like sharecropping, mortgaging has retained its "traditional" extractive function for this household. In view of the increasing formalisation of mortgaging relationships (employment of 'deedwriter'; see above) it has, however, become a more insecure way to gain access to land ownership.

Interestingly, Malik has passed on small plots of his own *boro* and *amon* land to 'poor' households in the village under mortgage agreements in return for political support and votes. While his chances of losing the ownership of this land through the mortgage are nil, he has given up income from land in return for political power. The reasoning behind this type of mortgage resembles closely that behind short-term 'traditional' sharecropping discussed above (V.1.3). Income from land is given up to sustain a position of more general influence and power. It is clear that although agrarian relations (e.g. sharecropping and mortgaging) bear the same designation, they differ in form, in the motivational and material context of their application and in their effects on the involved households. Not the formal position inside the mortgage or tenancy agreement but the attendant

power relation and strategic rationale of the involved parties influence household-level accumulation and development.

In Samitigram, mortgages taken therefore have two basic functions. Firstly, mortgaging out raises finances in order to improve the productive base of a household through investment in land or other productive assets. The rich absentee landowner Faruque temporarily mortgaged out some of his village lands in order to raise business capital. There was usually no danger of land loss for mortgagors in these kinds of agreements. Another example is Kamal's 'poor' household. The household mortgaged out its two *bigha* (0.66 acres) in order to buy cattle. By using this cattle on his sharecropped land and as a 'ploughman' on the land of others, Kamal intended to redeem the mortgaged land and eventually achieve economic improvement (see IV.2.4). Not only inter-household differences in the rationale of using mortgages but also differences in the opportunity situation of different households affect the outcome of a mortgage relationship. While Faruque is safe in the ownership of his mortgaged land, Kamal needs some luck to avoid losing his mortgaged land.

Secondly, mortgaging out fulfils poor households' consumption and life-cycle needs. Land loss often follows for the mortgagor. This may be due to continued financial need after reserves of mortgageable land have been exhausted, or it may be the result of a number of pressures to which 'poor' and 'coping' households are especially exposed due to their vulnerable position in rural society where markets tend to be linked through multi-stranded relationships between unequal parties. Thus if a 'poor' householder were to use a land mortgage to raise capital for some other income-generating undertaking he may well find himself forced to give up the claim to land despite his ability to repay the mortgage in order to secure other aspects of his economic survival.

Mortgages given gain access to land for cultivation. Household

strategies aimed at increasing income from irrigated cultivation include land mortgages as one way of gaining access to land. It was clear that in Samitigram land mortgaged in is valued for the cultivation income it provides even if the land is retained only for a few years before the loan is paid back.

Mortgages are also entered into to cement political power of either mortgagee or mortgagor. The example of Malik (IV.2.1) shows how political power objectives can determine the content of a mortgage relationship and the choice of mortgagee or mortgagor. More commonly than the example of 'reverse mortgaging' cited here, a poorer household mortgaged out to a richer household and through this relationship added to a web of multiple ties which cemented the dominant position of the mortgagee household.

What then are the interactions between land mortgaging and STW irrigation? Samitigram households of all four categories mortgaged in STW irrigated *boro* land ¹¹). Irrigated land was in all but one case mortgaged in in command areas where the mortgagee already cultivated land. Farm consolidation, economies of scale and increased cultivation efficiency under irrigated cultivation were thus achieved through mortgaging. In Samitigram irrigated HYV cultivation has increased yields sufficiently to make mortgaging in an attractive proposal in return for the cultivation income from mortgaged land.

It proved especially difficult to establish a picture of longer-term change for land mortgages. Mortgaging/moneylending increasingly competed with other investment opportunities (e.g. HYV cultivation, trade). The increase in cash cultivation costs (see V.4 Tables V.12 and V.13) coincided with an expansion of formal credit so that the number of mortgaging relationships had not increased. What emerged clearly is that mortgages had acquired a greater complexity of functions and meanings. Some of these indicate a change to household strategies which are more based on targets of production and productivity than under

non-irrigated conditions where, at a lower level of productivity, households appropriated surplus through extractive practices.

V.1.6 Land, Cultivation and Irrigation

The final part of this section draws together the changes in agrarian relations around the ownership and use of land under STW irrigation in Samitigram.

TABLE V.5: Owned, Operated and Effective Landholdings by Household Category (Total Acres Per Category)

	owned	operated a)	effective b)
Poor	20.1	41.4	31.3
Coping	62.4	97.5	78.3
Well-Off	142.2	152.8	150.6
Rich	114.8	81.5	97.0

For notes see Table V.6

TABLE V.6: Owned, Operated and Effective Landholding by Household Category (Acres Per Household)

	owned	operated a)	effective b)
Poor	0.49	1.01	0.76
Coping	2.01	3.15	3.01
Well-Off	5.47	5.87	5.79
Rich	22.97	16.30	19.40

a) operated landholding =
land owned - land sharecropped and mortgaged out
+ land sharecropped and mortgaged in

b) effective landholding =
land owned - $\frac{1}{2}$ land sharecropped and ($\frac{1}{2}$) mortgaged out
+ $\frac{1}{2}$ land sharecropped and ($\frac{1}{2}$) mortgaged out

Tables V.5 and V.6 indicate the impact of mortgaging and tenancy on the distribution of operated land production and cultivation profits. Differences between owned and operated land indicate how units of ownership and units of production differ. Clearly, the poorer the household category, the larger the size of its operated holding relative to its owned holding. Less than half the land operated by the 'poor' is also owned by them. The 'coping' own 64% of their operated land. The land owned by the 'well-off' amounts to 93% of their operated area. The 'rich' households of the village operated only 71% of their owned land. It is clear then that under irrigated conditions tenancy and mortgaging relationships in Samitigram increase the land available for cultivation to households at the bottom of the landownership scale. This is also found by Boyce (1987 p.224) in a comparison of operational and owned holdings at national level.

The 'coping' and the 'poor' thus operate considerably more land than they derive crop income from. Tenancy is the major explanation for this. As the 'poor' forego half of the crop income from rented land, their production costs per unit of crop retained are much higher than those of owner cultivators. The opposite effect occurs for the 'rich' who receive crops from far more land than they operate. Tenancy involves far more land than mortgaging and it outweighs the counteractive effect of mortgaging (cf. Tables V.2 & V.4) on the ratio of total cultivation costs to total crop received.

It follows that the redistribution of land for cultivation, which occurs from the wealthier to the poorer households of Samitigram through land tenancy is mitigated by counteractive effects on production cost/crop return ratios. The ratio of total cultivation costs incurred to total crop received is 0.38 for the 'poor', 0.36 for the 'coping', 0.29 for the 'well-off' and 0.24 for the 'rich' 12).

This is not the end of the story. Inter-household differences in

cultivation costs per unit of operated land have to be examined for possible systematic differences between household types. A discussion of credit structures (V.2) and the labour market (V.3) precedes my attempt to identify biases in the production conditions of the four household types in section V.4.

Finally, some aspects of the incidence of irrigation in the context of land ownership and cultivation by household category are summarised in Table V.7.

A comparison of rows 1 and 2 in Table V.7 shows again the concentration of the main productive asset, land in Samitigram. Although the use of the household unit exaggerates the concentration of land because wealthier households have more members (see row 6), the dividing line between 'rich' and 'well-off' on the one hand, and 'coping' and 'poor' on the other is still clear from the per head effective landholding in row 5.

TABLE V.7: Landownership and Irrigation in Samitigram

<u>Household Category</u>	<u>Rich</u>	<u>Well-Off</u>	<u>Coping</u>	<u>Poor</u>
1. Percent of total Households	4.9%	25%	30%	40.1%
2. Percent of total cultivated land owned	34%	42%	18%	6%
3. Percent of irrigated land owned	34%	41%	19%	6%
4. Per household effective landholding (acres)	19.4	5.79	3.01	0.76
5. Per head effective landholding (acres)	1.57	0.72	0.42	0.11
6. No. of household members	12.36	8.04	7.17	6.91

A comparison of rows 2 and 3 shows that in Samitigram inequalities in land ownership are not exacerbated by the more obvious inequalities in access to

irrigation water. The comparison of the dynamics around irrigated agriculture in Samitigram and the seven villages (see Ch. VI) will demonstrate that this is connected to the effect of the irrigation groups in Samitigram. While in Samitigram, groups, make irrigation water available to smaller landowners and thus increase their resistance to the extractive practices of the larger landowners (see III.5 and IV.2.1 Malik), in the 'seven' villages water is either refused or sold at extractive monopoly rates to non-owners of STWs. This has a polarising effect on patterns of land use and returns from cultivation (cf. Table VI.2). There are further issues around water distribution inside command areas in Samitigram which can lead to bias in water distribution (e.g. tailender problems under water scarcity; see III.5). Much in contrast to other accounts on the effects of mechanised irrigation in Bangladesh (e.g. Jansen 1979, Hamid 1982; Chisholm 1984; Howes 1985), in Samitigram access to irrigation water is largely proportional to landownership.

V.2 The Credit Market

A second essential production input is credit. It is demonstrated that while access to credit is widespread, its cost and terms vary with the debtor's position in the rural hierarchy ¹³). At the most general level, formal and informal credit are distinguished here. However, some of the most interesting material with reference to STW irrigation (the credit *samiti*) appears at the boundaries of formal and informal credit.

Although a range of themes is touched upon in this section, the main argument is consistent with section V.1. It is argued that with increased capital requirements for cultivation, formal credit has come to be conceptualised by most cultivators as necessary and recurrent, and that therefore it is repaid. This attitude was neither exclusive nor pervasive in Samitigram. It predominated

amongst 'well-off' and 'coping' cultivators who concentrated on income generation from irrigated cultivation. At the same time, the continued existence of usurious informal credit prevented 'poor' households from using their seasonal surplus productively, and systematic defaults on bank loans by 'rich' borrowers represented a subsidy to village elites and local bureaucracies ¹⁴). With increased loan dispersals to the agricultural sector (see I.3.2) and with default rates on the increase from 28.3% in FY 1984 to 73% in FY 1986 (World Bank 1987 p.78), the effective subsidy to rural elites through loan defaults has also risen.

All but the very richest household in Samitigram depended on credit to cultivate *boro*. As was outlined in III.3, the six monthly *boro* cultivation cycle, which involves seasonal loan disbursements and repayment, has become an integral part of the agricultural year.

In Samitigram, formal credit can be obtained from the local commercial bank, though the KSS and MSS (see III.4.7-8) and from the Bangladesh Krishi Bank (BKB). Two main types of formal credit were taken by Samitigram villagers. The first, cultivation credit on a six-monthly basis, is repayable after the harvest of the irrigated *boro* crop in June. The second, credit for the purchase of STWs, is repayable in annual instalments. According to local reports annual interest rates for these loans varied between 18% and 22% in 1986 ¹⁶).

Informal credit was taken on a mutual, no interest basis or on an extractive, high interest basis. The following high interest credit arrangements existed:

- 1) One maund of paddy loaned and repaid 2 to 3 months later, 1½ to 2 maunds taken back by the creditor.
- 2) 100 to 150 Taka loaned and repaid 2 to 3 months later with one maund of paddy. The resale value of this is about 200 Taka per maund during the high price period.
- 3) 100 Taka loaned in the difficult pre-harvest month, and 150 Taka repaid one

month later, after the harvest.

4) Loans from a moneylender (*mohajon*) for which labour is provided (digging up of bamboo shoots for sale as fuel material). The daily income of these labourers was roughly the same as the going wage rate in the village and presumably were at least in part used to repay loans to employers.

Recalculated as interest, the profits from usurious informal lending are between 50% and 100% for the usual three month loan period. Differences in the length of time a loan actually remains outstanding and in the conditions from case to case would make a more precise statement arbitrary.

There was a clear difference between high interest loans and the second type of informal loan, the mutual no interest loan. The latter are consumption loans exchanged between friends or relatives of similar economic status. Thus women of similar economic status maintained mutual support systems with loans of rice, oil, vegetables and small sums of money. Some no interest loans were also given by wealthier households to poorer relatives.

V.2.1 Credit, Distribution and Change

What then are the dynamics in the formal and informal credit sector of Samitigram in the context of irrigated cultivation? Table V.8 shows a very high involvement of all household categories in credit markets. As mortgage loans are not included (see V.1.5 and Table V.5), involvement in loan transactions is even higher than indicated in Table V.8.

Only five households said they took no loans at all. Of these, three were landless or near landless, and met their financial needs through labour and seasonal fish sales or raised finance by mortgaging out a small piece of land. Two of these 'poor' households were headed by old men who claimed to "have no need" for loans. One of these households had low cultivation costs as it concentrated on *b.amon* and only cultivated very little irrigated *boro* (c.f. Tables V.13 and V.14).

Table V.8: Credit taken by Household Category (% of total Category)

	Informal only	Formal only ^{a)}	Formal and informal	Total
Poor	26%	41%	26%	93%
Coping	3%	58%	39%	100%
Well-off	0	53%	42%	95%
Rich	0	100%	0	100%

a) credit samiti loans are counted as formal loans firstly because funds are obtained by the samiti as formal bank loans on the security of a samiti deposit account with a local bank (see III.4.6) and secondly because in contractual conditions and in impact at household and farm level samiti loans are closer to formal loans than to either type of informal loan.

In Samitigram, as in other parts of Bangladesh (see White 1988 on Tanore; Rahman 1979a & b on Phulpur and Comilla), more prosperous households took higher formal loans from more loan sources. All 'rich' households of Samitigram took several bank and KSS loans. It was less the need for credit but that "loans are cheap" as was repeatedly explained, which prompted 'rich' households to take formal credit. As Herring (1977 p.34) outlines for India, formal bank credit tends to reflect social and economic structures, since credit availability is conditional on land ownership. As a result, tenant producers hardly have access to formal credit and resort to more expensive informal types of finance (see McGregor 1987 p.2). When the landowner, rather than the cultivator, has access to cultivation credit, agricultural productivity is likely to suffer.

The above suggests major leakages of formal credit to relatively land-rich, joint households in Bangladesh. The records of local and *upazila* level bank managers, to which I was granted access, revealed that loan default rates are higher among the 'rich' of Samitigram than among the poorer households. These patterns of loan default result from the variety of roles formal credit plays in the economic strategies of different households. While default is a one-off income

source for the 'rich', other cultivators need recurrent cultivation loans and therefore repay. Default patterns also reflect how household structure is used by mostly 'rich' joint-family households. The more members of an economically joint household have land registered in their different names, the more bank loans that household can obtain. These loans are then defaulted on without any sanction to the defaulter household. As long as one household member retains a good repayment record, loan sources will not dry up ¹⁵).

Moreover 'rich' households -- to whom the above argument applies predominantly -- are least dependent on seasonal cultivation loans and loans to finance other investments. A usual answer about what would happen if the bank refused any further loans after a default on a STW loan was "I'd just buy it cash". With loans for irrigation equipment, the opportunities for 'rich' joint households to accumulate through the formal credit market have increased, and default is the central mechanism for this.

There is an active market in secondhand STWs in Singra. New STWs are bought with bank loans which the debtor subsequently defaults on. My interviews and conversations confirmed that these defaults are common. The equipment, which often never reaches the fields of the original 'irrigation scheme', is then usually resold. Defaults on STW loans have turned into a cash subsidy to wealthy village elites (c.f. Bottrall 1983).

If STWs are never paid for, their inefficient utilisation becomes possible for 'rich' households. Table III.2 reflects this through the difference in size of command area between individually-owned and group-owned STWs in Samitigram.

There is a further possible variation on STW default. 'Rich' households, local bank managers and agents for the STW manufacturers are reputed to take out 'fake STW loans' for which machinery is never delivered and then to divide the loan, which is defaulted upon, between themselves. Although it is extremely

difficult to trace such cases individually, the practice is discussed among villagers and known among government officials and equipment traders. The Dhaka manager of a major STW importing agency, which operates in Singra was able to describe local case examples to me in informed detail. He estimated the incidence of 'fake loan cases' as 50% of total STW loans disbursed (interview, September 1986). While this figure might be regarded with some caution, an analysis of STW related patterns of accumulation and change must not overlook the element of cash subsidy to village elites and local level bureaucrats through the abuse of STW credit systems.

Default patterns on the loans disbursed for the 31 STWs surveyed in this study reveal a strong element of subsidy to 'rich' individual STW owners. The largest defaulter with the Singra bank is Faruque, the village's absentee landowner who had two STW loans outstanding for several years and had paid back nothing in 1986. Interestingly, Faruque reverted to village-level mortgages to raise funds for one of his town enterprises. Possibly his bank record had eventually prevented further loans to him. His example illustrates how elements of the agrarian structure, like mortgaging, apparently persist but actually acquire new meanings at household level in the course of agrarian change. For Faruque, the taking of a mortgage was a one-stranded business operation which did not involve him in any of the multiplex dependency relations or the process of gradual asset loss, which has been traditionally associated with mortgages (see V.1.5). Like Faruque, many other 'rich' households from Samitigram and surrounding villages with private STWs had also paid back nothing or had overdue payments on their STW loans.

Samitigram STW groups, on the other hand, tended to perform well on loan repayment. The two groups which disintegrated (see III.5) did so in a quarrel over the misappropriation of funds for loan repayment. However, the irrigation groups did not eliminate appropriation through loans by the 'rich'. As seen in two

irrigation groups (the 'pseudo-groups', see III.5), the 'rich' STW manager was openly appropriating members' loan repayments. On the other hand, irrigation groups with a relatively wealthy or mixed socio-economic composition of members had better repayment records than groups with great internal disparities of wealth and power. Mixed groups also had the largest command areas and the largest number of members. It would be interesting to examine the differences in input structures and productivity for these different types of command areas. The financial and time scale of this research did not allow for this.

Most seasonal cultivation loans for *boro* paddy in Samitigram were taken out by 'well-off' and 'coping' households. The annual sequence of loan application, disbursement and repayment after the harvest was most firmly established among these households. As mentioned above, loan defaults were less common as the refusal of a cultivation loan after a default would endanger cultivation in subsequent years or force the household into the much more expensive informal credit market. For households who neither had sufficient capital nor a joint household to take out loans in the names of different household members, default becomes a serious danger to future income from irrigated HYV *boro* cultivation.

The idea of a bank loan as recurrent and therefore necessarily repayable is relatively new in Samitigram. Informal credit has traditionally been one element in a multi-stranded relationship of power and dependence. Repayment was therefore not always expected and often functional to neither creditor nor debtor (see Breman 1974 p.59/60).

Samitigram's overall good record of cultivation loan repayments with the local banks is clearly linked to the relatively high degree of access to irrigation water through the irrigation groups. If a group fails through lack of access to irrigation water, as is common in the Singra *beel* as a whole, a cultivator will not repay his cultivation loan. He will then not receive any further

bank loans and will have to spend most of his profits on high interest informal loans or cultivate HYV crops. Nuclear households are more exposed to these risks than joint households. As has been shown in III.5, the poorer nuclear households in particular gain access to water through irrigation groups compared to non-group situations. A large number of those households have been able to integrate the seasonal disbursement and repayment of formal credit into their household and agricultural production budgets on a regular and relatively secure basis.

The effects of secure access to water and to other agricultural inputs such as credit are thus mutually reinforcing. In Samitigram, irrigation groups became an option as access to water, credit and other HYV inputs improved. Now groups ensure the continuation of favourable access conditions in Samitigram.

A majority of the Samitigram 'poor' (67%, see Table V.8) had taken formal loans under the current household head. A minority of these households then defaulted on their loans and at the time of the interviews no longer had access to formal loans. For these and other 'poor' and 'coping' households, the credit *samiti* was an important avenue of access to cultivation loans (see III.4.5). Although credit *samiti* loans are not direct formal sector loans, loan conditions and interest rates (according to the manager 25% for members and 30% for non-members of the *samiti*) correspond more closely to formal than to informal loans. The credit *samiti* has made *boro* cultivation possible for a number of poorer Samitigram households, who would be unable to cultivate profitably if they had to rely on the informal market.

The good repayment record of credit *samiti* loans is a result of the way the *samiti* is integrated into the village's socio-political and economic relationships. A default on a debt to the credit *samiti* might have consequences for a variety of relationships in the village, which are important for the debtor's household strategies. The information that "credit *samiti* loans are guaranteed by the *jubok samiti*" offered to me by one group manager indicates that there is a

recognition and institutionalisation of the forces of socio-economic cohesion in the village through the *samitis* ¹⁷). Through the *samiti* structure a new, more educated village elite has asserted its leadership. At present, this has created sufficiently secure access conditions to water and credit for a number of 'coping' and 'poor' households to enable them to engage in irrigated cultivation.

Household heads were reluctant to admit to giving informal loans, especially high interest loans. Nonetheless, it became clear throughout the fieldwork that all of Samitigram's 'rich' households and many 'well-off' gave informal high interest loans. There were at least two *mohajons* (moneylenders) in the village, who came from 'well off' cultivator households. Neither admitted to moneylending but I obtained accounts of loans and loan conditions from a number of their debtors. An approximate distribution between high interest and no-interest 'friendly' informal loans in Samitigram is shown in Table V.9.

Column 1 of Table V.9 demonstrates the degree to which household categories lost through high interest credit. While 23 'poor' households (23% of the 'poor') took informal loans, 16 'poor' households (39% of the 'poor'), took high interest loans. From the conditions of high interest loans it was clear that the great majority were consumption loans.

TABLE V.9: Types of Informal Loans Taken by Household Category

	High interest	Friendly/no interest	Total
Poor	16	9	23 ^{a)}
Coping	5	8	13
Well-off	0	11	11
Rich	0	0	0

a) Total household numbers are higher than sum of rows, as some households took informal loans of both types.

Several 'poor' household who took high interest informal loans had some land available as collateral and could have taken out bank loans. One 'poor' householder, when questioned as to why he did not try for a bank loan replied

A loan from a neighbour (at 25% interest per month) is so much less trouble than a bank loan that I can earn the extra cash required for the village loan in the time it takes me to get the bank loan. ¹⁸⁾

Clearly there are access problems in the formal credit sector for illiterate 'poor' households, who are unfamiliar with bureaucratic procedures. Schaffer, Lamb and others (1974; 1975) first addressed issues around access to institutionally administered resources. McGregor (1987 and forthcoming) deals with the problem in the Bangladesh context. Initial bribes may be needed to gain access to bank loans. The small loan size needed by poorer households to tide over lean seasons makes loan processing in the formal sector expensive. The formal banking and credit sector leaves 39% of Samitigram's 'poor' households in at least partial dependence on high interest consumption loans. Thus some of these households' surplus continues to be extracted by wealthier village households through usurious informal credit relationships.

There are three lines of credit, which alleviate the regressive impact of credit in Samitigram. Firstly, the extension of mutual no-interest credit between relatives and friends of similar economic status is a safety mechanism for poorer households to protect themselves against income transfers to the wealthier classes. Among the 'well-off', mutual loans mostly alleviated temporary cash flow problems.

A second credit line of great importance for the 'poor' are the loans extended to members of the BRDB women's cooperative MSS (see III.4.8). These loans are officially intended to promote women's income generation through activities such as poultry raising. In Samitigram, MSS loans were almost without

exception appropriated by members' husbands and used for cultivation. Most MSS members were women from 'poor' households¹⁹). For these households, access to the MSS loan is a vital deployment of gender to obtain finance for irrigated cultivation. The one exception, where an MSS loan was not appropriated by the male members of the household is that of a 'rich' household (Saidur IV.2.1). The women of this household did start raising poultry and realising cash income with the help of MSS loans. At the time of the field research, they required no further loans for their poultry business and had started to disburse high-interest loans to poor households out of the MSS loans, which they still obtained annually.

Thus in Samitigram, the attempted institutional targeting of loans to poor women has brought finance to another group of potential development 'targets', the poor rural cultivators who are their husbands. In Singra *upazila*, the redirection of loans to women to the male sphere is well known and accepted by the BRDB local bureaucracy. We thus have a case of 'relabelling' (see Wood 1985) by the target group household in the context of unequal relationships inside the loan-receiving household, which were not taken into account in the design of the loan scheme. Fortunately, the redirected MSS credit here turns out to be a precondition for the cultivation operations of poor households which are not reached by any other credit programmes. However, the need to take into account women's positions within the household and their consequent chances of access to externally administered assets, and the need to consider the 'target' household as a whole are highlighted by this example (see White 1988).

The third element which alleviates the regressive impact of formal credit is the credit *samiti* (II.4.6). Indirectly, it provides access to formal credit for a number of 'poor' and 'coping' households and thus gives them the opportunity to engage in occupations which, as repayment records prove, generate sufficient income to repay the loans.

Like irrigation, credit is a necessary condition for HYV *boro*

cultivation. Under conditions of relative security of water access, Samitigram's informal credit sector has evolved better access conditions for a number of poorer households through the credit *samiti*. Marginal households (e.g. Toslin, IV.2.3) do get pushed into taking high-interest informal credit, and high interest consumption loans prevent a large number of the 'poor' from using their own seasonal economic surplus productively. Although the exploitative features of informal credit have been partially supplanted, credit as a whole is still a bottleneck factor for 'poor' households in Samitigram and remains a means of extractive appropriation for richer villagers.

With irrigated HYV cultivation formal credit has expanded. For joint 'rich' households this has meant a new income source through selective default on bank loans. Among less wealthy households in Samitigram, default is rarer and caused by inability rather unwillingness to repay. For nuclear 'poor', 'coping' and 'well-off' households default usually forces reliance on high interest informal loans, which reduces or eliminates the profitability of irrigated cultivation (see V.4 on cultivation costs and returns). Under conditions of relatively secure access to essential cultivation inputs as in Samitigram, 'well-off', 'coping' and 'poor' households show good repayment records. The other side of the coin is that loan stoppages, as implemented by commercial banks in Singra *upazila* in 1986, either force cultivators into high-interest informal loans or out of cultivation into renting their land to wealthier households who can raise the cash for cultivation.

Access to credit, default patterns and stoppages of formal credit thus show clear regressive distributional results. This should not distract from the productivity-enhancing role of recurrent cultivation loans and from the increase in the numbers of those who can cultivate irrigated *boro* through the impact of the credit *samiti* in Samitigram. The credit *samiti* is locally initiated and enhances productivity and output of those with insufficient access to formal credit.

Although it is integrated into local patron-client relationships, and although the price of loans is differentiated according to household category and client status, the example of the credit *samiti* shows that informal rural credit relationships need not necessarily be merely an extractive instrument of the rural elites. Credit in Samitigram is also coming to be regarded as a precondition for surplus appropriation from irrigated cultivation. As has been shown for tenancy and mortgaging relations (c.f.V.4-V.5), the reasoning behind an informal loan can be the facilitation of production which expands the exploitable base of surplus potential rather than the extractive appropriation of surplus from outside the production process.

V.3 The Labour Market

Section III.3 discussed how increased crop volumes and changed cultivation methods for HYV paddy have created new types of agricultural work and increased the demand for agricultural labour in Singra. The changes in the labour market which this increase in the demand for labour has created are the topic of this section.

In Samitigram, different groups of workers have experienced different types of change as a result of the introduction of STW-irrigated *boro* cultivation. There are now differences between migrant and local labourers, different wages are paid for the same work and different workers' bargaining power has changed to different degrees.

The introduction to the sections of the Samitigram labour market which follows below explores the implications of STW-irrigated cultivation for the position of agricultural labourers in Samitigram.

V.3.1 Organisational Forms of Labour

Depending on the type of work, time of the year and the economic situation of the cultivator, agricultural labour in Samitigram is done either by

members of the household, by inter-household labour exchange (*gata*) without cash payment or by a form of hired labour.

Table V.10 introduces the different organisational forms of hired labour in Samitigram. Labourers are distinguished by their place of origin and permanent residence and by the organisational form under which they provide labour.

Samitigram labour market sections are interdependent but can be distinguished by different internal operating principles.

Table V.10 Forms of Hired Labour in Samitigram

	village	local (<i>beel</i>)	migrant
1. Group	**		***
2. Individual			
(day/casual)	***		
(seasonal/annual)	*	**	

*,**,*** degree of relative frequency of labour type

V.3.1.1 The Labour Groups (*Dols*)

The bulk of Samitigram's *boro* harvest is carried out by migrant labour groups who started coming to the Singra when irrigated *boro* cultivation increased. Local labour also forms *dols* for *boro* harvest work. *Dols* have a leader (*sardar*) who conducts negotiations with prospective employers for the group.

During the initial years of *boro* cultivation in Samitigram, *dols* were paid a fixed sum per *bigha* (0.33 acres) of land harvested. Today almost all harvesting work is paid by crop share. This has established a direct link between harvested volumes and returns to labour and stands in direct contrast to the displacement of in-kind crop shares by cash payments observed in many other parts of Bangladesh (Clay 1976; Jansen 1983; Rahman 1984. Only some of the

poorest cultivators who hire day labour in addition to their own household labour for the *boro* harvest, paid in cash for harvest work. These poorer cultivators also tended to have access problems to harvest labour groups since *dols* move from the lands of wealthier to that of poorer cultivators. This exposes poorer cultivators to a higher risk of crop loss through early rains.

Dols are paid with a share of the harvested crop. The size of this crop share depends crucially on the arrival of the monsoon. In years with early rains, labour groups were reported to have been paid as much as 30% of the harvested paddy (12 of every 40 *seer*²⁰) for cutting and threshing the paddy). In such years employers travel to the migrant workers' villages or to the bus and train station in Singra or Natore where migrant *dols* arrive, in order to secure labour. In normal years and when the rains arrive late, groups come to employers and harvest labour was reported to be paid 6-9% of the crop (2½-3 *seer* per maund) depending on the distance between field and employers' homestead where the crop is carried by the labourers. In early June, at the end of the four to five weeks of *boro* harvest, the migrant *dols* return to their home villages with the paddy they have earned. Groups of workers sometimes rent lorries in order to transport their paddy home.

There were two local *dols* in Samitigram in 1985/86. They work mainly during the *boro* transplanting and harvest seasons but also for the *amon* harvest or in the construction of village houses outside the agricultural seasons. Local *dols* have six to eight members each and are relatively uniform in the age and physical strength of group members. Labourers who are old, very young, sick or physically weak and those who are stronger and work harder than average do not belong to the *dols*. While the former are not admitted because "they cannot pull their weight", the latter said they did not join *dols* in order to use their physical strength for their individual benefit. As will be shown below, the "weak" and the "strong" individual (i.e. non-group) labourers rely on different forms of day,

annual and seasonal labour with very different levels of return (cf. Figure V.4).

For work other than the harvesting of *boro*, such as weeding, harvesting *amon* or the construction of village houses, *dols* are paid piece rates. Payment is negotiated between *sardar* and employer and shared by group members.

The addition of *boro* cultivation to the annual agricultural cycle (cf. Figure III.1) has brought new dimensions to the bargaining process in the Samitigram agricultural labour market. A larger total number of agricultural operations during the year requires more accurate timing. Greater investment in *boro* cultivation (cf. Tables V.13 & V.14) means that a departure from the required sequence and timing of agricultural operations risks greater economic losses for the cultivator.

This greater complexity of the agricultural system created by an added cropping season shifts relative bargaining powers in the agricultural labour market. At *boro* harvest time, this can operate in favour of agricultural labourers. Employers' increased need for well-timed and promptly executed harvest operations makes them more vulnerable to the demands of agricultural labourers. If the *boro* harvest is carried out too late and caught by the arrival of the monsoon, the crop will be unfit for storage and will need to be sold immediately at very low prices. The rains may then also have raised the water level in the fields too high to sow (broadcast) *amon* and the cultivator will suffer further losses in the next season. During the annual peak period of labour demand, the *boro* harvest, the *dols* thus have the advantage of considerable systemic pressure for the timely execution of agricultural tasks. As shown above, this raises the payments to harvest labour in years with early monsoons. Somewhat in contrast to this, Brammer and Clay (1987)²¹ argue that the direction of change of Bangladeshi agricultural systems means the reproduction of poverty of the agricultural labour force on whose continued work at very low returns the maintenance of dynamics of the system depends.

The organisation of labourers into groups counteracts the power-dependence relation between labourer and employer which operates through market interlinkages and can affect wage negotiations in favour of the employer. This is expressed in Adnan's (1984 p.86) model of

...interlocking transactions in several markets imposed by one agent upon another.

The *dols* loosen linkages between the market for *boro* harvest labour and other markets. As a reflection of the labour power they control the *sardars* have come to be accorded special status by agricultural employers. This is reflected in symbolic gestures such as the offering of a chair and food and drink during negotiations and in matters such as how a *sardar* is addressed and treated. On the other hand, it was apparent that if a *sardar* were found by his *dol* to have accepted a low payment in order to secure advantages in other markets for himself, his position in the group would be endangered. The *dols* thus take some sections of the agricultural labour market out of the context of interlinked markets and confine the boundaries of the negotiations more closely to the work-wage exchange.

Since most harvest labourers in Samitigram are seasonal migrants, relationships between labourer and employer in other markets are less frequent and therefore less likely to counteract the systemic pressure for higher harvest wages. A mechanisation of harvesting operations which would eliminate labour's bargaining power during the *boro* harvest in Samitigram is unlikely in the near future due to the ecological conditions in the swampy *beel* ²²).

Clearly, it is not argued here that poor migrant labourers who come from areas of low labour demand and need to maintain home dependants, are in a position to withhold their labour in order to press for higher wages. Demographic growth and increasing landlessness will also increasingly tilt the balance against labour. Nonetheless, subject to climatic circumstances during the *boro* harvest,

agricultural employers in the Singra *beel* have become seekers of labour and are vulnerable to increased wage demands.

Under new production conditions with mechanised irrigation, the *dols* have thus created a degree of "room for manoeuvre" (Clay and Schaffer 1984) for labour to press for higher returns from the *boro* harvest (cf. Figure V.4). However, there are differences between migrant and local *dols*. Migrant *dols* tend to be employed by the 'rich' and 'well-off' while the local *dols* work for the 'coping' and 'poor' cultivators²³). This enables wealthy employers to segregate *boro* harvest employment relationships with migrant *dols* from continuing patron-client relationships with local labourers in other markets and other segments of the labour market. As other such "ambidextrous" strategies of wealthy households²⁴), this shows that patron-client relations in interlinked markets are not necessarily displaced by new, more productivity-oriented production relationships. Continuing patron-client relations in other seasons and other market segments may articulate with new production structures so that the rural elites can continue some forms of extractive appropriation.

There is another new, but much smaller section of the group labour market in Samitigram. Households which have insufficient own labour employ groups of women or young boys in order to transplant paddy. These groups are paid piece rates which amount to a fraction of the male agricultural wage of the season (see Figure V.4). The creation of a labour market section which which employs lower paid women and children thus reduces the share of labour in the surplus created through irrigated *boro* cultivation. This has also been observed by Jansen (1983) and Rahman (1984).

V.3.1.2 Day Labour

For most Samitigram labourers agricultural day labour is a seasonal occupation which is combined with other income generation activities in order to meet annual household needs. The majority of landless and land-poor households

rely on open-water fishing in communal waters and fish sale during the latter part of the rainy season between August and early October (cf. Table VII.1). Incomes from fishing are much higher than incomes from day labour during this period (cf. Figure V.4). The seasonal low in demand for agricultural labour during the monsoon is thus conveniently offset by a peak in fishing incomes. This reduces the risk that labourers get indebted through informal, high-interest credit (cf. V.2) and become dependent on employers and thus weakened in their peak-demand wage negotiations through credit-labour market interlinkages. In Samitigram, open-water fishing clearly constitutes an essential supplementary income source for households who cannot rely on cultivation alone ²⁵).

Levels of remuneration for day labour vary by gender, by season, by type of work and with the strength and skill of the labourer. Women day labourers receive only daily meals for themselves and their youngest children. The lowest wage for male day labourers (5-8 Taka per day) is paid in the rainy season between August and September when there is little agricultural work. As fishing incomes peak during this period, few local labourers seek work in Samitigram, and most of these find work in wealthier village households. Throughout the *amon* harvest and the *boro* transplantation period from October 1985 to February 1986, 15 Taka per day was paid to male day labourers. Between mid-February and mid-April, just before the *boro* harvest, there is a low in the demand for agricultural labour and wage levels fell to 10 Taka per day in 1986. Some increase in labour demand occurred through the Food-for-Work and Cash-for-Work programmes for road and culvert construction in the *union*. Eventually, the highest wages for the agricultural year, 20 to 40 Taka per day for ancillary harvest operations such as haystacking, are paid during the *boro* harvest from May to early June (cf. Figure V.4).

Day labourers in Samitigram are from the village itself. The strongest young men from 'poor' households perform the better paid types of *boro* harvest

labour for the 'rich' village households who do not use household labour for these tasks. It was not always clear how the scarce opportunities for better paid day labour were allocated. Both the physical strength and skill of a labourer and his local connections played a role. It could be argued that the few better paid day labour contracts available from Samitigram's 'rich' agricultural employers create a segment of "strong clients" and thus reduce the potential strength of Samitigram's agricultural labour force as a whole. The example of Yussuf's sons (cf. IV.2.4), two of whom work in labour gangs and a third relies on better paid day labour, illustrates how the potential bargaining strength of local labour at times when labour inputs are crucial to employers can be lost through the organisational fragmentation of the labour force.

In comparison to the labour groups (*dols*), individual day labourers maintain more intensive connections with employers in other markets. These are important to their households' resource strategies and ensure subsistence in a high-risk environment. As a result of such market interlinkages, individual labourers tended to be less able to use their occasional bargaining advantages in the labour market.

V.3.1.3 Seasonal and Annual Labour

For eight months of the year, from the *amon* harvest in October till after the *boro* harvest in June, seasonal labourers from Samitigram and surrounding villages live in their employers' households. They receive a monthly wage, daily food and sometimes a new *lungi*. When the monsoon arrives in about July, they return to their own households. A few 'rich' Samitigram households also employ labourers under annual contracts.

Seasonal and annual labourers (*chakors*) are men from other villages in the area or young boys who are as yet unable to work in *dols*. Their monthly wages varied between 30 Taka (for cowherd boys) and 180 to 300 Taka for adult male labourers. Only the richest household of Samitigram employs a woman on

an annual agreement. This *kajer mee* (literally: girl for work) is not paid but only given daily meals and two *saris* per year. It emerged from a number of interviews that if their earning potential elsewhere increases (e.g. as a result of fieldgleaning after the *boro* harvest) poor women are becoming increasingly unwilling to work as domestic servants for daily food only (cf. IV.2.5 & White 1988).

Both in the male and in the female labour market, total annual income for seasonal and annual labour is lower than for day labour (cf. also Figure V.4). While in other areas of the country a lower number of days worked may result in lower incomes for day labour despite higher wages, the general consensus in Samitigram was that because there are enough work opportunities throughout the year it is better to work as a day labourer than as a *chakor*.

While most local labourers relied on their social and kin connections to obtain continuous work as day or group labourers (cf. Table V.12 below), most seasonal and annual labourers came from other villages and could only achieve security of employment by accepting longer-term, less well-paid employment. As Samitigram wage levels are somewhat higher than in the surrounding villages, lower paid employment in Samitigram is still a desirable choice for the non-local labourers.

The employment relations between local *chakors* and employers often coincided with credit, tenancy or mortgaging relations and were part of a multi-stranded dependence of the labourer on the employer. In these cases employment as a *chakor* was clearly regarded as interchangeable with sharecropping or credit relations between patron and client household. The rationale of the total patron-client relationship here centres less on the economics in a single market (e.g. tenancy or employment) and more around the assurance of subsistence in a high-risk environment to the client household in exchange for extractive appropriation in interlinked markets by the patron household.

Most of Samitigram's child labour market is part of the seasonal and annual labour market. 'Poor' boys from about 8 years of age onward work as *chakors* in 'rich' and 'well-off' households in exchange for daily food and a small monthly payment. White (1988) also finds a labour market for female children in Tanore, a more Hindu area. In order to support their parental households, 'poor' children' drop out of school and remain illiterate. One boy *chakor* aged about eleven told me proudly

I started to learn how to read and write but I had to give up and work after the vowels

While 'rich' children study, often with tutors to overcome the shortcomings of the primary school system, 'poor' children forego formal education to work. New, lower-paid labour market segments in the wake of mechanised irrigation such as for the transplantation of irrigated *boro* (cf. V.3.1.1) not only decrease the return to labour in the aggregate but may also increase the incidence of child labour.

Formal education increasingly determines people's ability to benefit from structural and technological change in Bangladesh (cf. also III.5.3). If the response to irrigation-related increased labour requirements in agriculture is the increasing employment of 'poor' children (cf. also Rahman 1984), the level of literacy and the development prospects of the children of today's 'poor' will be further reduced.

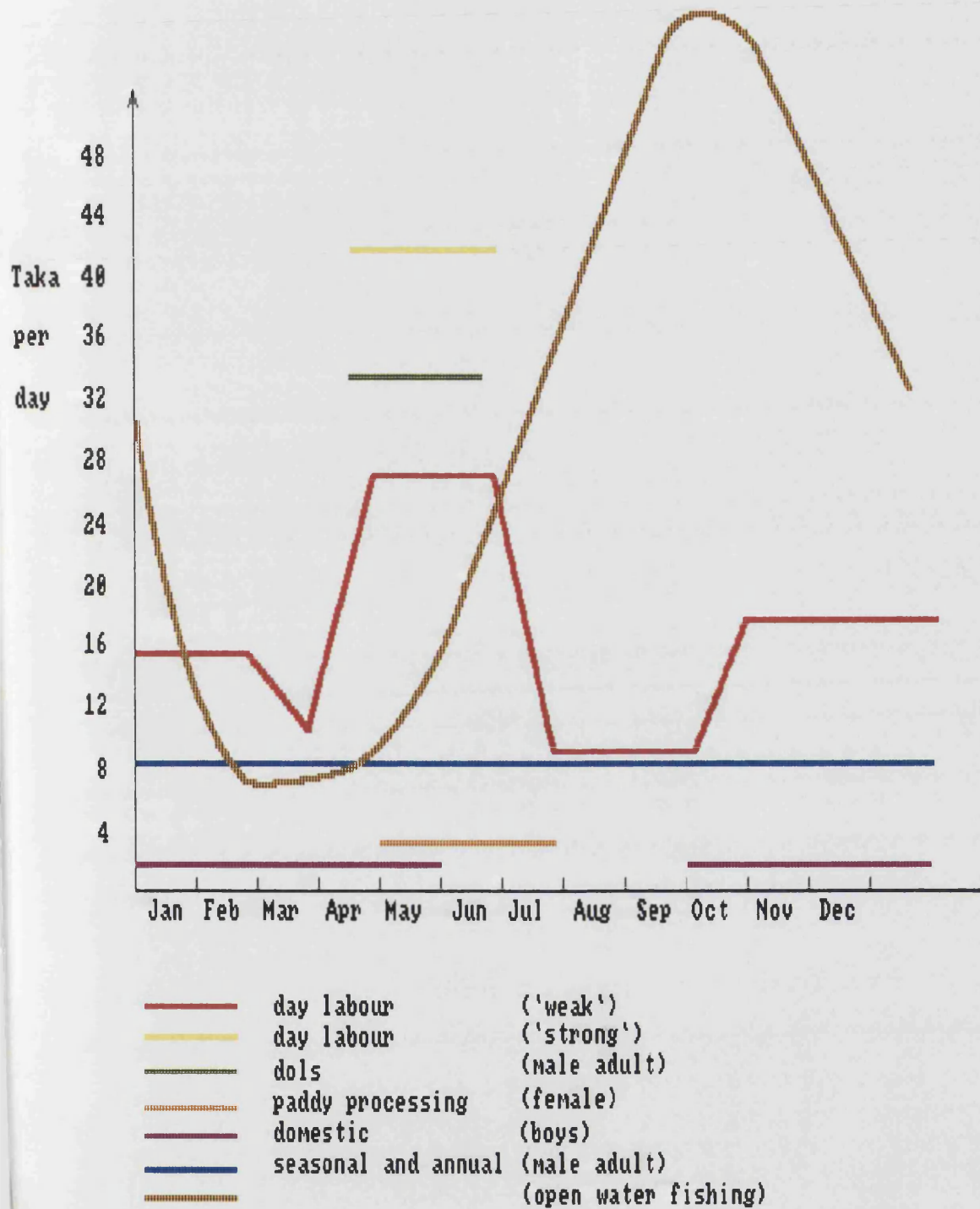
Clearly, the present primary school system is insufficient to reach the 'poor'. Also, a closer look at the importance of child labour in the household economy (cf. Cain 1977; Kabeer 1986) and at the possibilities to reduce or replace the economic importance of children in the 'poor' household would be needed.

V.3.1.4 Household Labour and Labour Exchange (*Gata*)

All Samitigram households with healthy men of working ability work in

Figure V.4

Seasonal Wage Variations by Labour Type (Samitigram)



own cultivation. In line with Chayanovian arguments, the degree to which household labour is used in own cultivation depends on the stage of the household life cycle and its related consumer-worker ratio. Beyond a household's age and gender structure, its wealth and occupational diversity give some scope for choice between using household labour and hired labour in own cultivation. Although all Samitigram cultivators used household labour, the intensity of use in cultivation decreased with increasing household wealth ²⁶). As discussed in Chapter VII, occupational diversification only tended to take members of the wealthiest village households entirely out of cultivation work. For 'coping' and 'poor' households, occupational diversification complements, rather than substitutes for labour in own cultivation. This indicates the higher degree of self-exploitation of household labour (i.e. working longer hours) for poor households.

Inter-household labour exchange, *gata*, has been practised in Samitigram for a long time. It is the origin of today's labour groups (*dols*). Those of the local *dol* labourers who also cultivate for themselves, transform their *dol* into a *gata* group for their own *boro* harvest. This temporary transformation of *dol* labour into exchanged household labour among poor labourer-cum-cultivators saves expenses for hired labour. With decreasing economic status *gata* was used more explicitly to reduce the cash cost for labour. Thus household self-exploitation strategies become more elaborate as the economic position of the household worsens.

While only the 'poor' labourer-cum-cultivators used *gata* for their *boro* harvest, 'coping', 'well-off' and one 'rich' household used *gata* for the transplantation of *boro* and the weeding of *amon*. Here, *gata* uses household labour outside the peak periods of agricultural work and thus saves expenses for hired labour. At the same time, the social status of the household is not endangered as the cultivator does not hire out his labour. The only 'rich' household who used *gata* in Samitigram employed hired labour in addition to

household labour inside the *gata* agreement. Here, most clearly, *gata* increases the use and productivity of household labour under the constraints imposed by status-related rigidities in the agricultural labour market. The other four 'rich' Samitigram households cultivated with some own household labour and hired labour. Thus it is clear that with increasing economic wealth of the cultivator the proportion of hired labour and, assuming constant labour intensity per acre across household category, the amount of hired labour per unit of land cultivated increases.

V.3.2 Household Categories and the Labour Market

Figure V.4 illustrates the wage differentials between the different sections of the agricultural labour market introduced above. The differentiation of the labour market by labour type and by season stand out clearly. The separation of Samitigram day labourers into 'weak' and 'strong' is also clear. In order to demonstrate their importance for the operation of the agricultural labour market, seasonal incomes from open-water fishing have been included in Figure V.4.

One of the most striking changes after the introduction of irrigated *boro* cultivation in Samitigram is that now the majority of Samitigram cultivators (including 44% of the 'poor') hire labour at some time of the year. In 1986, 65% of village households employed *dols* for the *boro* harvest. Only the 9% of households who had no own cultivation on own or rented land and a further 26% of 'poor' and 'coping' households who cultivated mostly rainfed *amon*, did not hire *dols* but used household labour and labour exchange for cultivation. Three 'well-off' households sharecropped out all their land and thus did not hire any labour.

As Table V.11 and the preceding discussion show, annual and seasonal labourers work mainly for the 'rich' and 'well-off' households. One reason for this is that the employment of seasonal and even more so of annual labourers

Table V.11: Use of Types of Hired Labour By Samitigram Households
(% of household category)

	Annual	Seasonal	Group	Day
'Rich'	100	100	100	100
'Well-off'	50	65	77	n.a.
'Coping'	6	34	52	n.a.
'Poor'	0	2	44	n.a.

requires larger cash outlays, space to accommodate labour and an uninterrupted work load to occupy the labourer throughout the year. Thus only two 'coping' households (6% in Table V.11) employed annual labourers. One employed a man from a poorer village in the deeper *beel* who worked in the household's snack stall and assisted its only working male in agricultural work. The other 'coping' household employed a boy labourer while one of the household's sons was attending school. Here, the employment of an annual labourer is an investment in the education of a household member.

The 'rich' employ all types of hired labour, and the greatest amounts per household. Migrant harvest *dols* of thirty or more members, male and female day labour and several seasonal and one or two male annual labourers worked in each of the rich households. The richest Samitigram household, Malik (IV.1.2) also employed female seasonal and day labour. The 'rich' thus continue to enforce their local positions of power through longer-term labour contracts which are used interchangeably or in conjunction with contracts in other markets such as credit or tenancy. Thus, a sharecropping agreement could bind a tenant-labourer to pledge his labour to his landlord, or a debtor would repay a loan by providing his labour below the market rate. In 1986 with an average wage rate of 15 Taka per day, 7 to 10 days of labour were the rate for a loan of 100 Taka in

Samitigram.

At the same time, 'rich' households employ migrant rather than local *dols*. This to some extent avoids the clash of the exploitative interlinkages of their local labour, credit and tenancy relations with their productivity objectives in the cultivation of irrigated *boro* in times of seasonal labour shortage. On the whole, hired labour is cheapest for the 'rich' in Samitigram since they employ the greatest proportion of annual and seasonal labour and use market interlinkages to their advantage most frequently.

'Well-off' households have somewhat more diverse patterns of labour use than the 'rich'. One household, with five working men, supplements household labour with the hire of occasional day labour only. Another operates a sawmill and electrical goods stall in the Borogram *bazar* (cf. Map III.1) and employs an annual labourer for agricultural and shop work.

The 'rich' and 'well-off' are Samitigram's main employers. 'Poor' and 'coping' households hardly enter the labour market as employers, other than for the *boro* harvest. A minority of 'coping' households employ young boys on seasonal or annual agreements in exchange for food, clothing and few, if any, wages.

The main form of labour employed by 'coping' and 'poor' cultivators is group labour (cf. Table V.11). As discussed above, group labour involves more single-market employment relations than individual forms of hired labour. Agricultural employers in Samitigram can thus be distinguished by the type of labour they employ and their consequent degree of bargaining power in the labour and other markets.

Table V.12 shows the quantitative dimension of the divisions among Samitigram labourers. Only just over a quarter of the 41 'poor' households and only one 'coping' household work in labour groups. Labour groups are thus

clearly not the main form of employment relation between local labourers and employers.

The majority of group labourers are migrants who are employed by

Table V.12: Types of Hired Labour Performed by Samitigram Households (% of household category)

	Annual & Seasonal	Group	Day	(STW operator)
Rich	0	0	0	40
Well-off	0	0	0	50
Coping	3	3	14	10
Poor	16	26	80	2

the 'rich' and 'coping' cultivators of Samitigram. Labour relations between local labourers, who work in groups, and employers have thus changed because a new, poorer type of employer has entered the agricultural labour market for the *boro* harvest.

On the other hand, new types of agriculture-related work have appeared in the labour market. The occupation of STW operator (cf. VII) is not significantly better paid than cultivation labour in the same season, but it has drawn wealthier households into the Samitigram labour market (cf. Table V.12; see also Lewis forthcoming). Clearly, control over water distribution rather than the wage returns, is the major incentive which draws wealthy cultivator households into the occupation of STW operator.

On the whole, the changes in the labour market have increased the absolute returns to labour from cultivation. This was universally acknowledged by Samitigram labourers. Some Samitigram households who were entirely relying on the sale of their agricultural labour also appeared to be better off than those who were subsisting on the cultivation of small pieces of land.

My question to Samitigram labourers about what had been the most important changes for them was either responded to with positive comments about the constant availability of work, or with the resigned remark that "nothing has got worse, but nothing has got better either". The subdivisions of the Samitigram labour market introduced in this chapter bear out this division of opinion.

V.4 Cultivation Costs, Output and Accumulation

This section brings together the main elements which influence costs and crop returns of STW-irrigated cultivation in Samitigram. The point of central interest here is whether irrigation has introduced or increased biases by household category in the cost and output value (net of cost) of cultivation. The pre-irrigation period in Samitigram is thus our point of departure. As pointed out earlier (V.1.3) higher land, which brought more secure returns of the pre-irrigation main crop *b.amon*, is mainly owned by the 'rich'. In the pre-irrigation period, the risk of *amon* failure through flooding was thus lowest for 'rich' households. The reversal in land quality criteria with the fall of the water table and the emergence of irrigated *boro* as the main crop has now made high land less valuable as it requires more water and more fertilizer for *boro* cultivation than lower land. The STW command areas of Samitigram today still show a concentration of higher land, which has greater input requirements for *boro* cultivation, among the 'rich'.

Chapter III discussed changes in cultivation processes which arise from irrigation. These brought or enforced a variety of cultivation cost biases.

Cultivation costs for rainfed *amon* and for irrigated *boro* which were collected in detail for ten of the case study households of Chapter IV, are presented in Tables V.13 & V.14 below. The tables should be regarded as illustrative of rather than representative of cultivation cost biases. More extensive

survey work, beyond the scope of this research, would be needed to obtain statistically reliable results.

Three points should be noted on Tables V.13 & V.14. Firstly, shadow prices for household labour were not used. This reflects labour market rigidities under which the majority of cultivators do not sell their labour for status reasons (confirmed by Ahmed 1981; Boyce 1987). Bharadwaj (1974 p.61) suggests that gross output net of paid out cost is the relevant measure of cultivation performance ²⁷). Along similar lines, Adnan (1984 p.177) argues that peasant households balance their external accounts and thus do not cost household labour. However, the 'external accounts' costing method, which I also use here, does underestimate cultivation cost for households whose cultivating members also work as agricultural labourers. The underestimate is unlikely to amount to the full market cost of labour used in conventional accounting procedures, though, since the increased use of household labour in peak periods stems from 'self-exploitation' of household labour beyond what would be available in the labour market. This includes 'overwork' by household members who also hire out their labour and cultivation work by household members who are excluded from the labour market (women and children; see White 1988; this corresponds to Adnan's (1984) undervaluation of "internal sector resources"). Nonetheless, 'poor' and 'coping' labourer households have some real opportunity costs for household labour used in own cultivation which are not taken into account here.

Secondly, due to methodological difficulties in determining for how particular types of credit were eventually used, cultivation credit was not included the calculation of cultivation costs in Tables V.13 & V.14. This biases cost estimates downwards, in particular for 'poor' cultivators who take the main bulk of informal high-interest loans (see V.2). Additional calculations (see V.4.2 c) examine the importance of credit as an element of cultivation costs for

different household categories.

Thirdly, household-produced seeds were costed at the price of the paddy raw material and in-kind payments at the seasonal average price of paddy (175 Taka per maund).

Tables V.13 and V.14 highlight a number of points on yields, cultivation costs for owner-cultivators and tenants and on net output values obtained by cultivators from different household categories in irrigated and rainfed cultivation.

V.4.1 Yields

With an average of over 70 maunds per acre (2.6 tons per acre) Samitigram irrigated *boro* yields are far above the average 0.97 tons per acre for Bangladesh and the average 1.1 tons per acre for Singra²⁸). These high yield potentials are likely to have facilitated the formation of irrigation groups in Samitigram. Yields declined with household category in the case studies (see column B), but a more broadly based survey would be needed to substantiate the significance of this finding.

V.4.2 Cultivation Costs (All Cultivators)

Cash cultivation costs for *b.amon* came to between Taka 360 and 825 Taka per acre. Depending on the level of water at harvest time which was favourably low in the period of investigation, up to 1200 Taka cultivation cost were reported for *amon*²⁹). The cash cultivation costs for irrigated *boro* ranged from Taka 2010 to 4445 per acre. *Boro* cultivation costs varied for the following reasons:

Rental charges for *hals* (cattle, plough and labour of equipment owner) added as much as 300 Taka per acre when cultivators did not own a *hal*.

The preparation of *boro* seedbeds in December and January requires

TABLE V.13: Cultivation Costs and Returns: Irrigated Boro

	A	B	C	D E		F G	
	Cost (Tk/acre)	Yield (maunds/acre)	A/B ^{a)}	NOV ^{b)} owner	tenant	NOV/Cost ^{c)} owner	tenant
Rich							
Malik	3435	76.5	44.9	995		3.9	
Saidur	3360	75	44.8	9765		3.9	
Well-off							
Adom	2010	78	25.8	11640	4815	6.8	3.3
Mujibur	2610	62.1	42.0	8258		4.2	
Coping							
Ali	2760	75.9	36.4	10523		4.8	
Toslin	2985	72	41.5	9615		4.2	
Poor							
Kamal	2685	53	50.7	6569	1953	3.5	1.7
Hakim	4445	64.5	68.9	6843	1199	2.5	1.3
Hanif	3495	78.9	44.3	10313	3409	4.0	1.9
Rahman	3540	57	62.1	6435	1448	2.8	1.4

TABLE V.14: Cultivation Costs and Returns: Rainfed Amon

	Cost	Yield	A/B ^{a)}	NOV ^{b)}		NOV/Cost ^{c)}	
	(Tk/acre)	(maunds/acre)		owner	tenant	owner	tenant
Rich							
Malik	645	33	19.6	5130		9.0	
Saidur	360	24	15.0	3840		11.7	
Well-off							
Adom	495	21	23.5	3180		7.4	
Mujibur	480	18	26.7	2670		6.6	
Coping							
Ali	-	16.5	-	-		-	
Toslin	645	27	23.9	4080		7.3	
Poor							
Kamal	510	27	18.9	4215	1853	9.3	4.6
Hakim	-	-	-	-		-	
Hanif	375	22.5	16.7	3563	1594	10.5	5.3
Rahman	825	21	39.3	2850	1013	4.5	2.2

a) Cost/Yield = Cost per unit of output

b) NOV = Net Output Value = Yield at average seasonal sale price (Tk 175) minus cultivation cost (Tk/acre). For tenants calculated with the crop received (% of Yield)

c) NVO/cost = return per Taka invested (yield * sale price (175Tk/maund) over cost (Tk/acre)

plots of high land since these dry up first after the monsoon. The lack of such land, and insecurity among 'poor' and 'coping' sharecroppers about whether *boro* land will be available to them in any particular season often forces these households to buy seedlings ready for transplantation. This added Taka 300 to 600 to per acre to cultivation costs.

Loans taken showed a clear predominance of more expensive credit forms for 'poor' households (see V.2 Tables V.8 and V.9). Although high-interest informal credit concentrated among 'poor' landless households, a number of 'coping' small owner and tenant cultivators also relied on high interest credit (see Table V.9). In 1985/86 a credit of 3000 Taka to cultivate one acre of *boro* paddy would cost 180 Taka in interest for a formal six-month cultivation loan from a bank and 1500 Taka in interest for an informal three-month village loan. Poorer cultivators tended to borrow informally to rent cattle and plough and to feed and pay labourers during the harvest period. No-one in Samitigram relied entirely on high-interest informal loans. There is no doubt, though, that poorer cultivators financed a part of cultivation costs through informal credit and this reduced their profit margins. As column F in Tables V.13 & V.14 indicates, the cash cost for irrigated *boro* cultivation is a higher proportion of *boro* output value than the cash cost for *amon* cultivation is of *amon* output value. In order to achieve the greatly increased returns to land and absolute returns (cf. Table V.14 & V.15 columns B & D), almost all Samitigram cultivators have come to depend on cultivation credit.

Irrigation is a main cost factor in HYV *boro* cultivation. The seasonal charge for water (300 to 900 Taka per acre) and the annual instalment (300 to 900 Taka per acre) for the capital cost of the STW, make up irrigation cost in Samitigram. Tenant cultivators in irrigation groups only pay water costs while STW instalments are covered by the landowner/irrigation group member.

Compared to owner/cultivators, this leads to a 300 to 600 Taka per acre reduction in cultivation costs for sharecroppers. Irrigation costs increase with land level and irrigation group charges mirror this.

The cost of irrigation for users of individually owned STWs was higher than the cost for STW group members for two reasons: Firstly, the generally higher level of land in command areas irrigated by individually owned STWs (owned by 'rich' households) meant that more water was needed per unit of land. Secondly, the smaller command area size of individually owned STWs (see Table III.2) led to a higher level of fixed costs per unit of land. On the other hand, higher variable costs are likely to be more than outweighed by the tendency of 'rich' STW owners to decrease fixed costs by defaulting on STW loans. Many private STWs in and around Samitigram were bought with bank loans in the names of female household members who had land registered in their names for tax purposes. Default on these loans was usual and carried no sanctions for the household (see also V.2).

Hired labour represents cash costs between 600 and 1650 per acre (excluding the cost of feeding the labourers). In very rare cases a 'poor'

Table V.15: Market Cost of Labour for Boro (per acre)^{a)}

Seedbed preparation	Taka	300
transplanting		420
fertilising		150
weeding		300
harvest		600
TOTAL		1650

a) case study averages

cultivator with very little land would do even the harvesting work by himself or with small amounts of day labour. In these cases (.e.g. Rahman IV.2.4), cash cost for labour was zero. The market cost of hiring labour for all *boro* cultivation operations in Samitigram in 1985/86 is given in Table V.15.

As has been shown in V.3 (Table V.10) the inputs of hired labour (as opposed to household labour) increase with the socio-economic position of a household. This is due to a higher amount of cultivation supervision and leisure time taken by wealthier cultivators and to the greater concentration of non-cultivation occupations among 'well-off' and 'rich'. Although agricultural labour carries a social stigma in Samitigram, cultivation work on own land only does to a much smaller extent than agricultural employment. There is some labour input into own cultivation by the majority of households from all categories. The amount of hired labour employed is thus a function of the age and gender composition of the cultivator household as well as of its socio-economic category. Wealthier households reduce their per acre cultivation costs by employing greater amounts of cheaper seasonal and annual labour (see Table V.11).

V.4.3 Cultivation Costs (Tenants)

Sharecropping and fixed tenancy display much narrower profit margins than owner cultivation (see Tables V.13 & V.14 columns D-G). Assuming cultivation costs of 2700 Taka per acre ³⁰⁾ and a yield of 60 to 75 maunds, a sharecropper is left with a profit of between 2550 and 3860 Taka per acre. An owner cultivator under the same conditions is left with between 7500 and 10125 Taka. By assuming no bias in either credit cost or the received prices for sold crops (see Table VII.2 for a modification of the latter), these calculations overestimate sharecroppers' profits. The lowest reported post-harvest price for paddy of 125 Taka per maund leaves a sharecropper with a profit of only 1050

to 1990 Taka per acre. The lower end of this profit range will turn negative if cultivation is financed through informal high-interest credit. Irrigated cultivation under Samitigram's $\frac{1}{4}$ / $\frac{1}{4}$ crop sharing agreements is thus crucially dependent on the availability of formal cultivation credit and water access. Among the 'poor' and 'coping' sharecroppers credit could constitute a problem. A higher water charge to sharecroppers - as enforced by Malik (IV.2.1) for his private STW; a 'security' payment of 300 to 600 Taka per acre exacted from 'poor' and 'coping' sharecroppers of irrigated land in Samitigram; or a tenant's absolute reliance on informal high-interest credit renders irrigated cultivation unprofitable even under the favourable conditions of high-productivity and water access through irrigation groups which exist in Samitigram.

Terms for fixed in-kind tenants are more favourable. Assuming equal cultivation costs and marketing returns, a tenant on fixed rent is left with an at least 50% higher profit per acre than a sharecropper.

V.4.4 Net Output Values

Column C in Tables V.13 and V.14 shows that with HYV *boro*, the cost per unit of paddy produced has increased. However, as column D demonstrates, all cultivators realise higher net output values from *boro* cultivation than from *amon* cultivation. This is the case even for cultivators with little household labour and without a *hal* such as Hanif and Rahman. Despite higher cultivation costs and a lower return per Taka invested (column F) for *boro*, per acre yields resulted in higher net output values for *boro* than for *amon* in all cases. A comparison of Tables V.13 and V.14 (columns C & F) also shows that in Samitigram *boro* cultivation required higher absolute and relative investment levels per unit of yield than *amon*. Lower returns to capital (return per Taka invested; see column F) for irrigated cultivation than for rainfed cultivation have also been found by Hossain (1986 xvii). It is clear then that the efficient use of agricultural

TABLE V.16: Cost Breakdown of Boro Cultivation (Taka per Acre)

	Saidur (Rich)	Adom Well-Off	Toslin Coping	Kamal Poor	Hakim Poor	
seeds	150	150	330	750	150	a)
fertiliser	750	450	375	300	750	b)
pump charge	600	450	600	600	900	c)
instalment	600	paid	600	-	900	d)
transplanting	300	gata	300	435	600	e)
weeding	300	270	hhold	hhold	hhold	f)
harvesting	660	600	600	600	845	g)
ploughing	-	90	180	-	300	h)
TOTAL	3360	2010	2985	2685	4445	

a) Seeds: Household-produced seeds only cost Tk 150 per acre, seeds bought shortly before sowing cost 330 Tk per acre. Kamal, who had no land to raise seedlings, had to buy seedlings at Tk 750 per acre.

b) Fertiliser: Fertiliser input decreases with increasing land quality. Farmers agreed that "higher land is more sandy so that you need to work more, irrigate more and put more fertiliser and you still won't get as good yields. On lower land you need little water and fertiliser, the ploughing is easier and you get better yields".

c) Pump charge: Water charges rise with land levels. Hakim's sharecropped land is high and had high water charges. It is also in Malik's son's private command area, where water charges were higher than average above costs.

d) Instalments: In line with the rules of Samitigram's irrigation groups, Kamal does not pay STW instalments as a sharecropper. Hakim, on the other hand, finds himself forced to pay STW instalments even as a sharecropper. His alternative is not to obtain sharecropping land. Saidur pays his instalments as group member. The STW Adom irrigated from had been paid so that instalments payments had finished.

e) Transplanting: Saidur used gata complemented by seasonal hired labour. Kamal employed day labourers and worked with them. Toslin worked in a dol with his neighbours, which he paid for the work on his land. Hakim employed a dol but did not work with them.

f) Weeding: The smaller cultivators used household labour while larger landowner hired labour.

g) Harvesting: The cost of harvest labour increased with the distance the paddy has to be transported to the employer's homestead.

h) Ploughing: Saidur and Kamal used their own hal and incurred no direct cash costs. Adom hired labour for ploughing. Toslin and Hakim had to hire a plough and attached 'ploughman'.

productivity potential for irrigated HYV cultivation requires a higher intensity of capital use and implies an increased role for formal credit in agricultural development. If credit is scarce, the less productive and less secure *amon* crop remains the more appropriate and profitable crop for the poor.

Table V.16 gives the crop budgets of five case study households in more detail in order to illustrate the combined effect of some of the inter-household differences in *boro* cultivation costs and returns.

Thus there are a number of biases in the level of cultivation costs between household categories. Most, though not all of these biases increase the cultivation costs of poorer households. Small owner-cultivators or 'poor' landless sharecroppers like Hakim, - (even though he may have exaggerated some of his costs to the foreign investigator) - can incur substantially higher cultivation costs than better-off households due to a number of factors inherent in the structure and material and social resource endowment of households. Sharecroppers then have to finance cultivation from their half share of the yield. Hakim is thus left with under 1200 Taka in net return from his cultivation efforts (excluding credit costs). On the other hand, a 'well-off' sharecropper like Adom keeps a net return of over 4800 Taka per acre, more than three times as much as Hakim per acre and almost three times as much per Taka invested (cf. Tables V.13 & V.14). Adom also has access to cheaper formal credit, his cultivation costs are less than half of Hakim's and his yields are over 20% higher. Sharecropping agreements thus do not only differ between irrigated *boro* and rainfed *amon*, as outlined in V.1.4 but also between households who engage in irrigated cultivation. Variations in crop budgets and net output values from irrigated cultivation between a 'traditional' sharecropper like Hakim and a longer-term 'new' type of 'well-off' sharecropper like Adom are a result of cultivators' differing positions in factor markets and the different degrees to which factor markets are contractually

linked to the disadvantage of the cultivator under 'traditional' and 'new' land tenancy agreements for irrigated crops.

The value of crop returns is not equivalent to the final household returns from cultivation. Household returns are further polarised by exchange structures. These are introduced in Chapter VII. The structure of direct returns from cultivation, which is the main focus of this thesis, is only one part of the analysis of irrigation-related household accumulation.

NOTES

- 1) The exception here is Saidurs's household (IV.2.1) which lost through mismanagement under the previous household head but was in the process of regaining the lost land.
- 2) Reports about the first appearance of STWs in Samitigram remained contradictory. As STWs were first introduced on a private (bazar) basis, no accessible records existed.
- 3) The term 'pre-irrigation period' is used as a short form for the period before the introduction of mechanised irrigation in this thesis. Traditional forms of manual irrigation (doon, seti) thus fall into the 'pre-irrigation' period.
- 4) A fourth form of land tenancy 'reverse fixed rent' found for STW-irrigated cultivation in the seven villages is discussed in Ch. VI.
- 5) The terms 'traditional' and 'new' distinguish types of sharecropping by degree of recency both in the research area and in the tenancy literature. An association with the 'traditional-modern' pattern variables of the structural-functionalist literature is not intended.
- 6) Bangladeshi women work the fields only in the rarest cases (cf. White 1988) and do not become sharecroppers.
- 7) However, as is argued here, sharecropping is not necessarily an impediment to productivity (cf. Cheung 1969; Rudra 1978).
- 8) Calculated from village survey data.
- 9) Mortgagees tended to be wealthier than mortgagors and used mortgages as an avenue of access to land for cultivation, Therefore the impact of mortgages on the distribution of operated land is regressive in Samitigram (see also V.1.5).
- 10) Assuming cultivation costs of Taka 3000 per acre (see Table V.14), a mortgage of 7500 to 12000 Taka here brings a profit of 7500 to 10130 Taka per season from the cultivation of boro. Additional gains for the mortgagee from the cultivation of amon are also possible.
- 11) Derived from Table V.4 complemented by other survey data.

12) Calculations assumed cultivation costs of Taka 3000 per acre and a sale price of Taka 175 per maund of paddy. Variations by household category in cultivation costs and marketing returns were not taken into account here (see Tables V.13 & 14 and Table VII.2 for these issues).

13) See also Herring (1977) who sees a parallelity and causal connection between rank in the landownership hierarchy and debt position.

14) Collusion between bank officials, parastatal officers, private sector employees and farmers over 'bad' loans was reported to involve illicit financial transactions (interviews in Singra, Rajshahi and Dhaka).

15) The registration of land in the name of female household members is a common deployment of subordinate gender position in the household in the interest of the household as a whole (see also the example of the MSS loans below).

16) This was reported by Singra cultivators. It stands in contrast to lower official interest rates and may involve 'hidden' costs to the borrower.

17) Other forms of integration of credit into socio-political structures facilitate non-repayment (e.g. default patterns of 'rich' joint households on bank loans in the names of individual household members; see McGregor forthcoming).

18) See also Wood (1977) for a similar observation on credit in Kosi, Bihar.

19) Wealthier households tended to exert more control over the activities of their women. In particular those who could afford it financially, restricted women's activities outside the household according to the motto "The honour of the household is that of its women".

20) One maund is 40 seers.

21) Paper presented at conference on contemporary Bangladesh at SOAS, London on February 25th 1987. But compare my discussion on the possibility of a 'reproduction of poverty' through hand tubewells (MOSTIs) with the assumption of low to zero wage rates (I.4.1).

22) The beel is too new and swampy to operate and store tractors for most of the year.

23) This eliminated the need for poorer employers to provide accommodation for the group during the period of employment.

24) Note the parallel on the tenancy market where wealthier households are able to be involved in 'traditional' and 'new' sharecropping relationships at the same time thus maintaining power-dependence structures to their advantage while also achieving productivity objectives. (see also Rudra 1978 on 'rural hybrids' & Beteille (1974) on 'ambidextrous individuals').

25) As opposed to pond fishery which is an expanding income source of the wealthy and threatens to displace incomes of the 'poor' from open water fishing (see also Table VII.1, Figure V.4 & discussion in VII.1.2).

26) Next to degree of occupational diversification, preference for leisure appeared to play a role in this.

27) Bharadwaj (1974 p.61) observes that in Indian Farm Management Surveys the calculation of profits net of all costs (including imputed ones) results in 'negative profits' for a majority of holdings. He therefore suggests that 'profit' in the conventional sense is not the relevant category, but that 'gross output netted for paid out costs' may be more appropriate. In his model of peasant production Adnan distinguishes between the household internal (non-market) sector and the external (market sector) in their different role for the production decisions and accounting methods of cultivators.

28) BBS (January 85 & May 86) & Asaduzzaman (1984). I discussed the exceptionally high yield levels of Samitigram at length with farmers and with an agronomist (K Bentvelsen, Dhaka). Yield levels were also found confirmed by a research team which collected survey information in Samitigram for some days during my fieldwork period (see Timberg July 1986).

29) If the monsoon waters have receded, paddy can be harvested by walking through the fields and cutting it. In deeper waters wading up to hip depth is necessary. If the waters remain very deep at harvest time (up to 10 foot around Samitigram), harvesting operations have to be carried out from boats or floating clay vessels. The latter two cases are more expensive and time consuming. Boat rent increases harvesting costs for those who do not own boats.

30) The average of 3000 minus Taka 300 for STW instalments paid by the landowner.

CHAPTER VI: IRRIGATION AND CHANGE IN SEVEN OTHER VILLAGES

Concentration on one microcosm is necessary in order to achieve some understanding of the meanings and functions of different agrarian relationships at the household level. It requires personal contacts and a degree of familiarity and mutual trust between researcher and village household to uncover some of the layers of reasoning and reality behind household strategies and choices. At the same time, the typical one-village study is also limiting. An investigation in one village only can lead one to assume as constant a number of factors, which may vary even between neighbouring villages. Unwarranted generalisations may be the result. The connections between economic, social and environmental variables are manifold and influence household strategies and the mechanisms and patterns of household-level resource accumulation.

This chapter widens the research horizon by including a further seven villages all of which are located within six miles of Samitigram. The chance to carry out investigations in this wider context on a limited financial and time budget was provided through a study carried out in 1976, Qadir, Chowdury, Emmert and Dey (1978). This study contains basic information on household numbers, distribution of households by landholding size and a variety of other village characteristics. My 'revisits' 10 years later to each of the villages follow up some of this data. Section VI.1 presents aspects of environmental and economic change over the 1976-86 period in the seven villages in general, and of irrigated cultivation in particular. Sections VI.2 and VI.3 link these findings to the main arguments of the thesis. VI.2 shows how different access conditions to irrigation water, result in different patterns of accumulation and change in the seven villages than in Samitigram. It is then demonstrated in VI.3 how the presence of one irrigation technology (STWs) results in fundamentally different

patterns of surplus distribution in different villages, and it is examined how such different dynamics can arise.

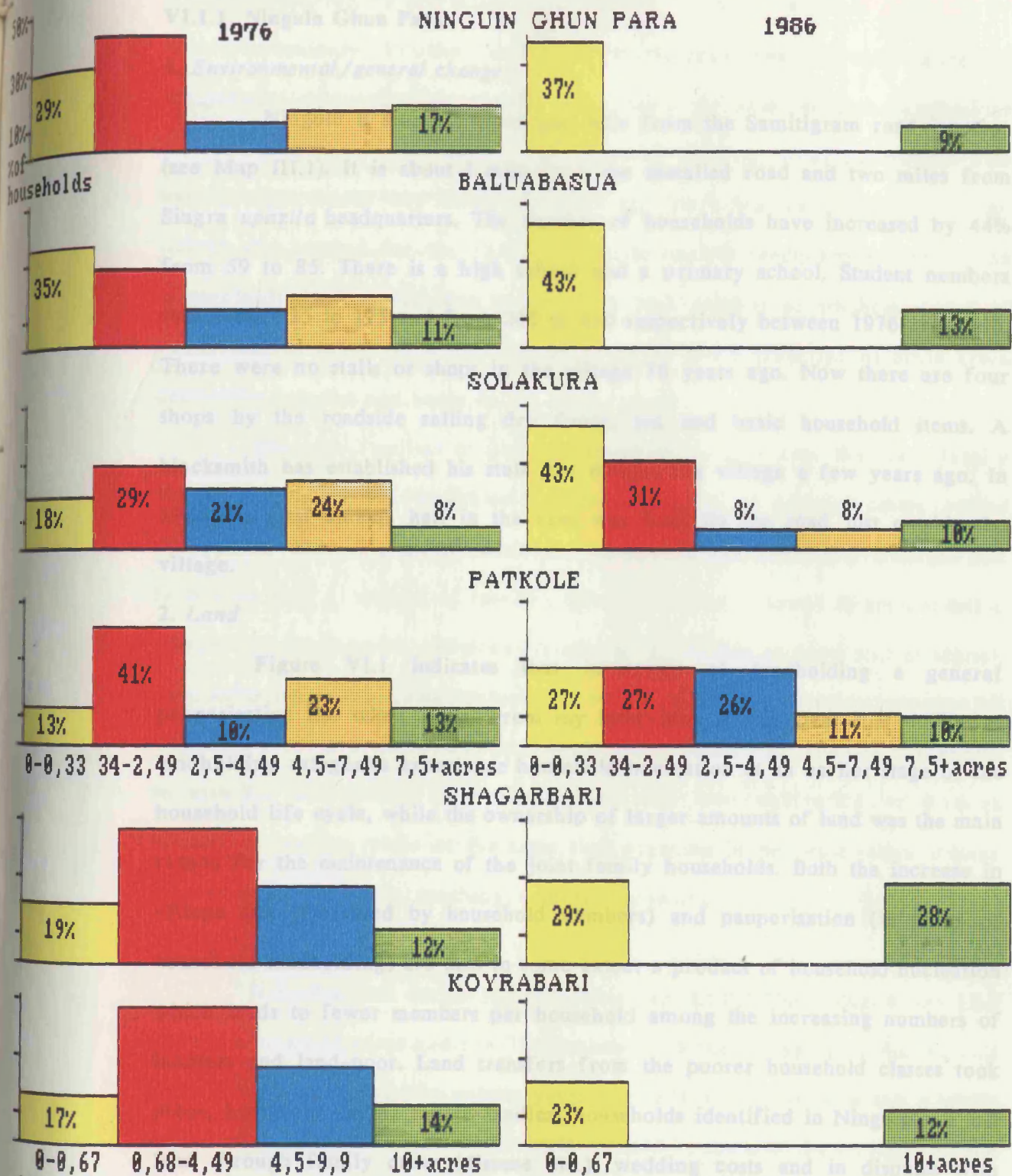
VI.1 Village Profiles

This section introduces individually each of the 'seven villages' (see Map II.1) under four headings. This somewhat lengthy procedure is used in order to illustrate the micro-level detail, which affects irrigation-related patterns of change. The 'Village Profiles' concentrate on four themes for each of the seven villages. It is shown that socio-economic change in reaction to the same technology is not uni-directional, even among neighbouring villages and that, in the context of technical change, agrarian relations, such as tenancy, have diverse meanings and functions for the direction of rural change.

Figure VI.1 below indicates changes in household numbers and in the distribution of households by landholding size in the 1976-86 period. Due to limitations of time, only the top and bottom landholding categories of the larger villages were investigated while the smaller villages could be entirely covered. At the time of the investigation, household categories (see II.5.2 & IV.1) had not been developed. Therefore, and in order to obtain a picture of change over the 1976-86 period, the landholding categories of the 1976 study were retained in Figure VI.1.

Combined with the discussion of inter-village differences in the incidence and diversity of non-cultivation income sources in VI.1, the landholding data of Table VI.1 shows how very similar patterns of landholding distribution can be part of very dissimilar overall economic positions and processes of change.

FIGURE VI.1
THE DISTRIBUTION OF HOUSEHOLDS BY LANDHOLDING SIZE 1976-86



1976 data from Qadir, Chowdury, Emmert and Dey (1978)
Two landholding scales were retained from the original research

VI.I.1. Ninguin Ghun Para

1. *Environmental/general change*

Ninguin is situated about one mile from the Samitigram road junction (see Map III.1). It is about $\frac{1}{2}$ mile from the metalled road and two miles from Singra *upazila* headquarters. The number of households have increased by 44% from 59 to 85. There is a high school and a primary school. Student numbers rose from 125 to 175 and from 200 to 410 respectively between 1976 and 1986. There were no stalls or shops in the village 10 years ago. Now there are four shops by the roadside selling dry foods, tea and basic household items. A blacksmith has established his stall just outside the village a few years ago. In 1986 the first cinema hall in the area was built by the road just outside the village.

2. *Land*

Figure VI.1 indicates that in terms of landholding a general pauperisation has taken place. From my interviews it was clear that the lower landholding categories experience household nucleation at an earlier stage of the household life cycle, while the ownership of larger amounts of land was the main reason for the maintenance of the joint family households. Both the increase in village size (measured by household numbers) and pauperisation (in terms of household landholding) are thus to some extent a product of household nucleation which leads to fewer members per household among the increasing numbers of landless and land-poor. Land transfers from the poorer household classes took place, however. Among the 28 landless households identified in Ninguin, 12 lost land through family crises (disease etc.), wedding costs and in disputes with relatives over the previous two to three decades.

3. Occupations/income generation

Proximity to the road and to Singra town brought increased occupational diversification. Among the landless or near-landless, occupations included construction and *coolie* work, *ricksaw* driving, local small-scale rice trading, agricultural day labour and fishing. There was an electrician in the village who worked for the BADC in Singra *upazila* headquarters. Among the larger landholders, there was an unusually high number of teachers, some of whom worked in the local schools and some of whom travelled to other areas daily using bicycles and buses on the nearby road.

The rich families of the village predominantly kept the joint family structure. One of the wealthiest families consisted of eight brothers whose occupations were: 1) primary school headmaster 2) Low-lift pump manager and farm supervisor 3) student of law 4) engineer (resident in town) 5) homoeopathic doctor 6) *imam* (Muslim religious office) and 7), 8) two students still at school. Diversification away from cultivation was a deliberate strategy among the wealthy and the poor alike. The proximity of a metalled road enabled households to maintain involvement in agriculture through own cultivation or through tenancy agreements while at the same time engaging in non-cultivation income generation activities (e.g. teaching, trading, transport).

4. Irrigation

Irrigation was mainly by low-lift-pump (LLP). The village's one LLP scheme covered 44 acres and had 73 members. With the drying up of the region's rivers ¹⁾ crops suffered in recent years (e.g. 1983). In line with the BADC's privatisation policy, the LLP was being purchased by some of the members of the former rental scheme. A second LLP scheme in the village had broken up several years ago in a factional struggle and cultivators in the command area switched to wheat. LLP irrigation in 1986 cost 300 Taka per acre for water and 600 Taka per

acre for the cost of purchasing the LLP. With privatisation many small landowners found themselves unable to afford the capital cost of the LLP and resorted to sharing or renting out their land to wealthier households. The payment of the LLP capital cost by a wealthier sharecropper gave the sharecropper the right to cultivate the land for at least 3 to 4 consecutive years. As a rule if a landowner took his land back earlier, he had to refund to the sharecropper any capital payments made for the LLP. This meant that wealthier cultivators tended to retain long-term control over irrigated land rented from poorer landowners.

Two or three wealthier villagers had bought a STW to ensure water for their crops. No STW groups existed. Water was only occasionally sold by STW owners at a rate of 1500 Taka per acre, substantially higher than the 300 to 900 Taka per acre rate in neighbouring Samitigram. As the agricultural lands of Ninguin are at a higher elevation than those of Samitigram and because Ninguin was not connected to electricity lines, the higher water charges represent an element of real cost differential. Ninguin STW owners irrigated mainly their own land and took some land in $\frac{1}{4}$ / $\frac{1}{4}$ sharecropping agreements (the landowner paid half the water cost) or in fixed rent of 18 maunds per acre from smaller landowners. STW command areas in Ninguin were small, about 3 to 4 acres each as compared to the 9.5 acres in Samitigram (see Table III.1).

Some wealthier villagers also owned small LLPs, locally called *futfuti* from which they irrigated own land and others' land for a per acre charge of 1800 Taka. Access to irrigation water in Ninguin was clearly biased in favour of wealthier households. The LLP scheme with its high risk of drying up was cheapest and most accessible to poorer households. To a greater extent than the LLP but along the same lines, more expensive STW and *futfuti* irrigation was

used by wealthy village households to expand their effective landholding and thus their income from land.

VI.I.2 Baluabasua

1. *Environment/general change*

Baluabasua is located immediately east of the Natore-Bogra road which is the eastern boundary of the small town of Singra *upazila* headquarters. Due to its location it is hardly recognisable as a separate village, Household numbers rose by 89% from 37 to 70 between 1976 and 1986. There was a tea stall and a *dak bungalow* (accommodation) for the Department of Construction and Building adjoining the village.

2. *Land*

In 1976 Baluabasua had the lowest mean and median landholdings and the highest proportion of households (36%) in the lowest landholding category among the seven villages. By 1986 the proportion of households in the lowest landholding category (0-0.33 acres) had risen further to 43% while the proportion of households in the highest landholding group (over 7.5 acres) had increased from 11% to 13%. Thus Baluabasua represents a case of landholding polarisation. As argued before (V.1.1) land wealth and the total economic position of households cannot simply be equated any more. Non-cultivation income and non-agricultural income sources alter the picture.

3. *Occupations/income generation*

Proximity to the road and to Singra town means a relative diversity of income sources. Since the road was metalled about 10 years ago, non-cultivation income sources increased. Among the upper household categories there were long-distance paddy traders, cloth merchants, teachers who worked in other areas and people with office jobs in the adjoining town. Many landless and

near-landless worked in low-paid service sector occupations in Singra town.

4. Irrigation

Relations of production and exchange surrounding irrigation in the village bear out the polarisation in land wealth. Baluabasua's 15 STWs were all privately owned. Larger landholders owned up to 3 or 4 STWs per household. As a rule, a STW owner situated the well on his land and took surrounding land in fixed in-kind rent. Baluabasua STW owners preferred to take each other's land in fixed-rent rather than sell water to each other. STW ownership had become a line of business for wealthier households, which was pursued by one of several male household members. Others in the household engaged in rice-milling or trading of construction materials, cloth, fertiliser or paddy. Control over land and cultivation income as well as profits on water charges were the main returns from STW ownership. Baluabasua STW owners had a strong record of recent land purchases and clearly related these to the profits from their control over irrigation water. Most clearly among all the villages in this study, for Baluabasua control over water implied increased control over land. Section VI.3 below illustrates how differences in the structural role of STW irrigation between Baluabasua and Samitigram manifest themselves as resource flows from cultivation to different household categories.

Small and medium Baluabasua landholders, whose plots were surrounded by irrigated land, had the choice to either sell the land, leave it fallow, or rent it to well-owners. The latter option was mainly adopted and involuntary 'landlords' received 18 maunds out of a yield of 70 to 75 maunds per acre. The majority of small and medium landowners were forced to rent out their land in fixed in-kind rent for the *boro* season, but often cultivated it themselves for the rainfed *b.amon* season. These households then needed to take work as agricultural labour or in neighbouring Singra town as *coolie*, office messenger or *ricksaw* driver to

complement household income outside the *amon* season.

The landholding threshold at which households started selling labour was much higher in Baluabasua than in Samitigram (2 acres rather than about 0.7 acres). This was connected to the lower income from irrigated *boro* cultivation derived by poorer households in Baluabasua who tended to lack access to irrigation water. In Samitigram, an acre of *boro* land brought an after-cost profit of TK 7000 to 10,500 to its typical 'poor' or 'coping' owner-cultivator who is a member of an irrigation group (see Table V.14). In Baluabasua, where lack of access to irrigation - and in the absence of functioning farmers' cooperatives (KSS groups) also to other inputs such as cultivation credit - forced many small landowners to rent out their land for the *boro* season, their profit from an acre of land came to Taka 3150 (18 maunds at TK 175 per maund; see Table VI.1). In contrast to Samitigram, there was no access to *boro* sharecropping land for households without control over water in Baluabasua.

There was also some water sale by STW owners in Baluabasua. The water charge of between 2400 and 3000 Taka per acre was up to five times higher than the water charge about four miles away in Samitigram. Baluabasua's irrigation charges clearly excluded smallholders from access to water. Only very few households, all large and medium wealthy landowners purchased water at these prices. The majority were unable to engage in irrigated cultivation and were forced to rent out their land to those who controlled the water.

VI.1.3 Solakura

1. *Environment/general change*

The village lies by the Atrai river about one mile to the east of Singra town. There were no shops or stalls. Villagers attended the twice-weekly *hat*

(market) in Singra. Between 1976 and 1986 household numbers rose by 34% from 38 to 51.

2. Land

Due to the small size of the village and the helpfulness of informants a full inventory of landholding sizes was possible. Qadir et al (1978 p.21) write for Solakura in 1976

Most of the land is distributed among the households in the three middle landownership categories. Only 8% of households have over 7.5 acres... But the negative part of the Solakura picture is that there is still (emphasis added) a fairly substantial percent (18%) of landless or marginal households.

In 1986 43% of Solakura's households were landless and marginal. 10% of households are now in the top landholding category of over 7.5 acres. As Figure VI.1 shows the top two of the three middle landownership ranges have declined substantially so that now the landholding picture is far more polarised than in 1976.

3. Occupations/income generation

Occupations in Solakura are relatively diverse through the influence of the nearby Singra town. As the village's agricultural land is of mixed elevation, cropping patterns spread agricultural labour requirements over the year and reduce peaks of labour demand and employment scarcity. Probably as a result, survival strategies of the landless households tended to focus on cultivation and display a lesser degree of diversification out of agriculture and less orientation towards the town than in other villages.

4. Irrigation

There are several private STWs and one DTW operated by a KSS in Solakura. Until recently there was also an LLP which is now defunct because of water level problems. Water costs for the LLP and DTW were 1200 Taka per acre. The charge for the privately owned STWs was 2400 Taka per acre. Water

sale from the STWs was frequent. In addition to water sales the fixed-rent system (*borga*) was used by STW owners to gain access to the land of poorer households in their command areas. Interestingly, while under LLP irrigation the $\frac{1}{2}/\frac{1}{2}$ sharecropping system, common for non-irrigated crops, remained in use, STW irrigation brought in the fixed-rent system of land tenancy. This may be connected with the smaller scale of STWs which allows individual households to devise strategies of surplus appropriation which centre on total command area control. These strategies may then take into account altered relative positions of power and changed cultivation risks through the change from sharecropping to the fixed rent system.

Several examples of smallholders working for STW owners in exchange for irrigation water existed in Solakura. Access to irrigation water by some small landowners through water sales from STWs and the DTW meant that some poorer households were able to rent land from others without access to water for the *boro* season.

VI.I.4 Patkole

1. *Environment/general change*

The village lies by the Atrai river just across from Solakura and about $1\frac{1}{2}$ miles from Singra town. Household numbers in the 1976-86 period rose by 41% from 39 to 55. There is a major regional traffic junction half a mile south with the main bus stop and loading points for ships and boats conveying paddy, jute and different agricultural products to other parts of the country. Motorized ferries carry vehicles travelling between the North of Bangladesh and the centre and South and wooden boats convey foot passengers across. In September 1986 the construction of a major concrete bridge across the Atrai river at Patkole was finished. This is likely to cause a contraction of local income from river

transport.

2. Land

Figure VI.1 shows that there has been a movement towards the lower end of the landholding scale. Relative numbers in the bottom two categories taken together have remained the same but there has been an internal shift towards the lowest (0-0.33 acres) group. Absolute and relative numbers of the top two landholding categories declined. However, with the prominence of trade and service occupations in Patkole, land is a particularly inaccurate indicator of wealth. The term "pauperisation" does not catch the reality of the village bustling with non-cultivation income-generating activity of various kinds. At least four poor households moved to the village in 1985 because of the relatively good economic prospects there.

3. Occupations/income generation

Patkole borders on a number of tea and food stalls and shops along the Natore-Bogra road. Most of these are run by village households. Almost everyone in the village is involved in some kind of trade or service, which attracts income from outside the village. Agricultural day labour as a main occupation is rare. Possibly because of the predominance of service sector occupations for poorer households in Patkole, labourers did not work in *dols* (labour teams) as in all the other villages. This may also be connected to the fact that although Patkole was a small village, its Muslim community was divided into two *samaj*, which worshipped and celebrated separately.

4. Irrigation

Irrigation in Patkole was mainly through one LLP. There were the same drying up problems with the river as in the whole area. The LLP, which covered 50 acres belonging to 45 households until 1985, only covered 34 acres in 1986. The reduction in command area may be caused by several factors. Firstly, after

the LLP was purchased from BADC under the privatisation programme, irrigation costs rose to include the purchase price of the pump. Higher irrigation costs drove a number of poorer households into the cultivation of rainfed crops (*b.amon*, wheat, pulses). Secondly, some large landholders pulled out of the LLP scheme and acquired their own STWs to avoid drying up problems. Access to LLP irrigation in Patkole presented a problem in terms of surface water availability and the cost of capital cost payments for the poorer cultivator households. Households who sharecrop out land because they are unable to afford the instalment cost for the LLP, receive half of their land's *boro* crop from wealthier sharecroppers rather than the two thirds, which was reported as the norm for irrigated land in Patkole. Some STW owners and owners of small *fufuti* LLPs also took land in fixed rent for 15 maunds per acre.

The land tenancy market in Patkole was particularly fragmented with a variety of rent and cropshare levels for different crops and irrigation technologies. As in the other villages, the fixed in-kind rent system had only been used since the introduction of STWs. Water sale from STWs was also common in Patkole at Taka 1200-2400 per acre. Although still twice as high as for irrigation groups in Samitigram, these costs could come to as little as half of what was charged by STW owners in Baluabasua two miles down the road. The fact that there were alternative irrigation forms (LLP and traditional methods) and the environmental conditions to cultivate unirrigated crops, some scope for non-cultivation income generation and quite a high flexibility in the tenancy market, provide some explanation of the difference in water charges in comparison with Baluabasua.

Patkole had the closest approximation to Samitigram's group structure (see III.4 & III.5). There were only two LLP groups in all the surrounding *beel* villages which were still functioning in 1985. One of these was in Patkole. A

better knowledge of the internal workings of this irrigation group is needed than I could obtain in my short 'revisit'. However, it was clear that there was considerably more access to irrigation water for poorer cultivators in Patkole than in the other LLP scheme in Ninguin (village 1). In Patkole, those who were forced to rent out their *boro* land because of high LLP water cost received a higher crop share than in Ninguin. One reason for the lesser degree of extractive pressure in the land, tenancy and water markets in Patkole may be its higher outward orientation of economic activities which is due to its central location for regional and national traffic. Thus, for example, several wealthy households in Patkole, some of them long-distance paddy and jute traders, had jointly formed a "*truck-samiti*", which rented and eventually aimed to buy lorries for their expanding transport business. It appears that village-level surplus extraction operated through the village power structure declines as income potential from external sources increases (see also McGregor forthcoming).

VI.1.5 Shagarbari and Koyrabari

1. *Environment/general change*

Among the seven villages Shagarbari and Koyrabari are the least accessible. For six months of the year, they can only be reached by country boat through the deep areas of the *Chalan beel*. For the rest of the year, a 4-5 mile walk along a raised footpath and through the fields, wading through various deep parts of the swampy land and climbing across single-pole bamboo bridges leads to the villages which stand out from the low *beel* like islands. Koyrabari is about half a mile east of Shagarbari.

2. *Land*

Household numbers in Shagarbari increased by 19% from 75 to 89 in the 1976/86 period. There has been quite a drastic increase both in landless and

marginal household numbers (from 19% to 29%) and in households with more than 10 acres of land (from 12% to 28%). According to conventional land-centred terminology, Shagarbari is a case of polarisation.

From 1976 to 1986 Koyrabari household numbers increased by 24% from 117 to 145. Figure VI.1 indicates an increase in landless and marginal households (less than 0.66 acres) by 6% and a decrease in households with over 10 acres by 2%. Thus we have an indication, rather than significant results, that in terms of household landholdings pauperisation may have occurred.

3. Occupations/income generation

The reasons behind this difference between the two villages were not immediately obvious. Household survival strategies among the poor in both villages relied on fishing, boat transport to the road and agricultural labour. However, larger landowners in Koyrabari seemed to have diversified their non-cultivation activities more than those of Shagarbari. There was a STW mechanic, two ricemills run on STW engines²⁾, a spare parts dealer for STWs and a representative for a commercial STW distributor in Koyrabari. In Shagarbari there was only a fertiliser dealer and a few paddy and cloth traders among the top landholders. A lesser degree of occupational and income source diversification among wealthy households in Shagarbari may have meant that more of the surplus from irrigated cultivation was channelled into land purchases than in Koyrabari. The polarisation in landholdings in Shagarbari compared to the pauperisation in Koyrabari may thus reflect a difference in the direction of surplus investment rather than a difference in the creation or primary distribution of surplus from irrigated cultivation.

4. Irrigation

In Koyrabari and Shagarbari, STW irrigation was the only form of mechanised irrigation. It started at the end of the seventies, several years later

than in any of the other villages. In contrast to the other five of the 'seven villages' (see Qadir et al 1978), neither Koyrabari nor Shagarbari had mechanised irrigation in 1976. Since then, STW irrigation changed the $\frac{1}{4}$ sharecropping system into fixed in-kind rent in both villages. In 1986 Shagarbari had an estimated 55 and Koyrabari 60 to 70 STWs. These large numbers of STWs may reflect the nature of the market for irrigation water (discussed below) and the absence of rain-fed cropping alternatives on land surrounding STWs, as well as the lack of major non-cultivation income sources in the two villages.

There were no irrigation groups in either village. Individual households with over 10 acres owned up to 4 STWs each. Irrigation charges were between Taka 1800 and 2100 per acre. One STW owner estimated actual costs as Taka 1200 per acre. Most small landowners could not afford water charges and thus rented their land to STW owners for 15 to 18 maunds of paddy per acre. There was a great deal of land exchange (permanent transfers of ownership) between STW owners to consolidate command areas. Despite lower land elevation than in Samitigram, which allows for more irrigated area per STW, command areas were smaller. The average command area in Koyrabari was 6-7 acres. This is slightly above the average for individually owned STWs but not above the group and overall command area average in Samitigram (12.4 and 11.3 acres respectively). Due to the low level of agricultural land around the two villages, it was impossible to cultivate a second crop of *amon* on land under winter *boro*. Furthermore, villagers reported that plots of land surrounded by irrigated *boro* could not carry other crops when *boro* is standing in adjoining fields. This was said to be due to unpredictable flooding and waterlogging interference from irrigated plots on unirrigated land. Therefore Koyrabari and Shagarbari households without their own STW, like their Baluabasua equivalents, had no choice but to rent out their land.

Shagarbari and Koyrabari were most similar to Samitigram in terms of environmental and ecological conditions. All three villages are in the deeper parts of the *beel* on raised residential "islands". Land elevation in Koyrabari and Shagarbari is slightly lower than in Samitigram. As a result, the *amon* crop has been totally replaced by irrigated *boro* in Shagarbari and Koyrabari. There is thus no cultivation income at all for households who do not cultivate *boro* on their land. In Koyrabari and Shagarbari the $\frac{1}{3}/\frac{1}{3}$ sharecropping terms have disappeared with the displacement of *amon* cultivation, and fixed in-kind rent has emerged as an instrument for the STW owners to gain control over command area land which is owned by others. In Samitigram, where individual STW ownership is rare, the $\frac{1}{3}/\frac{1}{3}$ form of sharecropping has been retained for *boro* cultivation while fixed rent only exists as an exception and with a very different structural meaning than in Shagarbari and Koyrabari (see V.1.4.3). The deeper land level in Koyrabari and Shagarbari also means that fishing is an annual rather than a seasonal income source as in Samitigram. While deeper land level results in less advantageous cultivation conditions for poorer Koyrabari and Shagarbari households, it also provides them with higher income potential from open water fishing.

Another important difference in relation to the outcomes of STW irrigation is the perception of cooperative activities in the villages. In contrast to Samitigram, labour exchange (*gata*) hardly exists in Koyrabari and Shagarbari. "It doesn't work here. Groups break up. People quarrel too much." the villagers say. The absence of irrigation groups means that in Koyrabari and Shagarbari, water is controlled by the land-rich elites and is used by them to expand their power and wealth. In contrast, Samitigram groups have undermined the degree of social and economic control of traditional elites in a number of ways (credit, water, seeds; see III.4 & III.5; IV.2.1A point 10). The low level of water charges and the

comparatively high degree of access to irrigation water by poor and medium households reflect this in Samitigram.

VI.I.6 Mahashandrapur

1. *Environment/general change*

A great amount of my research time was spent on this village. Nonetheless, at least in quantitative terms, I obtained the least clear results. Mahashandrapur is located at the end of a footpath about three miles from Singra *upazila* headquarters. During the rainy season, several precarious bamboo poles have to be clambered over to get to the village by foot or a long upriver boat ride has to be embarked upon from Singra town. The village has no shops. Its primary school, which had 110 students in 1976 had 400 in 1986.

In 1976 Mahashandrapur was described as consisting of 39 households, none of which owned less than 0.33 acres (Qadir et al 1978). In 1986 the village was too large for me to attempt a complete enumeration. There were 190 households according to the Singra statistical office and 250 to 300 households according to various estimates and calculations. Among these, a great number of households reported to have been landless for over a generation in each of the village's four original *paras* (hamlets). Since 1976 a fifth *para* was formed by households from Pabna who arrived after they lost their land through river flooding.

2. *Land*

Landholding statistics for Mashandrapur were unsatisfactory and not used for Figure VI.1. Extensive interviewing in all five *paras* showed, however, that landless numbers increased greatly over the 1976/86 period.

3. *Occupations/income generation*

Occupation and income source diversity in Mahashandrapur was low. A few

villagers worked in service sector occupations in Singra town. There was one STW mechanic employed by the BADC in Singra. A few poor households operated boats during the rainy season, and some realised a limited income by seasonal open water fishing or petty trading. Cultivation was predominant. The village's precarious connections to the outside during the monsoon made any income generation, which depends on continuous contact with the outside, difficult.

4. Irrigation

Irrigated agriculture in Mahashandrapur was dominated by the private STW. There were about 40 STWs on village lands, which tended to be owned by large landholders. Water was sold at the high charge of Taka 2400 to 2700 per acre to a few households only. The majority of smaller landowners were forced to give their land in fixed-rent to STW owners for 15 to 18 maunds per acre. Households with higher land had the alternative to cultivate rainfed *amon* or wheat. There was an LLP group in Mahashandrapur earlier, which broke up due to quarrels and water level problems. The manager of this defunct LLP group was described by several villagers as *samitir malik*, "the owner of the group". This creative use of language throws some light on the differences in perception of groups between Samitigram (see III.4 & III.5) and Mahashandrapur. There were no STW groups in Mahashandrapur. When questioned about this, villagers responded that after the - thus far unconcerned village - was connected to electricity lines, irrigation groups would be formed to take advantage of the lower costs of water pumping ³⁾

After the LLP scheme broke up, fixed in-kind rent for STW-irrigated land was introduced. This was a change in contractual form and structural meaning of tenancy for Mahashandrapur. Sharecropping had been a means for poorer households to gain access to land for subsistence production. When

wealthier STW owners started to use the fixed-rent form of land tenancy to increase their income from irrigated cultivation, poorer landowning households who would earlier have sharecropped-in additional land had to rent out their land to STW owners.

The new tenants of irrigable land in Mahashandrapur are the wealthiest households of the village. The economic advancement of these households over the last generation rested on two main pillars. Firstly, after a large number of Hindus had left Mahashandrapur for India in the wake of the communal troubles in 1971, the Hindu land (classed as "enemy property") was appropriated by wealthier Muslim households. In a few cases this caused drastic increases in landholding. Secondly, irrigated *boro* cultivation on own and rented land had become an important source of finance for land purchases by wealthier village households.

With the departure of the Hindus, supplies of sharecropping land for poorer households dried up in Mahashandrapur. The land was cultivated by its new Muslim owners who, in contrast to their Hindu predecessors, attach less stigma to cultivation work on own land.

As a reflection of the higher price and income generation potential of *boro* land (see V.1.4 & Tables V.13 & V.14), mortgages (*khaikalashi*, see also V.1.5) for *boro* land allowed for an annual reduction of loan principals. In contrast, loans on land without irrigation potential required full loan repayment without usufructary reduction. This indicates that, as in Samitigram, some agrarian relationships in Mahashandrapur were becoming more production- and productivity-oriented with lesser emphasis on extractive modes of appropriation.

Mahashandrapur land is less fertile than that of the other villages. Average yields were around 45 to 60 maunds per acre compared to 60 to 75 in

TABLE VI.1: Alternative Contexts of STW Irrigation and Water Prices

Village No	1	2	3	4	5	6	7	8 ¹⁾
	Ninguin Ghun Para	Baluebasua	Solakura	Patkole	Koyrabari	Shagarbari	Mahashandrapur	Samitigram
1. household Nos	85	70	51	55	145	89	250	103
2. household No increase (%)	44	89	34	41	24	19	-	-
3. polarisation a) or pauperisationb) ⁴⁾	b	a	a	b	b	a	?	a
4. level of external generation	medium	high	medium	high	medium	low	low	low
5. tenancy for (irrigated land)	sc & fr ²⁾	fr	fr	sc & fr	fr	fr	fr	sc
6. cropping alternatives	y	no	y	y	no	no	few	few
7. land elevation	medium	low	mixed	medium	low	low	low	low & med
8. alternatives to STW	LLP	no	DTW	LLP & TR ³⁾	no	no	no	TR
9. command area size (acres)	3-4	-	-	-	6-7	6-7	-	9.5
10. STW water price (100 Tk/acre)	15	24-30	24	12-24	18-21	18-21	24-27	9-12

1) villages No 1-7 see VI.1; No 8 = Samitigram

2) sc = sharecropping; fr = fixed rent

3) TR = traditional non-mechanised irrigation

4) In terms of landholding only

Samitigram. Due to higher irrigation prices and lower yields, cultivation profits were lower. However, despite lower cultivation profits the level of fixed in-kind rent for *boro* lands was the same as in the other villages. This suggests that fixed in-kind land rent acted as a 'wage equivalent' when wealthier land-cum-STW owner rented land from poorer households.

VI.2 Alternative Trajectories of Change

With the small amount of research time spent on the 'seven villages', the picture remains fragmentary. Nonetheless, it shows that even between villages of the same ecologically relatively uniform region there are large differences in the process of agrarian change and in the role irrigation plays for households from different categories.

The following sections present the three main forms of water delivery in the 'seven villages' (VI.2.1-3) and then connect forms of water delivery to changes in land, credit and labour relations (VI.2.2). Section VI.3 then compares the distributional outcomes of STW irrigation in Samitigram to those in one of the seven villages, Baluabasua and concludes by examining the factors behind the identified differences.

Table VI.1 collates some of the data on agrarian structure, environmental variables and STW irrigation in Samitigram and the seven villages. In conjunction with section VI.1 it shows that neither structural, economic nor environmental factors explain the differences in the impact of STW irrigation between Samitigram and the seven villages.

VI.2.1 Organisational Forms of Irrigation

This section examines the organisational forms under which mechanised irrigation, and in particular STW irrigation, was used in the seven villages. This

is done in order to explore the interaction of organisational alternatives for irrigation use with agrarian relations and structural change in the next sections (VI.2.2 & VI.3). The 'seven villages' had three main forms of irrigation organisation, LLP groups, STW water sale and land renting by STW owners.

VI.2.1.1 Low-Lift-Pump Groups

There were LLP groups in two villages, Ninguin Ghun Para and Patkole. In both villages a wider range of households received water than in exclusively STW-irrigated villages (with the exception of Samitigram). Also in both villages, a reduction in command area size and a higher concentration of control over command area land occurred due to the inclusion of capital costs into irrigation prices after the privatisation of former BADC LLPs. The increased irrigation cost which resulted from this, and water level problems pushed small owner-cultivators into renting out their land. At the same time, wealthier landowners acquired STWs to ensure their water supply. Charges for LLP water were lower than for STW water in both villages. The availability of the LLP alternative to STW irrigation in Ninguin and Patkole is likely to have contributed to the more fragmented tenancy and water markets in these two villages. This left more scope for poorer cultivators to obtain some access to water and to irrigated sharecropping land.

VI.2.1.2 Water Sale

Water sale was not the main form of irrigation in any of the villages. In all cases, water charges under sale arrangements were substantially (50-100%) above cost. This excluded small landowners from access to water for own cultivation and reduced profit margins for those few, mostly wealthier cultivators who bought irrigation water. In most cases, water sale resulted in disputes over the "proper" delivery of water, crop failures, the collapse of the agreement and often the decision of the 'water-less' landowner to rent out the affected land for

the next season, or to cultivate other crops. The highest water price under water sale arrangements was found in Baluabasua (village 2) where low land levels made alternative crops impossible on almost all agricultural land.

VI.2.1.3 Land Renting by STW Owners

The main organisational form of irrigated cultivation in the seven villages was fixed in-kind renting out of land by small and medium land owners to larger land-cum-STW owners. With very few exceptions STW owners came from the top 10 per cent of landowners. The consolidation and increase of command areas under their own cultivation increased the size of these households' effective landholding (for definition see II.5.2) and reduced that of smaller landowners without direct access to irrigation. In contrast to Samitigram, here control over irrigation water directly increased control over land.

The ability of STW owners to appropriate income from the land of others was reduced if alternatives for landowners who did not own a STW existed. Where other forms of irrigation, such as traditional manual surface-lift or low-lift pump were available, there was less economic necessity for small landowners to rent out their land to STW owners. Higher land level increased the feasibility of other cropping patterns on plots surrounded by irrigated land. There was also less pressure on smaller 'STW-less' landowners to rent out their land in villages which were more integrated into wider exchange and production networks and thus less centred on cultivation activities. This is indicated under point 3 in Table VI.1 above as the degree of 'external' non-agricultural income generation. In a village like Patkole, located at a focal point for local and regional trade and national traffic, the increase of STW command areas through renting-in of land is only one - and not necessarily the most profitable - of several avenues to income and wealth for the better-off households. Some of the

flexibility in Patkole's tenancy system and water market may thus stem from the lesser degree of emphasis on irrigated cultivation as an income source.

VI.2.2 Agrarian Production Relations

How then does irrigation interact with agrarian production relations in the seven villages? The discussion of agrarian relations and factor market conditions in the seven villages below, presents a picture of change which differs substantially from that which has been described in much more detail for the main research village, Samitigram in chapters III-V.

VI.2.2.1 Land

Figure VI.1 shows either polarisation or an across-the-board reduction in landholding sizes (pauperisation), as could be expected in a situation of continuing population growth and household nucleation. There is no clear relationship between the role of irrigation at household level and the direction of change in household landholding sizes. Too many other factors intervened, such as for example the absorption of the lands of emigrating Hindus into Muslim landholdings in Mahashandrapur or incomes from services and trade in Patkole. Most wealthy householders in the seven villages reported to have bought additional land with the gains made through STW ownership.

As a rule, the lower the level of land and thus the more limited alternative cropping patterns were, the more clearly control over irrigation water increased control over land for the STW owner. This control over land manifested itself primarily as fixed-in-kind renting-in of command area land by STW owners. It also increased the likelihood of subsequent purchase of the rented command area land by the STW owners. The different dynamics on the similarly low land of Samitigram, however, show that economic, ecological or environmental variables do not necessarily explain inter-village variations in the

structural role of mechanised irrigation.

The most important change in the land market of the seven villages with the appearance of STW irrigation is the transformation in form and meaning of *borga* (land tenancy). While the sharecropping (*borga*) arrangements of the pre-irrigation period were retained for unirrigated crops, the term *borga* came to mean a fixed in-kind rental agreement for irrigated *boro* in most cases.

This 'new' type of *borga* is an example of 'reverse tenancy' (see 1.3.1.1) under which the allocation of formal roles ('landlord' & tenant) and the distribution of relative returns differ fundamentally from those of more traditional rich-to-poor sharecropping relationships. The traditional sharecropping relationship ("*borga*") uses a poor tenants' labour to work the land assets of a wealthier landlord. The new fixed-rent ("*borga*") relationship, which has arisen with STW irrigation, helps a wealthy tenant to appropriate income from the land assets of a poorer household. The contractual terms of the new *borga* ensure that the rich tenant receives a greater share of the total profit than the poor tenant under the old "sharecropping" *borga* arrangements (up to over 70% rather than around 40% (see also Table VI.2). In Baluabasua, a STW owner gained after-cost profits of at least Taka 6500 per acre from the land rented-in in his own command area ⁴). This combines returns from water control and cultivation and is thus higher than profits from selling water at a maximum charge Taka 3000 per acre (before cost). A small landowner renting out because of lack of access to irrigation water in Baluabasua, on the other hand, received 18 maunds of paddy of the value of Taka 3150. An equivalent small landowner in Samitigram was likely to cultivate irrigated *boro* as a member of an irrigation group and gain 7000 to 11000 Taka after-cost profits per acre.

Various mechanisms increased the duration of fixed rent and sharecropping arrangements which maintained wealthier households' control over

irrigated land in the seven villages. Ninguin landowners who could not pay the capital instalments for the newly privatised LLP were forced to commit their land to wealthier sharecroppers for several consecutive years. These involuntary 'landlords' of STW command area land were in some cases employed as agricultural labourers by their tenant, the STW owner. Thus STW irrigation enforced power and dependence relationships in the seven villages. In contrast, a loosening of interlinkages between land, labour and credit markets, and the partial emergence of single-stranded, single-market relationships was found in Samitigram's irrigated agriculture (see V.1-V.3). In the seven villages, the gradual encroachment of STW owner-cum-tenants on the land they rent from households without access to STW water is the next step. As poor involuntary 'landlords' are forced to turn to agricultural or service employment, they lose cultivation ties with their land. Eventually land sale to the STW owner may ensue.

STW technology separates control and ownership of land for landowners without access to water in the seven villages. The separation of ownership and control over 'old' assets through the effects of new technology has been found elsewhere (see Redclift, 1984). A further step may be the transfer of the ownership of 'old' assets through control over new technology. That this is not a necessary development is shown by the changes in Samitigram where irrigation groups brought at least a temporary slackening of disaccumulation processes among relatively land-poor cultivators.

Mortgages for irrigated land in the seven villages take the *khaikalashi* form under which the repayable sum decreases annually in return for the usufruct of land. For rainfed land, the older *bondhok* form is used. Under this, the full loan has to be repaid irrespective of the time the land was cultivated by the mortgagee (see V.1.5). As in Samitigram, a less extractive form of mortgage has thus evolved for the more productive irrigated land. *Khaikalashi* mortgages

have become a means of access to land for cultivation. As paddy yields have increased with irrigation, the old extractive *bondhok* form of mortgage has become an outmoded form of surplus extraction both in Samitigram and in the seven villages.

VI.2.2.2 Credit

In the seven villages, a greater dependence of poor households on high-interest informal credit appeared to exist than in Samitigram ⁵⁾. The absence of any source of cultivation credit without land collateral similar to Samitigram's *credit samiti* (see III.4 and V.2) may account for this. A stoppage of formal cultivation credit by commercial banks in 1986 forced many poorer households to rent out their land and concentrated irrigated cultivation further among wealthy tenant-cum-STW owners with cash at their disposal. Credit stoppages thus enabled wealthy households, (the main defaulters on formal credit: see V.2), to rent-in the land of poorer landowners who depend on bank loans for cultivation. Thus the major defaulters, the wealthy, benefit from the sanctions on their non-repayment of loans. This is an ironic contradiction between stated development objectives and achieved results in the credit sector. On top of their non-repayment of bank loans such wealthy defaulters obtained between Taka 6500 to 8500 of cultivation income per acre of land rented from cash-poor small landowners (see Table VI.2 below).

VI.2.2.3 Labour

HYV *boro* changed the Singra *beel* from a labour outmigration to a labour immigration area (see III.3). Occasionally, employers now find themselves the weaker party in employment negotiations at peak demand times such as the *boro* harvest. In section V.3 it was argued that in Samitigram organisational forms of labour and labour relationships have diversified with irrigated *boro* cultivation. Chapter VI.1 demonstrated how, in the seven villages, *boro*

cultivation has become the domain of large landowners through their control of STW irrigation and their privileged access to other inputs such as credit. This concentration of cultivation activities among large land-cum-STW owners in the seven villages has had its effect on the labour market. In Samitigram, households of all categories entered the labour market as employers (see Table V.10). Even agricultural labourers turned into peak-time employers. In contrast, in the seven villages the employers were almost exclusively the more powerful large landowners. Smaller landowners and tenant-labourers did not cultivate *boro* and thus did not employ labour. On the contrary, small landowners were forced to sell their labour as their cultivation income from household land fell with the rise of the fixed-rent system.

This difference between Samitigram and the seven villages in the composition of the group of agricultural employers affects the character of agricultural employment relations. In the seven villages, class interests and class boundaries in the labour market are clear. In Samitigram, divisions are more hazy and temporary..

In the seven villages, households who are forced to rent out their land during the *boro* season ⁶⁾ can experience an extra element of dependence (akin to earlier forms of labour bondage; see Patnaik & Dingwaney 1985). This is the case, for example, when a STW owning tenant-employer is able to refuse irrigation water while also not renting in a small landowner's land. Depending on land elevation, this can leave the small landowner without any income from the land. This scenario applies in particular when there are no cropping or irrigation alternatives as in Baluabasua. In these cases, the character of labour relations is unlikely to be substantially altered by a labourer's nominal ownership of land, which is permanently rented out to a STW owner-cum-employer.

The relative fixity of land rent levels in the seven villages irrespective

of input cost and yields shows that small landowners in the seven villages were in effect powerless rentiers on their own land. It suggests that land rent may be treated as a wage-equivalent labour reproduction fund ⁷⁾. In Samitigram, where only one wealthy landowner (Faruque) rented out land for fixed-rent to less wealthy cultivators, fixed rents depended on input costs and land productivity. There, the tenancy relationship is a means for a wealthier landlord to extract production surplus from tenants (above labour reproduction requirements) rather than, as in the seven villages, a means to reproduce the labour of a small landowner for the benefit of a rich tenant/employer. Thus land rent varies with the size of production surplus in Samitigram but remains constant and much lower (see Table VI.2) in the seven villages.

With agricultural labourers and employers in discrete categories, objective class interests were more clearly discernible in the seven villages. Hire and sale of labour by the same household, as in Samitigram (V.3.3 see especially Table V.10), was not found in the seven villages.

One may wonder, at this point, whether the more obvious objective clashes in class interests in the seven villages have led to clearer class solidarity ⁸⁾. Only speculations can be made here. There was awareness of ongoing processes of concentration of rural power and land through control over water. The proverbial saying that "he who has the water has the wealth" was common in my conversations and interviews in the seven villages, but I did not hear it in Samitigram. The conditions to translate incipient class consciousness into class-based actions and organisations were not necessarily given though. Both at the material and at the ideological level, class relations take the form of patron-client relations (see Wood, 1981). In these, awareness of class divisions is not transferred into class-based thinking or action. If dominant moral norms and ideology relate to forms of vertical alignment such as kinship, caste or patron-

client structures (see Bertocci 1972, 1979; Alavi 1973, Beteille 1974), this counteracts the transformation of class consciousness into class action (see also McGregor, forthcoming).

However, agrarian relations in interlinked markets upon which the poor rely, but the terms of which are determined by the wealthy, bind the poor at the material level. STW irrigation in the seven villages enforces elite control of land and water. Increased production surpluses are thus channelled into the hands of the established elites. Rather than creating additional 'room for manoeuvre' for landless and small landowners in the seven villages, the new irrigation technology supports existing land-based elites by enforcing established lines of control with new ones. Disaccumulation of assets and the subsistence level existence of increasing numbers of agricultural labourers and their dependants are the result. Similar accounts of the effects of the 'green revolution' in India have been given by Patnaik and Dingwaney 1985, Griffin 1974.

Different factors mitigated the impact of village patron-client relations on agricultural production in different villages. Proximity to the *upazila* town, to the road or river provided alternative income sources for landless or land-poor households. Annual or seasonal income sources from fishing loosened some of the lines of dependence and control on agricultural labour and credit markets. Patkole's location meant income potential in service, trade and transport. This weakened the elite's power base within the village since poor households could derive income from *ricksaw* driving, employment on river ferries, office messenger work, *coolie* labour or small-scale trade and thus did not need to rely on agricultural employment and usurious credit. The degree of formal education of poorer households also mattered as education opened up employment possibilities outside agriculture, and provided more independence from local patronage structures for access to information of economic value.

Such weakening of dependence does not necessarily foster class-based action. The sectoral diversification of income sources in Patkole brought a lesser degree of strategic emphasis on cultivation incomes on the part of the village elites and less need to rely on agricultural income for the poor. As a result of this and due to the ecological characteristics of Patkole (medium land elevation and resultant greater cropping alternatives), some smaller landowners were able to purchase water. These households then employed labour seasonally according to their cultivation timing for irrigated *boro*. These same poor cultivator households also hired out labour at other times of the year. Thus class boundaries between employers and labourers blurred. This, in combination with occupational diversification, which weakens class contradictions around cultivation, appeared to result in a lower degree of perceived class conflict in agriculture.

Significantly, Patkole was the only one among the eight villages where local agricultural labour did not form groups (*dols*). Some permeability of the water and land market through land renting and water sale combined with a number of class-specific new opportunities in cultivation and non-cultivation sectors (see Ch VII) enforced class-internal competition rather than class-based solidarity.

Thus the likelihood of class-based action by agricultural labour was low whether agrarian class contradictions are contained in mixed-class group structures as in Samitigram, suppressed by strengthening patron-client relationships as in Baluabasua, or mitigated through occupational diversification outside established patron-client relationships as in Patkole.

VI.3 Modes of Irrigation and Distribution

This final section of Chapter VI compares the distribution of irrigated cultivation profits between Samitigram and one of the seven villages, Baluabasua.

It shows how alternative organisational forms of irrigated cultivation ⁹⁾ affect different household categories' cultivation income and attempts to identify some of the reasons behind such differences.

In this section households are described as 'sharecropper', 'fixed tenant', STW owner, large and small landowner. It must be remembered that these labels have different meanings and refer to households of different categories in Samitigram and the seven villages. In Samitigram, tenants are the landless, small or medium landowners from the 'poor', 'coping' or 'well-off' categories whereas no 'rich' landowner rented-in land (see Table V.3). In the seven villages, on the other hand, only wealthy STW-cum-landowners rented-in irrigated land. Table VI.2 compares the financial gains which the majority of households of different categories derived from irrigated cultivation of their own and rented land in Samitigram and Baluabasua.

The landholding categories employed in Qadir et al (1978) and the composite household categories developed here are used as equivalents in Table VI.2. Section V.1.1 indicated the problems with using land as an indicator of household position. In order to avoid those shortcomings, only two categories, 'the rich' and 'the poorer cultivators' are used in Table VI.2 to compare resource flows in Samitigram and Baluabasua. As shown in Figure V.2, landholdings of these two categories (the 'rich' and 'well-off, coping and poor') do not overlap. In terms of this simplified twofold categorisation, land is thus sufficient to differentiate household types.

Table VI.2 uses Baluabasua (village 2) only. To subsume all seven villages into one category would have led to an overly monolithic representation. Baluabasua contrasts most strongly with Samitigram in terms of the distributional effects of STW irrigation. In environmental terms the two villages are quite similar so that, without laying claim to strict *ceteris paribus* conditions here (cf.

Table VI.1 for some of the differences between the villages), some isolation of the irrigation element is possible.

In both Samitigram and Baluabasua, STWs are the only form of mechanised irrigation. The 'Village Profiles' (VI.1) showed that, to the user, STWs are the most expensive form of mechanised minor irrigation after LLPs and DTWs. This is partly due to the fact that STWs were most prone to private individual ownership and consequently to extractive water charges and land rents imposed by jSTW owners. This was especially the case in villages where neither alternative rainfed cropping patterns nor other forms of irrigation were available. Baluabasua and Samitigram are two such villages. In sections III.5 and IV.2 it was outlined how irrigation groups increase access to irrigation especially for poorer households in Samitigram. Section VI.1 showed how individual ownership of STWs restricts access to water for cultivators who do not own STWs in Baluabasua.

Cultivation is affected by the alternative ways irrigation has come to be organised and integrated into the agricultural production structure in two villages.

Household categories for Samitigram and Baluabasua in Table VI.2 cover slightly different ranges of households. Samitigram's 'rich' (5%) represent a smaller percentage of wealthier households than the 'over 7.5 acres' category for Baluabasua (13%). Correspondingly, the 'poorer cultivators' for Samitigram cover a wider range of households than the 'under 2.5 acres' category for Baluabasua. Some of the larger absolute and relative returns from irrigated cultivation for the Samitigram 'poorer cultivators' compared to the Baluabasua 'under 2.5 acres' category in Table VI.2 thus arise from the fact that different household classifications had to be used. However, interviews in the seven villages

TABLE VI.2: Income Distribution from Irrigated *Boro* Cultivation in Samitigram and Baluabasua (Taka Per Acre net of Cultivation Costs)

	<u>Samitigram</u>	<u>Baluabasua</u>
	<u>The 'rich landowners'</u>	<u>over 7.5 acres</u>
1. Owner-cultivator	9000-10.000	9000-10.000
2. Tenant (STW owner)	-	6500-8500 (67-73%)
3. Landlord	5000-6000 (63-70%)	-
	<u>The 'poorer cultivators'</u>	<u>under 2.5 acres</u>
4. Tenant	1200-3400 (30-37%)	-
5. Owner-cultivator	7000-11.000	-
6. "landlord" (forced)	-	3150 (27-33%)

bracketed percentages indicate share of total profit obtained
Values taken from case studies (Chs IV & VI)

indicated that fixed in-kind tenancy is the predominant mode of STW use there and leads to the patterns of extractive accumulation by STW owners from others' land shown in Table VI.2. Nonetheless, Samitigram's 5% 'rich' cover a somewhat narrower range of wealthy households than the 13% with over 7.5 acres who benefit from control of private STWs in the seven villages. Conversely, Samitigram's 'poorer cultivators' who on the whole had access to irrigation via the groups include households who are wealthier than the under 2.5 acre category in the seven villages. Nonetheless, Table VI.2 demonstrates clearly the differences in the distribution of production surpluses from STW irrigated agriculture under two alternative forms of organisation.

Table VI.2 shows the most common organisational forms of STW irrigation and associated distribution of cultivation returns. In both villages, STW

irrigation led to the appearance of fixed in-kind rent, but fixed in-kind rent was common only in the seven villages. In Samitigram, fixed rent provided a continued income from land to one large landowner who had moved to a nearby town and shifted into non-cultivation activities (see V.1.2.3).

In the seven villages, fixed in-kind renting out was the most frequent form of land use for irrigated cultivation with less than 2.5 acres (line 6 Table VI.2). The comparable category of households in Samitigram are the owner-cultivators of line 5 in Table VI.2. These small landowners realized between Taka 3850 and 7850 more per acre of own irrigated land than equivalent households in Baluabasua under the fixed-rent system (c.f. lines 5 for Samitigram and 6 for Baluabasua). Moreover, assuming equal yields in both villages, the comparison of the 3150 Taka per acre of fixed rent gained by a poor landowner from irrigated cultivation on their own land are likely to be less than his previous returns from rainfed cultivation on the same land ¹⁰).

Line 1 of Table VI.2 for Baluabasua shows that around 70% of after-cost profit from irrigated cultivation of the lands owned by the 'under 2.5 acre' category was appropriated to rich STW-owner-cum-tenants through fixed-rent. In Samitigram, no 'poorer cultivators' were not forced to rent out their irrigated land, since access to water through irrigation groups existed.

Under roughly equal ecological conditions and yields in Samitigram and Baluabasua, STW irrigation thus plays two very different roles. This raises the question of which factors determine the difference between patterns of distribution and agrarian change which have resulted from the introduction of the same irrigation technology in two so similar villages.

In view of the predominance of the "waterlord" situation in Bangladesh (see Jansen 1979, Chisholm 1984, Howes 1985), it is tempting to conclude that Samitigram's relatively non-exploitative farmer-managed groups are exceptional. However, similar cases exist. Curtis comments on farmer-managed irrigation in

the Dang Valley in Nepal

It is worth dwelling upon ... social structure because its clearly inegalitarian principles, as well as outcomes, contrast with the rather more egalitarian principles which currently underly their irrigation organisation.
(Curtis 1987 p.6 sic)

Tarak comments on the same region

... whether the paddy cultivators are sharecroppers or self-cultivators or big landholders, they do contribute their labour in proportion to the khet (irrigated M.G.) land they cultivate. There is no concession on the ground of caste or land holding, rather big land holders contribute more proportionally.
(Tarak 1986 p.47/48)

Further parallels to the Samitigram situation appear in the work of both authors on Dang valley surface water canal irrigation. Irrigators associations were formed without substantial interaction with government or external agencies and are operated by members' meetings as the main policy making body. Under the rotational system, the distribution of water is relatively equitable in times of scarcity. There are no written group constitutions but rules evolve over time. Irrigation groups are "dynamic, subject to constant stress and change" and group leaders can be disposed of by members (Curtis 1987 p.10, cf. III.5 in this thesis).

For Bangladesh, Maloney and Ahmed (1986) report that since about 1980, informal groups (predominantly savings groups and "businessmen's groups") have been formed in many areas in Bangladesh. In 12 *unions* and 2 towns, Maloney and Ahmed found 329 informal groups with 6 to 150 members, and one group of 1800 members. With increasing distance to roads the number of groups decreased. As in Samitigram, many of these groups had been initiated by "youths" ¹¹⁾ disaffected with their BRDB elders. All groups in a sample of 24 were found to have social welfare/insurance functions for their members.

Van Schendel (1986) also notes the existence in rural Bangladesh of "neighbourhood or village associations", although he finds the positive impact of such schemes restricted to the better-off.

Herbon (1988 pp.27-34) identifies a range of cooperative organisations such as school committees, savings clubs and pump groups initiated by younger villagers in Bogra, Bangladesh. He concludes that these groups are a response to the requirements of new technologies and increasing resource pressures in rural Bangladesh to which previous individualistic approaches are ill-suited.

In a study of 31 villages in neighbouring South India, Wade (1988 a & b) finds 19 "corporate" villages, organised to the benefit of landowners, and 12 "non-corporate" villages. He suggests that institutions for collective action are much more common in the Indian countryside than perceived by academics and the state and concludes that

such institutions are likely to be found where people have their backs to the wall - where risks of social conflict and crop loss on account of water scarcity ... are high.

(Wade 1988a p.775)

Nonetheless, informal groups and farmer-managed irrigation systems of the 'Samitigram kind' are not always the outcome of resource pressures in Bangladesh. Although factors such as technology type and demographic or resource pressure can form part of the rationale for group formation, they fail to explain the differences between villages with the same degree of resource scarcity such as Samitigram and the seven villages.

An analysis of the reasons for non-cooperative behaviour in eleven West Bengal villages (Bandyopadhyay and Von Eschen, 1988.) finds that poor households are less likely to have mutual help ties, and that there is a close correlation between the incidence of mutual help relations (as opposed to unilateral help in patron-client situations) and the occurrence of more institutional cooperative endeavours. This leads to the conclusion that the higher the degree of social and economic stratification, the less likely it is that cooperation will occur. This is confirmed by a number of irrigation studies in other countries (Nunberg 1983 p.28; Hutapea et al 1979; Lynch 1985 p.39). Sharp

social and economic stratification patterns allow elites to earn income by extractive modes of appropriation such as water refusal or usurious moneylending. This creates the incentive for the elites to prevent forms of cooperation which could create greater economic security and thus remove the reason for dependence of those who are being exploited (e.g. forced 'landlords' or debtors). Sociometric diagrams of the incidence and character of inter-household help relations, as constructed by Bandyopadhyay and Von Eschen (1988) for each of their eleven villages, might have provided important clues on the difference between Samitigram and the seven villages. However, neither resources nor time were available for this so that, at this point, more ad hoc and indirect information has to suffice.

Among the eight villages of this study, Samitigram's distribution of landholding sizes in 1986 is among the least polarised ones with only 17% of households in the 0-0.33 acre category as opposed to 37, 43, 43, 27, 29 and 23% in six of the seven villages ¹²⁾ (cf. Table VI.1). However, less polarised landholdings could be a cause as well as a consequence of the organisational form, or mode, of irrigation. In view of the comparative patterns of surplus distribution outlined in Table VI.2, it is clear though that polarised landholding structures are at least to some extent a consequence of the manner in which STW technology is used in the seven villages.

A more important point, also made by Wade (1988a p.776) may be that the likelihood of collective action depends on the relative power positions of the affected sub-groups. The weaker are those who are opposed to or can find alternatives to collective action, and the stronger are those who stand to benefit from collective action, the more likely is its successful occurrence.

The history of Samitigram groups fits this well. A powerful sub-group, the sons of medium and wealthy village households, adopted group formation in the course of their quest to take over village leadership from their elders. In the

process, they weakened and split their own peer group, the village elite consisting of those with the option to obtain STW water on an individual basis.

As the new Samitigram leaders establish their position, their initial rationale for group formation, the drive for leadership, is lost. The question of whether the Samitigram groups have gained sufficient momentum to continue to function then arises. Increasing resource scarcity may well raise the incentive to cooperate. This point is made by Wade (1988 a & b) who finds that water scarcity in tail-end villages along irrigation canals stimulates cooperation. The same argument can be used in cases of land scarcity. In a study of tubewell utilisation in the Punjab, Jairath (1988 p.105) finds that the extent of tubewell sharing increases as holding size decreases. In Samitigram, land is the scarce factor. Since groups in Samitigram function to increase the returns from land, the incentive to continue cooperation is growing. In this context, Samitigram groups may well continue to operate.

The location of the fieldwork for this research offered a rare opportunity to explore how self-initiated groups are formed and how they operate in a less than egalitarian, but still not predominantly exploitative way. The operation of Samitigram's groups depended on a number of factors.

Trusted and able leaders ensured group cohesion and cooperation. Beyond the random personality factors which determine the character of group leadership, an important element in the functioning of Samitigram groups was a relatively high level of formal education (class 8 to 10) among a high percentage of group members. The importance of the education factor was repeatedly mentioned in fieldwork interviews. Education enables group members to understand and monitor managers. It also means that the group manager position could be assumed by more than one group member should the group decide to change manager. A minimum level of primary education enables group members to be involved in processes of problem-solving and decision-making in group

meetings. The consequent understanding of the rationale for group decisions and procedures brought a degree of trust in the group manager in most Samitigram groups. This remained subject to a, somewhat cynical, tacit acknowledgement of the inherent 'perks' of the manager position.

Member ability to comprehend the functioning of irrigation groups is also noted by Bagadion and Korten (1980 p.282) as a requirement for successful operation. In Samitigram and the seven villages, strong concentrations of wealth, political power or formal education within informal groups jeopardised the functioning of these groups in the interests of all members. In line with this, Alam (1984) finds that while education is of little significance for the adoption of tubewell irrigation, it is directly related to the type of organisation and management adopted. Primary education, in its role of improving the human capital assets, in particular of the materially poor plays, a central role for the internal monitoring and mutual control mechanisms of self-managed groups.

Another influence on the likelihood of successful collective action may lie in the incidence and character of kin or religious bonds. The comparison between Samitigram and the seven villages remains relatively inconclusive on this. If, in the absence of kinship data for all eight villages, village size is accepted as an indication of the density of social and kin relations, Samitigram falls among the larger and therefore probably less densely integrated villages. Samitigram is also one, but not the only one, among the eight villages, which has an exclusively Muslim population. Extractive relations with the Hindu population of the neighbouring village were maintained by at least one Samitigram group (the MSS; see III.4.8). Therefore the presence of a common religion may be a necessary condition for collective action. Wider evidence would be needed on this.

Samitigram's population was not only entirely Muslim but also belonged to one *samaj* and used the same mosque. In at least three of the seven villages,

the Muslim population belonged to more than one *samaj*. Thus it may be tentatively concluded that kin and religious bonds facilitated the operation of Samitigram groups. However, as in Wade's study (1988b), resource scarcity provides the underlying economic rationale for the operation of groups in Samitigram while an intergenerational conflict in the village which occurred at a historically unique point in time brought the momentum for their inception.

NOTES

1) Through the decline in the general water table with irrigation, surface water sources were no longer recharging fully during the monsoon.

2) The operation of ricemills and boats by STW engine has interesting distributional implications. Although some analysis of ricemills is given in Chapter VII neither was researched in detail for this study (see Lewis forthcoming).

3) The rationale behind this confirms the association between increased productivity potential and more productivity-oriented agrarian relations under conditions of a declining per capita resource base, which is one of the main propositions of this thesis.

4) Average yield of 75 maunds at 175 Taka per maund and 3600 Taka cultivation costs per acre (see Table VI.2 below)

5) This statement relies on a number of interview rather than on a detailed survey on credit relations as time and resources did not allow for this.

6) i.e. households in Baluabasua, Koyrabari, Shagarbari and Mahashandrapur where land elevation was too low to allow for other crops and irrigation alternatives did not exist.

7) This is a form of subsumption of agrarian relations under capital on the basis of the family farm. Wood (Dec. 86) suggests that "the disappearance of the Bangladesh farm" may result as actors in control of new technology take over production or decision-making. Lewis (forthcoming) examines this hypothesis for a range of agricultural technologies in Bangladesh.

8) see Marx 'The 18th Brumaire of Louis Bonaparte' 1950 ed.

9) Jairath calls this "modes of irrigation". The term covers the technical characteristics and the economic conditions of use for an irrigation source (Jairath 1988).

10) The somewhat shaky basis of comparison here are the per acre returns from rainfed amon cultivation in Samitigram under irrigated conditions. Clearly, differences in yield, both between villages and over time as well as shifts in input and output prices could have affected this.

11) As observed by McCarthy (1984 p. 53) a "youth" in Bangladesh is someone who is "educated or from a productive farm family, aged between 15 and 36 and male".

12) No data for Mahashandrapur (see VI.1.7)

CHAPTER VII: OCCUPATIONAL DIVERSIFICATION

An increasingly "symbiotic relationship" between agriculture and agro-industry in Bangladesh has been observed by recent research (Lewis 1987). This goes hand-in-hand with occupational diversification and the expansion of off-holding incomes in the rural areas.

The level of incomes from rural non-cultivation activities depends on effective rural demand. In agricultural countries such as Bangladesh, effective rural demand is centrally affected by the irrigation-led increases in agricultural productivity and incomes (Ishikawa 1967; Boyce, 1987). These have been discussed in the main part of this thesis. In this chapter, non-cultivation occupations taken up by Samitigram households from different categories are examined, and an attempt is made to relate occupational diversification and changes in the level and composition of off-holding incomes to the introduction of STW irrigation.

This raises an attribution problem (cf. II.4.2). Growth and diversification processes are clearly affected by a host of factors other than irrigation. It should be clear in the reader's mind that monocausal attribution is not intended by the discussion of only the irrigation factor in this chapter. On the other hand, there is evidence that recent economic growth in Bangladesh is very closely related to irrigation (Boyce 1987, 1988).

Increased cultivation output and incomes have repercussions on the demand for many rural off-holding occupations. With increased agricultural yields, a larger percentage of a larger total crop will be marketed. This will increase the cash resources at the disposal of cultivators and the demand for goods and services. It would be desirable to have income elasticities for the different off-holding occupations which expand in response to irrigation-led agricultural output and income increases in Bangladesh. This was beyond the scope of this work and not available to me from other sources. Nonetheless, since

off-holding patterns of occupational diversification are affected by and have effects on changes in agricultural production, they merit some discussion here.

The latter section of this chapter focuses on the two major off-holding activities paddy trade (VII.1) and STW supply and services (VII.2) which are most directly connected with the introduction of STW irrigation.

VII.1 Samitigram Income Source Diversification

A rough estimate of income increases in Samitigram as a result of irrigated *boro* cultivation may here serve as a starting point for the exploration of household-specific patterns of occupational diversification.

With an average net return of 3691 ¹⁾ Taka per acre of *amon*, the 1131 acres of agricultural land which Samitigram households reported to own would have brought a net return of 4.174.521 Taka under rain-fed conditions. With about 50% of the rainfed *amon* crop displaced by irrigated HYV *boro* ²⁾ and with *boro* cultivation on about 80% of Samitigram lands (see III.3) at a per acre net return of 8991 Taka ³⁾, net returns from Samitigram agricultural lands have increased to 10.222.317 Taka. In nominal terms, cultivation incomes have thus increased to 2.5 times their pre-irrigation level. This level of increase of effective demand has diversified the structure of off- and on-holding income sources.

Table VII.1 gives an indication of Samitigram income sources by household category. In conjunction with data from the seven villages (cf.VI), this is here the point of reference for a discussion of some of the indirect consequences of irrigated cultivation in Samitigram.

Occupational diversification either takes the form of multiple occupations which are concurrent with or counterseasonal to agricultural work, or it can lead individuals or entire households to cut their ties with agriculture.

Table VII.1: Samitigram: Income Sources by Household Category

<u>PADDY CULTIVATION</u>	Rich	Well-Off	Coping	Poor
1. Cultivation	5	26	30	28
2. Casual labour	-	-	1	32
3. Permanent labour	-	-	2	4
4. Cattle Renting	-	1	2	3
5. Fieldgleaning	-	-	-	1
<u>PRODUCTION FOR SALE</u>				
6. Fish (open water)	-	-	10	21
7. Fish (ponds)	1	4	-	-
8. Milk	-	-	1	1
9. Eggs & Chicks	1	1	1	2
10. Vegetable/Fruit	1	1	1	2
11. Sweets	-	-	-	1
12. Wood	-	-	-	1
13. Cowdung Fuel	-	-	4	-
14. Date Molasses	-	1	2	-
15. Bamboo	-	1	-	-
16. Homeopathic Medicine	1	-	-	-
<u>INTERMEDIARY TRADE</u>				
17. Paddy Trade	2	5	6	4
18. Provisions Shop	1	2	1	1
19. Snack Stall	-	-	1	1
<u>COTTAGE & RURAL INDUSTRY</u>				
20. Mat & Net Making	-	-	2	3
21. Tailoring	-	1	3	-
22. Quilt Sewing	-	-	2	1
23. Signpainting	-	-	1	-
24. Construction (village houses)	-	1	-	-
25. Sawmill/Furniture Maker	-	1	-	-
<u>SERVICES</u>				
26. Watch and Radio Repair	-	-	1	-
27. Mechanic	-	2	-	-
28. STW operator	2	12	3	1
29. Mosque Caller	-	1	-	-
30. Village Doctor	-	1	1	-
31. Deedwriter	-	-	1	-
32. Village Police	2	-	-	-
33. Government Service	1	1	-	-
34. Moneylending	1	1	-	-
<u>NON-CULTIVATION EMPLOYMENT</u>				
35. Bamboo Root Digging	-	-	-	2
36. Domestic Service (female)	-	-	-	4
37. Cattleherds (child)	-	-	-	4
38. Construction (Food-for Work)	-	-	-	4
39. Pump Operator	2	2	3	2
40. Ferry Attendant	-	-	-	1
<u>OTHER SOURCES OF INCOME</u>				
41. STW Manager	3	7	2	-
42. Union Parishad Member	-	1	-	-
43. KSS Chairman	1	2	-	-
44. Begging	-	-	-	1
TOTAL HOUSEHOLDS	5	26	31	41

In particular for poorer households in Samitigram, non-cultivation incomes follow a counterseasonal pattern to cultivation incomes. Similarly, Muqtada and Alam (1986 p.64) find that between 44 and 48 per cent of total annual household income in three areas of Bangladesh (in Faridpur, in Mymensingh and Dhaka district) is derived from counterseasonal non-agricultural sources.

Of all 103 Samitigram households, only two derived their income exclusively from non-cultivation sources. In particular 'poor' and 'coping' households, which had fewer members (see Table V.7), tended to change occupations seasonally so that they relied on different sources of income at different times of the year. In Samitigram, a range of small-scale, low-return occupations such as the sale of molasses, sweets, cowdung fuel, bamboo and jute products (mats, baskets) and handmade fishing nets and most centrally, income from open-water fishing in the flooded *beel* are the main income sources for poorer households in August and September during the rainy season.

In contrast, occupational diversification in most 'well-off' and 'rich' Samitigram households leads individuals within the household to specialise on occupations which support or complement the cultivation activities of the rest of the household. Thus, for the better-off, the joint household pools resources, saves transaction costs and realises economies of scale from a range of functionally interlocking occupations (e.g. paddy trade, transport, rice milling, STW trade). The savings realised from the complementarity of such intra-household occupational diversification with cultivation and with each other are retained within the household.

The cultivation of irrigated HYV *boro* also brought a certain degree of specialisation in cultivation-related occupations. In response to increased needs for ploughing with care, the occupation of 'ploughman', working with own cattle and plough (*hal*), has turned into a central income source for a number of 'poor'

households in Samitigram. Also through irrigated *boro* cultivation, the returns from field gleaning, which maintain the very poorest, often female-headed households have increased. 3) Service occupations such as STW mechanic become an integral part of cultivation and provide direct and indirect income opportunities.

During the rainy *amon* season and in particular before the floods recede sufficiently to put the new crops into the ground, open water fishing is an important income source for many 'coping' and 'poor' households in Samitigram (see Table VII.1 line 6 and Fig. V.4). As pointed out before (IV.3), the fall in the water table which results from increased water use for irrigation has reduced fish populations in the *beel*. This endangers the annual budgeting strategies of poorer households. In future, it may make them more dependent on agricultural incomes and thus more exposed to extractive tenancy, employment or credit relations with wealthy landowners. However, so far, rising fish prices were reported to have counterbalanced the income-reducing effect of the decreased catch.

Recent increases in pond fishbreeding by 'rich' and 'well-off' households who have access to the necessary resources and government extension services (Table VII.1 line 7) may in future reduce poorer households' incomes from open-water fishing. This is then likely to have negative repercussions for the capacity of those poorer households to invest in *boro* cultivation.

Interviews with numerous petty producers, small traders and service sector workers in and around Samitigram confirmed that the demand for 'agricultural' (non-paddy) and cottage industry products of local origin has risen in response to increased incomes from irrigated cultivation. These local growth effects are clearly conditional on a range of economic and social factors at the national and international level and cannot be attributed solely to irrigation. There can be no detailed discussion of these issues here. However, one important factor is the degree to which increased rural incomes are spent on imported

goods. Osmani & Deb (in Muqtada & Alam 1986) find that, at present income levels, the income elasticity of demand for the products of Bangladeshi rural industries is greater than one. This was confirmed in Samitigram by for example the reported increases in demand for products such as milk, eggs, sweets, wood and furniture products, bricks, ropes, nets, quilts, mats and baskets and for services such as watch and radio repair, *ricksaw* transport and signpainting.

These increases in local demand are reflected in a higher incidence of intermediary trade. A new *bazar* (Notunbazar, see Map III.1) is forming near Samitigram as the number of shops, and the range and quantity of traded goods increases. *Bazar* stalls differ in their degree of involvement in regional and national marketing networks and in the range and quantity of the goods they trade.

On the one hand, there are what has been called "snack stalls" in Table VII.1. These are flimsy constructions run by poor households. They are at best equipped with a few jars of homemade snacks, betel leaves (*pan*) and, if the owner can afford to buy them, some teacups, plates, and kettle and burner to heat tea for customers. Items are sold in very small quantities (i.e. one biscuit or cigarette) as neither buyers nor traders can afford larger quantities.

On the other hand, there are "provisions shops" (Table VII.1 line 18). These sell a wider range of goods, many of which are new to the locality and have often been bought by the wealthier shopkeeper in the district town or even in Dhaka. Many are luxury goods for the villagers and have been imported into the country. Others, such as STW fuel, are essential inputs into *boro* cultivation. Such shops, run by 'rich' villagers like Malik and Saidur (IV.2.1), are becoming the final outlets for marketing structures of foreign products which reach down to the village. In Notunbazar, there was olive oil from Spain which replaced local mustard oil, there were foreign cigarettes instead of local *bidis*, pre-packed biscuits rather than locally baked ones, there was plastic jewellery and cosmetics

from Hongkong and Korea and the odd large tin of powdered milk, often a donation from abroad which somehow found its way to the shop.

For the owners of such shops, the marketing links to the towns often coincide with links to government bureaucracy. Provision shops are a focus for local politics and the shop owner is a point of access to external connections and resources for many villagers. Village factions in Samitigram are clearly distinguishable by the shop they frequent. By allowing clients to run up annual debts, repayable at the *halkata* function after the *boro* harvest, provision shop owners can influence their clients' ability to invest in *boro* cultivation. In the course of increasing commercialisation and monetisation, new forms of patron-client relationships are thus developing in the trade sector. For the 'rich' and 'well-off', provision shops are not only a source of income but also a political asset.

As agricultural land per capita decreases, non-cultivation employment gains importance. If non-agricultural employment increases, the level of agricultural wages and the character of labour relations are more likely to change to the advantage of agricultural labourers who constitute the great majority of Bangladeshi poor.

The bulk of non-agricultural employment in Samitigram is in construction and transport. Increased amounts of marketed paddy (cf. VII.2) and spin-off trading activities have created work for *ricksaw* drivers, porters, ferry workers, boatmen and oxcart drivers. Road construction on government and donor schemes (CARE, Food-for-Work) provides increased counterseasonal employment for poorer households. "Tied" labour was infrequent in Samitigram. Under this employment or credit during the lean periods is provided by rich patrons in exchange for cheap labour from poor clients during the peak labour demand seasons. As also observed by Lewis in recent work on Chandina (1987 & forthcoming) and research on the IRWP (Wood 1983 a&b & December 1986), the

availability of counterseasonal employment can increase the bargaining power of agricultural labourers and enable them to press for higher agricultural wages.

Finally, when discussing non-agricultural income sources in Bangladesh, politics and administration cannot be ignored (see J. Harriss 1980, BRAC 1980). Paid and unpaid executive and administrative positions in rural Bangladesh bring significant illegal, semi-clandestine incomes. A study of the power structure of ten villages (BRAC 1980) estimated that in the course of six months, each *union parishad* member derived 20,000 Taka through control over Food-For-Work and food ration programmes ⁵).

In Samitigram and the seven villages, the assumption of public office was invariably followed by the construction of more expensive *pucca* brick houses and land purchases by the officeholder. Access by the *union parishad* chairmen to dealer licenses for fertilisers, pesticides and their control over access to other agricultural inputs is often transformed into income from bribes (see Jensen 1981 and n.d). The amounts derived from input dealerships increase with the profit potential of the dealership or occupation. This operates according to what could almost be described as "market principles" under which the required bribe for access to an input, service or a license depends on the profit derivable from it, subject to the relative bargaining powers, and relations in other spheres and markets of the involved parties. Minor public office, such as that of KSS chairman, also brings illegal semi-clandestine incomes which are likely to have increased with the quantities of material (inputs, loans) handled.

VII.2 The Paddy Trade

A highly visible outcome of the increase in irrigated *boro* cultivation in the Singra *beel* is the increased volume of paddy which has transformed Singra into a grain surplus area. This brings Samitigram households into newly evolving paddy marketing structures. As a simple calculation demonstrates, the increase of

at least 300% in paddy output from Samitigram lands has increased marketed paddy at an even higher rate. If, with one acre of land with the average *amon* yield of 25 maunds per acre, a household used to consume 5 maunds in the pre-irrigation period, and if the same household now cultivates irrigated *boro* yielding 75 maunds per acre while retaining *amon* on half an acre, marketed surplus will have increased by over 400% to 83 maunds. Even if population growth and increased consumption levels by near-subsistence households are taken into account, the increase in marketed paddy remains high. Trade and processing structures for paddy have been subject to a number of changes as a result of the introduction of mechanised irrigation in Singra.

Samitigram households are involved in the paddy trade as buyers, sellers and in processing. The scale and character of involvement in paddy-related exchange and processing and the level of gain or loss per unit of processed or marketed paddy depend on a number of opportunities and constraints experienced by the household.

VII.2.1 Paddy Sellers

It is well known that in Bangladesh, paddy prices fluctuate seasonally and that poorer producers tend to sell in low-price seasons while wealthier cultivators are able to take advantage of high-price periods (cf. Rahman 1973; BRAC 1979). In Samitigram, 'poor' and 'coping' cultivators sell most of their *boro*, including some or all of that needed for annual household consumption, immediately after the harvest, at low prices. Cash requirements for formal and informal credit repayments, consumption needs and ceremonial obligations were given as the main reason for this. As a result of high post-harvest sales, 'poor' and 'coping' households have to purchase or borrow paddy at high cost in the months preceding the next harvest. In contrast, 'rich' and 'well-off' households, who can fall back on larger non-agricultural incomes (cf. Table VII.3) and on their accumulated wealth, purchase paddy in the post-harvest, low-price period and

TABLE VII.2: Prices received by 5 Sellers of Boro Paddy in Samitigram

Household ^{a)}	Taka/maund	Time / Circumstances of Sale
Saidur ('Rich')	200	own produce, sharecroppers' rent and purchased paddy (625 maunds +) sold on radio information and personal contacts to regional hat and national wholesale centres (Khulna and Dhaka)
Adom ('Well-Off')	130-170	produce from own and sharecropped land (400 maunds) sold in bazar and Borohat
Mujibur ('Well-Off')	145-175	produce from own and sharecropped land, sold in stages in Borohat
Toslin ('Coping')	140	own produce (40 maunds) immediately after harvest in Borohat
Kamal ('Poor')	125	produce of sharecropped land (5 maunds) sold in bazar immediately after harvest to finance cultivation and consumption

^{a)} From case studies in chapter IV

resell it in the high-price period before the harvest. In this way, production surplus of poorer cultivators is appropriated by the 'rich' and 'well-off' through paddy marketing.

It is argued here that access to the different levels in a hierarchy of sale points determines the price which sellers obtain for paddy. Table VII.2 below describes the circumstances of paddy sales in 1985/86 for five Samitigram households.

Clearly, no statistically significant data is presented in Table VII.2. However, it is shown in which direction the results of the main part of this thesis (Chapter V) would be modified when the assumption of equal returns per crop unit is relaxed (cf. Tables V.13 & V.14). Farmers' incomes from irrigated *boro* cultivation are the result of both marketing and production conditions. In Samitigram, *boro* marketing conditions appeared to cause relatively larger inter-

household income differentials than *boro* production. However, Samitigram cultivation conditions are somewhat special. Irrigation and other groups in Samitigram (cf. III.4-5) have created relatively favourable access conditions to agricultural inputs such as credit, water, seeds and fertilizer, for poorer cultivators. It was shown in Chapter VI for the seven villages that these access conditions do not necessarily represent the norm and that the greater part of inter-household income differentials from *boro* cultivation is often caused by extractive pricing (cf. water in Baluabasua; see VI.1) which is enforced by those in control of essential cultivation inputs.

During the low-price period after the *boro* harvest in 1986, most 'rich' and some 'well-off' households of Samitigram sold paddy to the government godown (granary) in Singra town at the intervention price of Taka 175 per maund. At that time of the year, the local open market price was between 120 and 140 Taka per maund. Since 'poor' and 'coping' households had restricted or no access to government godowns at the time, they were forced to sell their paddy at the lower market price. Other studies (BRAC 1980) report collusion between godown managers and traders in which the difference between the price of paddy acquired by traders in the open market is split between trader and godown manager while the manager refuses to buy small cultivators' produce.

VII.2.2 Paddy Processing

After harvest, paddy is threshed, parboiled, dried and husked. As crop volumes have increased, processing methods and structures have changed. This has distributional implications at inter- and intra-household level.

Threshing technology varies with the amount of labour available at the time of threshing. Whereas the smaller quantities of *amon* harvested in late October and November are threshed with cattle and mechanical threshers, the much greater volumes of *boro* harvested in June are threshed manually on wooden slats by the harvest labour groups (*dols*).

Amon parboiling is done by the women of the cultivator household. In 'rich' households, female labour is sometimes employed to assist. The *boro* crop, on the other hand, is often taken to a parboiler business or a rice mill with parboiling facilities, in particular by households with large irrigated holdings.

Parboiling as a business appeared as a result of irrigated *boro* cultivation in the area. Since the harvested *boro* needs to be parboiled and dried before the monsoon rains start, speedy post-harvest operations for large crop volumes are needed. These transform the *boro* crop to a quality and moisture level at which it can be stored. A failure to achieve this forces the cultivator to sell the wet paddy immediately at low post-harvest prices.

A number of men from Samitigram 'poor' and 'coping' households operated seasonal post-harvest parboiling sites where their own and other cultivators' paddy was parboiled in huge pots over open fires in holes dug in the ground. The income from such temporary parboiling business was greater than that from agricultural day labour. Both with paddy parboiling and husking (see below), as the cash return potential from the occupation has risen, it has shifted from the female into the male sector.

There are two "permanent" parboiling businesses near Samitigram. One was started in 1983 by a poor household. With an outlay of 3000 Taka, reported to have been raised through day labour, the household constructed a cement floor for paddy drying. This is rented out for 2 Taka per maund of paddy if the client does the drying work, or for 5 Taka per maund if the parboiler business does the work. This business has become the main source of income for the household.

The second parboiling business is in Notunbazar (see Map III.1). It was started in 1984 by a young secondary school educated woman whose husband was stationed in Dhaka with the army. With an outlay of 15,000 Taka, a cement floor and parboiling equipment was installed. The business employs up to seven labourers, sometimes from Samitigram. Here too, 2 and 5 Taka per maund of

paddy are charged. The workers receive 3 Taka per maund. The business can process up to 30 maunds daily but tended to reach 200-300 maunds per month, depending on the amount of rain. When it rains the open air drying floor is unusable.

One of the most discussed changes in paddy processing is the shift from *dheki* husking to ricemills. Bangladesh is the last South Asian country to undergo this change (Greeley 1982 p.2). A number of observers have expressed concern at the displacement of poor women from *dheki* husking, one of their few cash income sources (Adnan & Islam 1976; McCarthy & Feldman; DeVlyder 1982; Nebelung 1986). Greeley estimates that waged rural women, the great majority of whom belong to the poorest households, contribute 23% of household earnings, nearly half of which is derived from paddy processing.

It was by no means clear that in Samitigram, the income of poor households whose women had been displaced from *dheki* husking, had fallen as a result. One farmer said

My wife and mother used to husk on the *dheki*. Now I borrow paddy from my employer, take it to the rice mill and sell it. They work in other people's houses now (domestic servants) and earn some money that way.

All household members appeared to prefer the new arrangement. Similar developments are reported from elsewhere. Hamid et al (1982) mention "rice husking men" in Rajshahi. The disappearance of the *dheki* has clearly meant a shift of cash income from the female into the male sector. This does not necessarily impoverish poor households since the income shift may occur within the same household. For female-headed households, the picture looks bleaker. The expansion of alternative cash income sources, such as cottage industry, vegetable gardening and poultry raising through increases in effective rural demand, may provide a counterbalance to the contraction of *dheki* incomes. Also, the employment of women for parboiling operations by those who used small rice

mills without parboiling facilities had become more common. There were thus a number of indications that in Singra expansion of female cash income potential occurred directly or indirectly as a result of expanded crop volumes. For more detailed work on gender specific effects see White (1988).

A number of small, diesel or electric ricemills, often run on STW engines appeared with mechanised irrigation in Singra. There are three ricemills in the Samitigram locality. One is located a mile from Samitigram. The owner, who also has two STWs and a substantial brick house, started the mill in 1982 buying new equipment for cash. The electric engine can husk up to 200 maunds of paddy per day and bring a before cost income of Taka 1000 per day in the peak season. However, like the parboilers, this ricemill is dependent on the weather. When it rains, little paddy is brought. For good years, the owner reports a profit of up to 30.000 Taka.

Another of the local ricemills is in Borogram. Its owner bought the Chinese engine for 17.000 Taka in 1980. The mill is used for paddy husking and wheat grinding and employs 6-9 labourers. In 1985, the ricemill owner also bought a sawmill in response to increased local demand for furniture. Ricemill and sawmill now form a working complex with complementary annual peak activity points.

The third local ricemill is about three miles from Samitigram by the Natore-Bogra road. Its Chinese engine was bought new for 10.500 Taka in 1982. The mill processes paddy, mustard oil and wheat and has drying and parboiling facilities. Unlike mills which process paddy only, this mill operates all year. It charges more per maund of paddy (6 Taka) than the other mills and, in addition, offered the whole process of parboiling, drying and husking for a charge of 12 taka per maund. The mill only employs labourers from other parts of the country. They live on loans from the owner when work is short and have few connections in the locality.

These three ricemills are used by the great majority of Samitigram cultivators. However, some 'rich' households and the paddy trading group (cf. III.4.10) use a ricemill in Natore. The Natore mill has the advantage of being located at a focal point for the long-distance paddy traders so that those households who can afford to transport their paddy the nine miles to Natore, obtain valuable price information and realise higher sale prices (cf. Table VII.2 Saidur). This brings us to the discussion of the paddy traders.

VII.2.3 Paddy Traders

Paddy traders buy and resell unprocessed paddy or processed rice. Samitigram households of all categories trade paddy (cf. Table VII.2 line 17). As in the rest of Bangladesh, the paddy trade in Singra takes place on a number of buying and selling levels. In accordance with their access to the different points in the marketing hierarchy, paddy traders realise different profits both per unit of paddy marketed and in absolute terms.

Sellers who cannot transport their paddy to market, sell to village traders. The village traders tend to be the local wealthier farmers who also engage in paddy trade.

The village *bazar* is the next level of the paddy trade. It consists of a number of permanent stalls, itinerant traders and local farmers who offer small amounts of agricultural produce. Samitigram's *bazars* are Notunbazar by the road junction and the old *bazar* in the *union* headquarters. Less wealthy farmers sell small amounts of paddy and rice in the *bazar* in order to meet their temporary cash needs.

At the next level, there are the *hats*, once or twice weekly large markets, which serve a larger number of villages. *Hat* traders move between the *hats* of one area on a weekly rota (see Patel 1963). Different *hats* specialise in particular types of produce. The largest *hat* in the Samitigram area is Borohat. It

specialises in paddy trade. Here, paddy trade is taxed at 0.5 Taka per maund of paddy by those who have obtained the *hat* management rights at an annual auction. The *hat* tax (*kajna*) is collected from every trader by female *hat* employees. In Borohat, these women have recently formed a union. Borohat is about five miles from Samitigram. In order to take their paddy there, villagers need a lorry, an ox or buffalo cart, or for smaller quantities at least a cycle *rickshaw*. Those without access to transport cannot sell in Borohat.

Borohat is a collection point for long-distance paddy traders. These traders, who tend to come from other areas of the country, often employ poorer locals to buy paddy for them in the *hat* in return for a per maund commission. Another occupation which has expanded for poorer local men through the paddy trade in the *hat* is that of porter (*coolie*).

Associated with the long-distance paddy trade is the "truck" transport business. The possession of or access to a lorry is a valuable asset to a paddy trader. Samitigram's paddy trading group which buys paddy in Samitigram and the surrounding villages, hires a lorry to transport the paddy to the Natore rice mill. There, it is processed under a contract between the mill owner and the group. The rice mill is an assembly point for long-distance paddy traders who buy the processed rice from local producers and traders. When the paddy price in the national wholesale markets of Khulna or Dhaka is particularly high, Samitigram's paddy trading group sometimes rent a lorry to take their paddy to the wholesale markets themselves in order to obtain the higher sale price.

A member of the Samitigram paddy trading group estimated that each group member needed an initial outlay of 20,000 Taka per *boro* season for their business. The profits per group member in 1986 were reported as 28,000 Taka, at 35 Taka per maund of paddy sold.

This stands in strong contrast to the small-scale, poorer paddytraders who, since they lack cash and storage space, buy small amounts of paddy, have it

processed and resell it with only a few Taka of intermediary profit.

The formation of associations of paddy traders who jointly rent or purchase lorries to transport paddy to more distant markets where higher prices can be realised, is a strategy of those who have some capital. The formation of transport associations (e.g. the truck *samiti* in Patkole; cf. VI.I.4) which jointly rent and eventually buy lorries which are then hired to local traders, is another opportunity which was taken up by those with capital which arises from increased crop volumes.

In the absence of credit support to those who lack access to capital and other resources, new opportunities in trade and transport are being captured by the wealthy and are likely to exacerbate inequalities in the rural areas.

VII.3 STW Supply and Services

Beyond their direct effect on cultivation incomes, the activities connected with the supply, maintenance and repair of STWs have effects on rural occupational structures and incomes. This section discusses these effects for the research area.

VII.3.1 Supply

The location of aid programmes determines private STW suppliers' markets within Bangladesh (see I.4.3). The private STW supply sector in Bangladesh is therefore dependent on investment decisions and strategies of foreign donors and foreign business interests.

Singra is the *upazila* with most STWs in Bangladesh. It has been the location for a number of large irrigation programmes. These programmes have brought the development of differentiated networks of regional and local STW traders and agents.

Natore district town, nine miles from the Samitigram road junction (Map III.1), is the centre for Singra's STW trade. In the early eighties, at the

outset of privatisation initiatives in the irrigation sector, at least eleven STW dealers operated in Natore. Natore dealers act as agents for or buy STWs from Dhaka-based importers or from wholesale traders of machinery which has been assembled in Bangladesh. Since 1986, the STW business in Singra has declined sharply due to the phasing out of the IDA 1147 programme (see I.4.3). In 1984, at the peak of the local STW boom, the largest Natore dealer sold 250 STWs in Singra. In 1986, the same dealer sold less than 100 STWs in Singra, while eight of his competitors closed down completely. The contraction of sales as a result of the phasing out of irrigation programmes in the area occurred in the context of the not undisputed opinion (cf. Glaser October 1986), that STW demand is now saturated.

In 1986, only three of the eleven dealers were still operating in Natore. The elaborate marketing networks of the Natore STW dealers which without exception involved direct contact to the village end users, are all in a process of severe contraction or have disappeared. The largest STW dealer in Natore who had started to operate in 1975, employed a number of 'fieldmen' who toured villages on motorcycles to advertise STWs and to assist farmers in obtaining bank loans for STWs. In addition to six fieldmen, the business operated a branch in Singra *upazila* headquarters during the irrigation season. The Singra branch was closed in early 1986.

The first contact between local dealers and Dhaka STW suppliers was usually established through advertisements in national newspapers which local Natore businessmen responded to. For these businessmen, the STW dealership tended to be one of several lines of business taken up as a result of their ability to establish connections to higher levels of the national aid/trade sector. Large STW dealers operate a number of import agencies and dealerships and own lorry or bus transport companies.

A main marketing strategy of STW dealers is to employ a villager as the

business representative or agent to work in a number of villages. Such agents are paid salaries or a commission per STW sold. They also gain through a variety of illegal transactions which involve farmers, the local bureaucracy and the banks. It was known for local agents and dealers to obtain subsidized BADC equipment by submitting fake applications in the names of local farmers. Local dealers were also reported to be recruiting farmers for STW loan applications to banks. After a small downpayment, the STW is then resold, the loan defaulted on and the proceeds split between dealer and farmer.

I had extensive discussions with one village representative and later with his Dhaka-based employer. It transpired not only that Mohammed, the village representative, had managed to purchase at least five acres of land ⁶⁾ through various illegal transactions around his STW agency but also that his employers were fully aware of these transactions and condoned them in order to realise their own, much larger profits from the STW trade. Mohammed's Dhaka employer said

"At least 50% of business are fake loan cases and Mohammed never delivers the full length of pipe... because our company needs the local connections we allow misappropriation by local agents to continue to a certain extent."
(Interview, Dhaka September 1986)

Variations of "fake loan cases" with or without the involvement of BADC equipment, bank or public officials and private dealers, are common in local STW supply networks in Bangladesh. In the villages, this means increased income and wealth for households with the level of education and the connections to business and bureaucracy which enable them to (ab)use bureaucratic systems.

The example of Mohammed illustrates that the gateway function of these villagers enables actors at higher levels to gain access to village markets and to extract even higher gains for themselves. On the other hand, their gateway function is a prime form of resource accumulation for privileged villagers and provides them with opportunities to decrease their reliance on cultivation.

At the end of the IDA 1147 programme in 1986, Mohammed was dismissed from his STW agency and reverted to cultivation. He continued to earn some income from trading spare parts and second hand STWs after the loss of his agency income.

VII.3.2 Services

In 1982, DeVyllder wrote

In the village there is no organisation and no technical competence available that can handle the repair and maintenance of the tubewells: while the crop dries up, the farmers have to wait for the arrival of an outside technician, who generally attends to the farmers who offer him the highest rewards. Inefficiency, corruption and crop destruction are the results.
(De Vyllder 1982 p.137)

Today, most STWs in Borogram *union* are serviced and repaired by one of the eight local village mechanics. The majority of Samitigram STWs are under seasonal contract for the repair services provided by Adom (cf. IV.2.2). For Adom's household, as for several of the other local mechanics, STW repair has become a major part of total household income and the key to other income sources such as land renting, the position of STW group manager and the sale of spare parts. Adom acquired his mechanical training by apprenticing himself in a diesel engine workshop in Jessore. He later complemented his skills by learning about electric STWs in an apprenticeship in another workshop. Although he does not have the officially required "license", Adom has become the recognised local authority on electric STWs. For the future, he planned to open a shop in the local *bazar* to sell spare parts.

The majority of the other local mechanics around Samitigram acquired their skills by working for the BADC (see I.4.3) and later left BADC employment to work on their own. A number of these mechanics remain in close contact with the BADC and have access to spare parts from BADC stores. Adom travels the 30 miles to Bogra by bus in order to buy spare parts in the market.

Village mechanics occupy a central position between STW users and

suppliers. In some areas of the country, they work as marketing agents for STW traders. Lewis (1987 p.22) mentions that STW traders in Chandina town had over 60 village mechanics "on their books". Smaller STW dealers in Natore and Singra tended to integrate their trade in new and second-hand STWs with the provision of STW spare parts and repair services.

In the village, the occupation of STW mechanic carries prestige. Although to a lesser extent than the agents and traders, the mechanics benefit from their connections with local business and act as an entry point to village markets for their wealthier business associates in the towns.

As a result of the privatisation of agricultural input provision, a local private sector now forms the final link in the chain between foreign suppliers and village cultivators. This does not mean that the interests behind the structures have changed. After subsidised aid/trade programmes have established the demand for particular types of irrigation equipment and ensured a continued high level of demand for spare parts⁸), the privatisation of the STW trade now brings a change in end point distributional structures only. This weakens the Bangladeshi state and makes end-point distribution structures more dependent on decisions not necessarily taken in the country.

As functions are devolved from the local state and parastatal bureaucracy, occupations such as fertiliser dealer, STW trader or agent and spare parts dealer or mechanic appear in the private sector. As a result, occupational diversification occurs at the village level and the development opportunities for some of the rural population improve.

The development outcomes of such occupational diversification depend on who diversifies and under what conditions.

Table VII.1 gave an indication of the diversity of income sources by household category in Samitigram. The above discussion has made clear that in the wake of STW irrigation, despite some contractions (e.g. open water fishing)

the scope for non-cultivation income generation has expanded for all household categories. Whether the paddy trade, field gleaning or the production and sale of handicrafts and manufactured foods is considered, the level of income derived from these activities has increased. At least to some extent this is due to the irrigation-related rises in paddy output and effective local demand. My quantitative data on the levels of household non-cultivation incomes is confined to some case studies but was confirmed by many villagers' opinions expressed to me informally. Table VII.3 below presents some of the case study data. No income totals are given as there were a number of recall problems. Thus for some types of income, such as moneylending, there are strong religious and cultural disincentives so that a disclosure of income derived from such activities is rare and unreliable.

TABLE VII.3: Samitigram: Cultivation and Non-Cultivation Incomes (Taka p.a.)

	<u>Non-Cultivation Income</u>	<u>Cult. Income</u>	<u>Non Cult./Cult. Income</u>
Saidur	pond fish 30.000	129.000	43%
'Rich'	paddy trade 25.000		
	lending n.a		
Adom	pond fish 15.000	48.000	98%
'W-Off'	fishing 7.000		
	STW mechanic 25.000		
Mujibur	bamboo sale 20.000	42.000	83%
'W-Off'	pond fish 15.000		
Ali	milk sale 4.500	19.150	23%
'Coping'	paddy business n.a		
Kamal	domestic servant 240	3816	
'Poor'	day labour n.a.		4%
	ploughman n.a.	2700	

Data from case studies Ch IV

In the case studies, the 'well-off' had a higher ratio of non-cultivation income to cultivation income and a higher average number of non-cultivation income sources per household than the 'rich'. This indicates that the turning away from land as main income source - inside the prevailing class-biased opportunity structures - does not necessarily occur from the top down. Factors like education and age of the household head determine occupational diversification. Less land per head among the 'well-off' than among the 'rich' also exerts some pressure towards diversification. The diversification patterns of 'poor' and 'coping' households are even more the outcome of decreasing person-land ratios but do not produce the same development outcomes because of capital constraints.

An examination of the direction of income source diversification in the village survey data reveals some interesting patterns. In response to the expansion of demand for the products of rural cottage industry, 'coping' and 'poor' households have increased the production for sale of traditional items such as mats, fishnets, furniture or clothing. This intensification of cottage industry production takes place on a small-scale, low technology level and on a seasonal basis. It occurs in response to expanded local demand (see Islam & Muqtada 1986 p.167). 'Coping' and 'poor' households are also diversifying into small-scale intermediary trading activities and the cultivation of vegetables and fruits for sale.

As could be expected, the diversification of 'well-off' and 'rich' into intermediary trading occurred on a much larger scale than that of poorer households. While wealthy villagers trade truckloads of paddy poorer households deal in bags of paddy, often carried on foot to the ricemills and markets.

Diversification patterns into non-cultivation production look somewhat different. Poorer households expand cottage industry production in response to increased demand. Wealthier households only rarely cultivate crops other than paddy for sale. Their investment concentrates on activities such as paddy trading,

local politics and transport. Beyond the village, the pattern seems to repeat itself. The elites of the district and divisional headquarters derive major parts of their income from trade and services and much less from productive activities. This is not the place to examine the constraints to industrial development in Bangladesh. However, despite some occupational diversification at village level at present income levels, the influence of foreign donors on the supply structure in Bangladesh and the import-orientation of those with higher incomes, demand structure, which is so far only slightly above subsistence, bodes ill for the development of national non-agricultural production in future.

Despite the differences in opportunities open to village households of different categories, factors like attitudes to risk and other personal characteristics also play a part in the explanation of diversification patterns (cf. Ch IV Kamal and Toslin). Personal characteristics thus determine the degree of use of the class-specific 'room for manoeuvre', made by individual households.

In the final analysis, income source diversification patterns at village level require a complex set of explanatory variables. It appeared in this research that there is a certain 'room for manoeuvre' for productive expansion in the traditional rural industries, and that this is mainly taken up by the poorer households. On the other hand, the opportunities which have the largest scope for profitable involvement and which are taken up on a much larger scale by the rural elites are in the trade, crop processing and service sectors. This direction of income source diversification implies an increasing external dependence of the country's economic structure and a strengthening of intermediary commercial and bureaucratic classes in the country in their function as facilitators of the connection to foreign aid and trade interests.

NOTES

1) All yields and net returns are averages calculated from Tables V.13 & V.14.

2) Boro displaced amon on lower lands by pushing sowing dates further into the monsoon period (cf. III.3).

3) Calculated from Table V.14.

4) On the other hand, the shorter stalks of the boro caused a shortage of fuel and commoditised what was previously a free resource. Poor households who do not own cattle now have to purchase cooking fuel.

5) Agricultural wages reach an average of Taka 15 per day.

6) This involves an outlay of 180.000 Taka; see also footnote 5).

7) The investigation of diversification patterns at the district level was beyond the scope of this research but would clearly provide important clues to the character of economic transformation in the country. The expansion of such intermediary import-based activities may well counteract the diversification in the production sector.

8) One Dhaka businessman commented sarcastically "Aid means that the first sample is free".

CHAPTER VIII: CONCLUSION - PEOPLE, TECHNOLOGY AND AGRARIAN CHANGE

Five major themes emerge from the research. These are introduced in section VIII.1.1-5. Section VIII.2 then relates these fieldwork findings to the debate on agrarian change introduced in Chapter I. In this research, the identification of household categories (see II.4 and IV.1) and of patterns of accumulation by household category form the basis for further investigations on how and why people produce and take other resource management decisions.

VIII.1 Fieldwork Findings

VIII.1.1 Patterns of Accumulation

Land is the most prominent form of accumulation in rural Bangladesh. As a 'land-augmenting' form of investment, irrigation increases land prices (see Figure V.3) and thus enforces inequalities between landless and landowning classes. In the research area, irrigation also caused a price reversal for high and low land. This raised the relative value of the lands of the 'poor'. However, since the Samitigram 'rich' purchase land regularly (see Table V.1), they are in the process of appropriating the higher quality land.

Section V.4 (Table V.13 and V.14) did not reveal strong differences in cultivation costs and output values between household categories in Samitigram. However, cultivation costs, in particular for 'poor' households, have to be modified on two accounts.

Firstly, although the absence of shadow prices for household labour in the calculation of cultivation costs reflects correctly a situation in which the majority of cultivators do not hire out their labour (see V.4), it also underestimates cultivation costs for the 'poor' who do hire out their labour and

therefore do have real opportunity costs for some of the household labour used in own cultivation.

Secondly, the omission of credit cost biases cultivation cost values in V.4 downwards, again in particular for the 'poor' who take the more expensive forms of credit (see V.2). The cultivation costs and crop values net of cost in Tables V.13 and V.14 have to be interpreted in this light. A bias of cultivation costs and net value of crop returns against 'poor' and 'coping' households can thus safely be assumed.

Patterns of accumulation in the various factor markets around cultivation in Samitigram (V.1-V.3) point in the same direction. All 'rich' households reported land purchases and none reported land sales other than as exchange of plots. The 'rich' also profited from the credit market through multiple borrowing and default on formal loans, informal lending and the recycling of formal loans into the higher-interest informal sector (see V.2). Lower paid types of labour were employed by wealthier households (V.3).

For the 'poor' and 'coping', opportunities for accumulation are fewer and different in character. A majority of all but the 'rich' households had less land in 1985/6 than in the previous generation of household heads. Only among the 'rich' could land purchases still counterbalance the fragmenting effect of population growth, inheritance rules and household nucleation on landholding size per household (see Table V.1). With lower household category, access cost to credit also increased, and default on formal credit became a less likely avenue of accumulation. The labour market segmented, with equal work rewarded differently according to the season, the organisational form of labour and the gender and client status of the labourer (see Figure V.4). Group labour (*dols*, see V.3.1.1) in particular commanded increased bargaining strength at times of

systemic and climatic pressure on harvest operations for irrigated paddy. The more detailed findings of the fieldwork are:

a) Cultivation costs per acre and output values (net of cash costs other than credit) rise with the introduction of irrigated *boro* (Table V.13 & V.14). With declining household category of the cultivator, the returns net of opportunity costs for own labour and credit costs decrease.

b) Employment levels increase as new types of agricultural work appear (III.3). Different bargaining conditions and rates of return result for different sections of the agricultural labour market under irrigated cultivation (V.3 & Figure V.4).

c) STW irrigation is associated with an absolute improvement and a relative polarisation of household positions in Samitigram ¹⁾. In the 'seven villages', small landowners are likely to have lost in absolute terms compared with previous incomes from rainfed cultivation (VI.3 & Table VI.2).

d) Beyond the direct effect of irrigated cultivation, structures of crop marketing further polarise relative household positions (VII.2 & Table VII.2).

e) The degree of polarisation of relative household positions through irrigation depends not only on technological and environmental variables but also on the features of social organisation at micro-level.

In the seven villages, the price of and access to irrigation water, the character of production relations (VII.1-2) and consequently the distribution of returns from irrigated cultivation (VI.3) were much more biased against poorer households than in Samitigram. The central factor to account for this difference

was the mode or organisational form of irrigation.

VIII.1.2 Patronage and Productivity

Patron-client relationships are a feature of rural society throughout the Indian subcontinent (see Eisenstadt and Roninger 1984 pp.150). They can be distinguished by strong multiple links between "pairs of unequal standing" (e.g. landlord-tenant; labourer-employer; lender-debtor; father-son; see Beteille 1974, Frykenberg 1977 p.12).

Patron-client relations are the basis for factional politics. Conflict over resources occurs between alliances of mixed class origin rallying behind powerful local leaders who themselves are in a client position to regional politicians. These in turn, are attached to national parties (see Alavi 1973; Wood 1978). In contemporary Bangladesh patron-client relations are a prime resource allocation mechanism. Increasing inflows of external resources which are mediated through patron-client structures enforce the power-dependence element of agrarian relationships and decrease the scope for independent organisation and action by the poor.

The agricultural productivity potential facilitated by mechanical irrigation affects the objectives and outcomes of patron-client relationships in Samitigram and the seven villages. The specific findings of this research are:

a) Interlinked factor markets and power-dependency relationships retain importance in the agrarian structure under irrigated conditions, but to different degrees and in different forms depending on the organisational form of irrigation.

Chapter V showed how factor market relationships in irrigated agriculture in Samitigram changed to facilitate greater agricultural productivity.

Land exchanges and sales, tenancy and mortgaging relationships changed under irrigated cultivation so as to achieve economies of scale and productivity increases. Yield expectations have become a factor in landowners' choice of tenants for irrigated land ²⁾. This has increased the performance of tenant cultivators, occasionally beyond that on own land (IV.2.2 Adom). In contrast to rainfed cultivation, levels of payment to some forms of labour in irrigated cultivation now increase with output and speed of work rather than being dependent on employer-labour relations in other markets (see V.3.1.1).

The influx of migrant labour groups, especially for the harvest of irrigated crops has removed some labour relations around irrigated cultivation from the context of patron-client relationships. The bargaining process between a labour group (represented by its *sardar*) and an employer leaves group labourers at peak demand times less exposed to the pressures of unequal multi-stranded relationships in interlinked markets than individual labourers and labourers in cropping systems with less precise timing requirements. Like the migrant labourers, groups of local labourers have become able to press for higher returns at times of systemic pressure for speed of irrigated operations.

b) STW irrigation groups in Samitigram weakened, and individual ownership of STWs in the seven villages have enforced interlinkages between factor markets.

In Samitigram, relatively secure access to HYV seeds, fertiliser and water through groups (III.4-5) achieved increased agricultural productivity for the majority of cultivators. This provided some economic security to small landowners and decreased the extent and degree of success of extractive practices in interlinked markets. In the labour market, higher demand and the appearance of poorer agricultural employers brought higher returns to migrant and group labourers whose employment relationships had fewer linkages to other markets.

With individual STW ownership in the seven villages on the other hand, the lack of access to irrigation water forced small landowners to rent their land to wealthy land-cum-STW owners, and to enter the labour market even before the output potential of their own land fell below household requirements. Here, control over water through the ownership of irrigation equipment enforced elite control over small landowners. New linkages between factor markets appeared (e.g. water-land-labour; cf. VI.2.2.3) so that STW owner's returns from other factor markets increased through their control over irrigation.

c) The enforcement of extractive factor market interlinkages in the seven villages had some negative effects on the efficiency of use of irrigation equipment and land (cf. command area size, Tables III.1 & VI.1). On the whole, under irrigated conditions, patron-client relationships and market interlinkages were used to affect the distribution of increased outputs rather than at the expense of agricultural productivity.

In Samitigram, wealthier households concentrate efforts on irrigated cultivation. As a result, poorer tenants have gained access to more sharecropping land during the low-yield rainfed *amon* season. These form part of multiple relations with wealthier households in interlinked markets .

d) New potential for patron-client relationships has arisen with technological change and increased dependence of the village on wider networks.

Some locally new areas for patronage were

- Informal loans for paddy business (husking of paddy at rice mill and resale (VII.2)
- credit from provision shops/input dealers to facilitate irrigated cultivation

(VII.1)

- employment in transport, trade, ricemills and as tubewell operator (VII.1-3).

e) In Samitigram, the position of manager of irrigation, credit or other groups facilitates the exercise of patronage over a number of clients, conveniently aggregated in groups, in a situation where increasing scarcity of land and lack of alternative income sources requires a concern with agricultural productivity to ensure social peace and continued surplus appropriation from agriculture (cf. VIII.1.3 a). The Samitigram groups demonstrate that one-to-one power-dependency relations are not necessary for the exercise of patronage (see also Adnan 1984 p.91). The group is a new unit for the exercise of patronage. This has also been examined by Nebelung (1988) who finds "non-exploitative patron-client relations" between NGO field staff and landless and land-poor groups of agricultural labourers.

VIII.1.3 Factor Markets: Change and Continuity

The findings on the changes in agrarian relations under STW-irrigated cultivation are central to the argument and should be read in conjunction with the discussion in VIII.2.

a) Mechanised irrigation overcomes technological barriers to output growth in Bangladeshi agriculture. With present rates of demographic growth and without further reserves of cultivable land, the need to realise increased returns from land increasingly forces a concern with agricultural productivity rather than with surplus extraction only on the producers and non-producing appropriators of agricultural surplus.

b) With this shift from an extractive approach to cultivation to one concerned with output and productivity, the functions and contractual forms of agrarian production relations have diversified.

c) Agrarian production relations also assumed different roles for households of different categories ⁴⁾. Different household categories were found to focus on different agrarian relationships for the expansion of their agricultural productivity and returns.

The diversification of agrarian relationships took different forms in the land, credit and labour markets for different household categories:

-- While land sales took the form of exchanges for the 'rich' and usually consolidated holdings, some 'well-off' sold land in order to invest in non-agricultural pursuits, or to buy more fertile land. 'Poor' and 'coping' households, on the other hand, sold land mainly to finance life-cycle and consumption needs but made few land sales for income-generating investments.

-- Distinguished by contractual form and structural meaning there were four types of land tenancy in Samitigram and the seven villages.

Firstly, there is 'traditional' sharecropping (mainly for unirrigated paddy; V.1.4.1). This is an integral and interchangeable part of a string of connections between a poorer and a better-off household all of which reproduce the dominant class position of the better-off and are essential to the economic survival of the poorer household. 'Traditional' sharecropping agreements tend to be contractually linked to other markets so that the unequal class position of landowner and tenant household is not only reflected in the tenancy agreement but also in employment, credit or water access conditions.

Secondly, there is 'new' sharecropping (for irrigated paddy; V.1.4.2).

These contracts are entered more with agricultural output and productivity objectives as part of wider power-dependence relationships. Tenants tend to be chosen because of their particular cultivation skills or advantages in access to inputs rather than because of client status towards the landlord household ²). For the landowner, the sharecropping contract functions to generate income from land without operational responsibilities. For the tenant, the sharing in of irrigated *boro* land is an opportunity for additional income from cultivation under the constraint of limited supplies of own land.

Thirdly, there is fixed in-kind rent (for irrigated land; V.1.4.3). This evolved from sharecropping and in Samitigram existed between one wealthier landowner and a number of poorer tenants in Samitigram. It allows the wealthy landowner to eliminate even his supervision of harvest and crop division while continuing to receive a regular income from his land. To the tenants, the fixed-rent agreement provides larger returns than sharecropping, and increases the incentive to increase production efficiency as all income above rent remains with the tenant-cultivator.

Fourthly, there is fixed 'reverse' tenancy (for irrigated land; VI.2.2.1). This prevailed between poor landowners and wealthy STW owner-cum-tenants for irrigated land in the seven villages and was the only form of tenancy for irrigated land in some of the villages (e.g. Baluabasua VI.1 2). Here, the tenancy relationship allows a wealthier landowner-cum-tenant to consolidate his operated holding around his STW and so to realise income from the land of others through his control over water. In the longer term, the reverse tenancy relationship is likely to lead to the transfer of land ownership to the STW owner (VI.2.2.1).

-- Land mortgages diversified in form and function both for mortgagors and mortgagees (see V.1.5).

For mortgagors, a mortgage taken does not necessarily mean a pressing consumption or life-cycle need. Mortgages were also taken to improve the composition of household assets either by acquiring more land or agricultural inputs, or by investing in non-agricultural pursuits.

For mortgagees, the mortgaging in of irrigated land has become a means to gain access to productive land for cultivation under a less exploitative form of mortgage (*khaikalashi*; see V.1.5). The mortgaging in of less productive rainfed land, on the other hand, occurred under a more exploitative form of mortgage (*bondhok*; see V.1.5 & VI.2.2.1). Under irrigated cultivation, surplus appropriation thus is not inbuilt into the structure of the mortgage itself, but has become dependent on the productive cultivation of land which is temporarily acquired through the mortgage.

Credit in particular, illustrated the variable meaning of factor market relationships for different household categories. For the richest village households, formal credit tended to constitute a one-off income source through the mechanism of default. For 'well-off', 'coping' and some 'poor' cultivators, formal credit has become a necessary HYV cultivation input and was therefore repaid. On the other hand, informal credit was taken by the 'coping' for larger life-cycle or unforeseen expenses. The 'poor' took most high-interest informal loans for consumption requirements (V.2).

A new form of 'formal credit', recycled informally by the credit *samiti* developed in Samitigram (see III.4.6). The absence of land collateral requirements for credit *samiti* loans improved the likelihood of profitable and efficient irrigated cultivation in particular for 'coping' and 'poor' households.

-- Organisational forms of labour diversified with irrigated HYV cultivation. Under the lowest paid forms of male labour, (annual and seasonal labour), mostly individual, non-local and 'weak' local labourers worked in a situation of dependence, either through lack of local connections or through multi-stranded relationships in interlinked markets.

For group labour (*dols*, see V.3.1.1), levels of payment adjusted to labour market supply and demand without apparent wage-reducing effects of linkages to other markets and with a positive correlation between labour productivity and returns to labour.

Other new forms of agricultural labour (female and child work) commanded very low wages, prejudged the development chances of 'poor' children and depressed overall returns to labour.

An 'elite' of Samitigram labourers appeared whose access to the most highly paid agricultural employment was due to their physical strength and their client position towards 'rich' households.

d) Depending on the mode of ownership and use of STWs, factor market interlinkages in agricultural production either weakened or strengthened.

With irrigation groups in Samitigram, relations in the land, labour, credit and water markets tended to become less interlinked and to focus more on output and productivity increases in the separate markets (V.1-V.3).

Under individual STW ownership in the seven villages, control over water increased STW owners' command over the land and labour of others so that extractive practices were not only enforced in the water market itself, but also in other, interlinked markets. This enforcement of market interlinkages had regressive distributional results (VI.3), but did seem to allow for productivity and

output increases for the elites through use of some agrarian relationships such as land exchange and reverse tenancy for command area consolidation ⁵⁾.

e) In Samitigram, group irrigation weakened market interlinkages but did not displace them. The coexistence of rainfed, low-yield, high-risk cultivation and irrigated, high-yield, lower-risk cultivation on the same plots of land at different times of the year (see III.3) allowed wealthier landowners the simultaneous engagement in productivity-oriented production relationships in the irrigated *boro* season, and the continuation of extractive relationships in interlinked factor markets in the rainfed *amon* season.

VIII.1.4 People, their Choices and Room for Manoeuvre

Sections VI.1 and VI.2 identify a number of environmental and ecological factors which influence the distributional and structural impact of STWs in the eight villages studied (VI.1-2).

a) In the seven villages (cf. VI.1), charges for STW water were lower on higher land because rainfed cropping alternatives existed. This was the case although irrigation costs increase with land elevation. On the other hand, there were higher water charges for lower land despite lower irrigation costs. This was due to the lack of rainfed cropping alternatives on lower land. This allowed for monopolistic water pricing by STW owners.

In Samitigram, on the other hand, irrigation cost was mirrored in irrigation charges.

b) The presence of alternatives to the STW such as LLP, DTW and traditional irrigation methods reduced the scope for those in control over STWs to extract

high water charges. The highest water charges were found in Baluabasua (VI.1.2) where there were no alternatives to STW irrigation, and where uniformly low land levels made rainfed crops within the reach of most operating STWs impossible.

On the other hand, on Samitigram lands irrigation charges reflected cost and were far below those in any of the seven villages although alternative cropping patterns or irrigation methods did not exist on most lands.

c) Proximity to sources of non-cultivation income (road, town, important traffic junction) contributed to more fragmented village markets, in which poorer, less powerful households were able to gain some access to water and sharecropping land.

It has been argued that an important effect of the increased productivity potential achieved through mechanised irrigation is the appearance of more productivity-oriented agrarian relationships (cf. VIII.1.2 e & VIII.1.3 a & b). This was found for Samitigram group irrigation and also for individual STW ownership in the seven villages. A polarisation of household positions through STW irrigation occurred in all villages. However, STW irrigation polarised household positions to a lesser extent (see Table VI.2) and was accompanied by a partial elimination rather than an enforcement of dependency structures in Samitigram.

d) Although environmental and ecological factors provide some indications to the difference in water prices and access conditions between the seven villages, they do not explain the difference between Samitigram and the seven villages (see Table VI.1). Samitigram's charges for STW water were only 20 to 60% of those in the seven villages and, in contrast to the seven villages, access to STW water

existed for the great majority of Samitigram cultivators. However, none of the conditions which facilitated more favourable conditions for the poor in the seven villages (i.e. connection to sources of external income; medium to high agricultural land to allow for cropping alternatives; alternative mechanised irrigation; see Table VI.1) were found in Samitigram.

e) It is clear then that changes in production structures and productivity, which follow the introduction of a new technology are not only determined by the inherent characteristics of that technology and by the physical and environmental conditions into which the technology is inserted.

The difference between Samitigram and the seven villages in the impact of STWs lies in the influence of STW groups and individual ownership of STWs on the structure and outcomes of agricultural production. Group irrigation in Samitigram increased land productivity and the efficiency of use of irrigation equipment to a greater extent than individual ownership in the seven villages and achieved greater benefits for poorer cultivators (cf. Table VI.2). Moreover, irrigation groups reduced the scope for individual STW owners in Samitigram to use control over water to extract monopoly rents and to increase their power in other factor markets (see III.5 and IV.2.1).

Samitigram villagers told me repeatedly and confidently: "We might fight on other things, but we are united in agriculture." People from neighbouring villages commented in a resigned fashion that in their village it was impossible to run a group because "people will fight".

Although the initial stimulus for group formation in Samitigram was the news about Comilla cooperatives in the seventies, which reached the village via a man from a neighbouring village, Samitigram irrigation and other groups (see III.4-5) were formed without any directed input into group organisation from

outside, government or non-government agencies.

The question arises of why people chose to form groups in Samitigram and not in any of the other villages in the research area. I do not offer an explanation. However, a number of points arise from the research.

f) Samitigram groups have their common origin in a particular conjuncture of historical events. The war of independence and the subsequent enthusiasm for a better and more just society coincided with the brush between a number of young educated men from the village and the fraudulent *union* chairman (see III.4.1). This coincided with an intergenerational struggle for control between Samitigram's old, traditional leaders and other younger well-off villagers, often their sons, who aspired to village leadership. The formation of groups served as a means to collect followers for these aspiring young leaders. Personality factors, which qualify the 'young men' of the early seventies as trusted and able leaders in the eyes of most villagers also contributed to the formation and continued functioning of Samitigram groups.

g) Increasing numbers of poor, potential 'clients' on a decreasing per capita land base can no longer be contained in old-style, dyadic patron-client relationships. They thus present a potential threat to social peace. Moreover, under prevailing conditions of land fragmentation, the productive use of new agricultural technologies (wells, pumps, mills, tractors) can only be achieved through the formation of 'user groups'. Group formation is thus one logical reaction to prevailing economic and social pressures and may well be a prototype for patron-client relations of the future.

h) Section III.4 demonstrated that Samitigram irrigation groups do not always produce equitable outcomes or apply rules irrespective of position and status . The 'pseudo groups' (III.4), managed by a member of the richest household in Samitigram show most clearly that managers also use irrigation groups to extract agricultural surplus through interlinked markets. Most irrigation groups in Samitigram did not operate in such a straightforward manner, but group managers could derive benefits from their position through interlinkages to other markets (e.g. land: see IV.2.1 Saidur, point 10).

j) Like individual STW ownership, group irrigation in Samitigram can thus involve appropriation through market interlinkages. Nonetheless it was very clear that group irrigation in Samitigram leaves less powerful actors, such as tenants and small landowners, more 'room for manoeuvre' to engage in cultivation, to expand their profits from cultivation, and to establish a base - at least temporarily - for economic independence through irrigated cultivation. Irrigation groups thus weakened and changed, rather than eliminated extractive factor market linkages and patron-client relations in Samitigram. In the seven villages, on the other hand, STW irrigation has enforced unequal relations of power and dependence through old and new factor market linkages and is speeding up the transformation of small cultivators into effectively landless labourers.

k) A difference in rationale accompanied this. While in the seven villages, groups or factions were seen as in conflict over given resources, the members of at least some of the Samitigram groups understood themselves through their augmentation of resources through cooperation ⁶⁾. as a result, the opportunities from groups open to households from various categories differed fundamentally. If poverty is defined as the degree of absence of choice (cf. White 1988), then

the poor have become poorer in the seven villages, whereas in Samitigram their 'room for manoeuvre' has increased through STW groups.

These findings show some interesting parallels with Nebelung's work (1988) on NGO-facilitated small farmer and landless groups. Like Samitigram groups, NGO-facilitated groups for two major Bangladeshi NGO's, Nijera Kori and Proshika, are found to be of mixed class origin, to create increased 'room for manoeuvre' for the poor and to include an element of patronage between group members and manager/NGO facilitator. The open question in both cases remains whether group leaders, be they NGO staff or 'enlightened new elite managers' will consolidate their positions as patrons or whether 'client members' will be able to decrease their dependence and achieve self-sustaining forms of development.

VIII.1.5 Limits to Diversification

In view of population/land ratios in Bangladesh, the increase in cultivation incomes, which results from the introduction of mechanised irrigation, at best stabilises the economic position of most cultivator households temporarily. A secure and sustainable diversification of income sources away from land-based occupations is needed for the future. Except in Chapter VII, this thesis has not focussed on diversification. Some findings and speculations can be presented nonetheless.

a) The degree of diversification out of cultivation affects production relations in cultivation (cf. VI.9 and Table VI.1). Thus the availability of non-cultivation employment, mostly subject to proximity to a road, traffic junction or town (eg. Patkole VI.1), and other rural income potential outside cultivation (such as from open-water fishing in Samitigram; see Table VII.1 & Figure V.4) can enable local

workers not to tie their labour and therefore make them able to be press for higher returns in peak periods of labour demand.

b) With mechanised irrigation, the scope for occupational diversification in the research area expanded (see VII.1). However, patterns of diversification varied by household category.

'Poor' and 'coping' households tended to derive non-cultivation incomes through a succession of seasonal occupations in production, trade and services. These were combined with cultivation to achieve a precarious but relatively continuous annual income. Seasonal occupations, which accounted for only a small fraction of total annual household income (e.g. netmaking, construction work), constituted the main or only household income for specific periods of the year.

On the other hand, individual members of some 'well-off' and the 'rich' joint households tended to engage in non-cultivation activities on a full-time, year-round basis. Their occupations (produce trade, transport, local administration) were often related to or functionally interlocking with the cultivation activities of other household members and tended to increase household gains beyond those directly realised through the occupations of individual members.

c) Occupational diversification into crop processing, trade and service in the context of irrigated cultivation was found for all household categories and varied in scale according to household capital assets (cf. VII.1-2).

d) Increased effective demand led to local growth effects in cottage industries and non-paddy farm production (e.g. mats, nets, quilts, pottery, clothes, eggs,

fruits, sweets; see VII.1). While 'poor' and 'coping' households increased traditional production, the 'well-off' and 'rich' responded to increased effective demand primarily by increased processing and (import) trading activities. A diversification into non- agricultural production for sale did not occur among Samitigram's 'rich'. This pattern of diversification indicates that growth of incomes and effective demand leads to a strengthening of the intermediary, commercial and bureaucratic elites in their function as facilitators of the external connection, and at most to the development of fragmented non-cultivation production structures. The character of the connection between Bangladesh and foreign industrial nations clearly limits the potential for sectoral diversification in Bangladesh from the village level upwards. Further research to substantiate these indications would be needed.

e) An examination of the STW sector (I.4.3 & VII.3) illustrated some of these points. Structures and processes at the various levels of STW supply and service networks in Bangladesh are affected by the connections to foreign capital. Constraints to the productive expansion of the STW sector in Bangladesh, and to a self-sustained growth of marketing networks can be traced to the objectives and activities of foreign suppliers and of associated, although often conflicting and heterogeneous, Bangladeshi commercial and administrative interests ⁷⁾.

f) Despite the externally imposed limitations on processes of growth and change in the STW sector, development (see p.1) does occur, although to different degrees for different household categories. Occupations such as STW mechanic, installer, spare parts producer, operator, agent and importer achieve some sectoral diversification and provide scope for economic advance households' formal education, socio-political role and material assets.

VIII.2 Which Way Change? Some Speculations

This section links fieldwork findings of VIII.1 into the broader patterns of long-term structural change which were outlined under I.2. This is combined with a discussion of other contemporary research findings.

Fieldwork findings revealed two different patterns of change in reaction to the same technology in one ecologically quite uniform micro-region in Bangladesh. On the other hand, there are common features in apparently very different trajectories of change in Samitigram and the seven villages.

Most importantly, with growing resource scarcity, the disassociation of agricultural production from the appropriation of agricultural surplus is becoming an increasingly unviable strategy (VIII.1.3 a). Consequently, surplus appropriation is becoming more dependent on an expansionary 'capitalist' rationale under which agrarian relations, whether they have clearly polarising effects as in the seven villages, or less inegalitarian outcomes as in Samitigram, are directed towards the increase of agricultural productivity and output.

The emergence of this capitalist rationale can occur in the context of agrarian relations which have not conventionally been categorised as capitalist (such as share tenancy, informal lending and land mortgaging). Banaji's distinction between "forms of exploitation" (e.g. wage labour and share tenancy) and "modes of production" (e.g. capitalism and feudalism) (1971 p.2428; see also p.13) and Adnan's (1984 p.108) "forms of market" versus "forms of production" conceptualise this. As both authors argue, forms of exploitation (or market) do not imply particular modes (or forms) of production. Thus new market interlinkages such as water-land-labour (see VI.2.2) can enable exploiters to take over production decisions and thus to increase agricultural production. On the other hand, the loosening of market interlinkages can also enable people to pursue common interests together in an expansionary capitalist mode (e.g.

Samitigram's irrigation groups). My focus on the contractual form and structural meaning of agrarian relationships does not presuppose the association of forms of agrarian relationships with particular structural meanings or modes of production.

Section I.2 showed how the meaning of different agrarian relations has changed over time. Section I.3 and VIII.1 demonstrate that the meaning of agrarian relations is has changed and is continuing to change.

Thus up to the end of the Mughal period, land revenue was a form of parasitic surplus extraction and disassociated from the efficiency and outcomes of agricultural production. In the British period, land revenue became an outmoded form of surplus extraction and was replaced by debt relations (see p.15). After the increases in agricultural productivity since the 1960s, a replacement of usurious debt relations by land rent as the major mechanism of surplus extraction from agriculture is again taking place (see p.33). However, land rent today is functionally different from the earlier, parasitic forms of land rent. Increased productivity potential and a reduced per capita land base compel producers and non-producing appropriators of agricultural surplus to incorporate productivity objectives into their use of land rent.

The changes over time in the forms and functions of land tenancy illustrate this. The original function of share tenancy in the Mughal period was the expansion of cultivated area and the appropriation of food and tradeable produce by non-cultivating elites. Here the appropriating 'parasitic' (in the sense of non-producing) landlords rather than the tenants were the initiator and driving force behind the tenancy relationship (see p.10). During the British period, resource pressures were turned against the tenant cultivator (see pp. 12-18). As a result, tenants started to compete for sharecropping land to maintain basic subsistence levels while the relative importance of land rent as a vehicle for the extraction of agricultural surplus declined. At the same time, debt relations rose

in importance. Until the arrival of "green revolution technologies", share tenancy tended to constitute an integral part of patron-client relations at the expense of productivity, or in conditions of low productivity potential and/or high risk of crop failure.

Mechanised irrigation and other HYV inputs have not displaced this type of "traditional" tenancy (see V.1.4.1). However, new functions and meanings for land tenancy have appeared (see V.1.4.2-3 & VI.2.2.1). Under "entrepreneur renting" tenants' rationale for the tenancy relationship revolves around output and profit; 'reverse tenancy' has inverted the traditional roles of poor tenant and rich landlord; and landlords' selection of tenants for more fertile, irrigated land appears to depend more on expected crop returns and less on the relations in other markets.

Land mortgaging emerged during the British period as a consequence of the transformation of land property into an alienable right. Like usurious credit relations (see below), mortgages constituted a form of parasitic appropriation since the extraction of agricultural surplus was achieved through interest in isolation from the agricultural production process. With HYV production, land mortgages are now used by mortgagees to gain access to productive land for cultivation. The difference in contractual form of mortgages for rainfed low-yield land ('extractive' *bondhok*) and for fertile irrigated land 'production-oriented' *khaikalashi*; see V.1.5 & VI.2.2) illustrates this. The converse change from a less to a more exploitative form of land mortgage with the introduction of irrigated cultivation was observed by Howes (1985 p.64/65). This cautions against easy generalisations and underlines that not the form of exploitation (which is determined by varying political economy conditions), but the rationale behind agrarian relations is crucial for the identification of transformation processes. As does this research, Howes finds that while the mortgage used to

serve as a disguised form of usurious moneylending the use of the land under present irrigated conditions passes to the moneylender until the original loan can be repaid (loc.cit). In both cases the rationale behind the mortgage has thus turned towards production objectives.

Other recent research in areas of irrigated HYV cultivation in Bangladesh describes *khaikalashi* mortgages as "a form of tenancy" (Rahman 1986) "a system of intermediate land possession" (Müller 1988) or "a middle-term investment possibility" (Räder 1988 sic). Changes in the function of mortgages under HYV cultivation are thus clearly part of the transformation process under which surplus appropriation is coming to rely increasingly on the productive utilisation of assets rather than on the use of extractive power in disassociation from the production process.

Usurious credit relations linked the rural cultivator to markets and replaced land revenue as the primary means of extraction from agriculture in the British period (pp. 15-18). Colonial surplus extraction from agriculture relied on the intensification of extractive practices through debt rather than on productivity increases. While extractive practices in the credit sector persist (see V.2), in recent years credit has also become a necessary precondition for production for the majority of HYV cultivators. Thus some credit relations have become an integral part of agricultural production relations. Rather than constitute a parasitic "fetter" on agricultural productivity, some types of credit relations are now engaged in by creditor and debtor in order to further the exploitation of latent agricultural productivity potential.

The origins of landless labour in Bengal have been traced back to forms of forced labour and predial slavery in the Mughal period (pp.10-11). With abundant land supplies, coercive forms of labour use were required to ensure agricultural surplus extraction by the non-producing classes. With the

commercialisation of rights to land in the British period, slavery transformed into debt bondage. Tied indebted labour (i.e. the interlinkages between labour and credit markets) remained a feature of agrarian production relations during the British period. More contemporary village studies (Jansen 1983; 1986) note an increasing incidence of day labour and a loosening of tied labour relations with growing numbers of landless since landowners no longer need to secure their labour supply. Forms of "tied" longer-term labour today are rarer and are now often an assurance to the labourer of a certain permanence of employment at the cost of a reduction in wages (see V.3.1.3).

With continuing demographic pressure and increased agricultural productivity potential through irrigated HYV cultivation, the character of labour relations is diversifying. The eight villages of this study showed an increase in contracts for group labour. This brings an element of collective bargaining between employer and labour group into the agricultural labour market. Returns to some forms of labour varied with speed of work and labour productivity. Furthermore, the requirements of efficient agricultural production and labour market supply and demand conditions, rather than contractual interlinking of markets, determined the nature of some agricultural employment relationships. This was the case in particular when climatic or "systemic" pressures for the prompt execution of agricultural tasks were high. Other research notes that with the intensification of rice farming, a change from day labour towards labour contracts for particular tasks occurs. Under the latter, the elimination of interlinked market has progressed furthest as the labourer becomes

a self-employed service offerer in agriculture working at ...(his M.G.) own risk without any social support and security.
(Piesch 1988 p.122)

An analysis of agrarian change cannot confine itself to the cultivation sector. The evolution of the non-cultivation sector interacts closely with that of

cultivation and determines the strategic "room for manoeuvre" for different groups of rural people. From a diverse base centred on local and regional Asian markets in the Mughal period, non-agricultural production in Bengal became almost exclusively bound for European markets. With the industrial revolution, markets for Bengali manufactures were closed. At the end of the British period, manufacturing was nearly extinct and Bengal had become the provider of raw materials for non-agricultural production elsewhere. The reversal to agriculture of formerly diverse production structures meant that a trading and intermediary but no industrial elite evolved. After the separation from India, and again at independence in 1971, the exodus of many Hindus meant a further contraction of non-agricultural production.

In contemporary Bangladesh, economic and social status are still mostly achieved through mediating positions for external capital or through state patronage. Independence from Pakistan was obtained almost without any industrial elite in Bangladesh and with a Bangladeshi state which had nationalised large Pakistani assets. The control of political and bureaucratic networks and state patronage thus remained the major avenue to wealth in Bangladesh. International trade and some forms of barely distinguishable "aid" have provided expanded opportunities to accumulate through intermediary activities (e.g. import and marketing of foreign products) and, more recently, to expand into production activities such as the garments industry under particular constraints imposed by foreign capital and associated internal vested interests.

The STW sector has illustrated this here (I.4.3 & VII.3). As a working hypothesis rather than as a research finding I suggest that the "switch to exploitation via expanded reproduction" in the STW sector, as in other non-agricultural production sectors in Bangladesh, is impeded by the limitations imposed by external interests and by the inability or unwillingness of internal

administrative and commercial forces to resist.

This has repercussions for the rural sector. The type of irrigation technology supplied (cf. I.4.1) and the character of supply and service systems reflect the objectives of external forces and of intermediary Bangladeshi elites. This poses constraints on the extent and direction of growth of non-cultivation incomes for the rural population and affects the development of agricultural production relations.

VIII.3 Outlook

Irrigation groups of the Samitigram type are one of the possible outcomes of current population pressures on land and of the organisational requirements of new, more productive cultivation methods in rural Bangladesh. The particular combination of circumstances which led to group formation in Samitigram (see VI.3) may not be the rule. On the other hand, in the absence of significant non-cultivation income sources only the wealthiest top few percent of Bangladeshi rural households can still rely on extractive practices in the cultivation sector. Villages with nearby non-cultivation income sources tend to have looser market interlinkages, less extensive extractive practices and a greater number of productivity-enhancing features in agricultural production relations.

This has policy and research implications. The stalemate around landownership and use ⁸⁾ may be overcome by concentrating on new avenues to acquiring incomes and assets for land- and assetless groups which no longer depend on access to land. The production, use and trade of new agricultural technologies are some of the options, which have been investigated by recent research (Wood, Palmer-Jones and Ahmed forthcoming; Lewis forthcoming) and NGO activities (e.g BRAC & Proshika in Bangladesh).

One cannot predict whether Samitigram irrigation groups will continue

to include most cultivators, or whether groups will be appropriated and used for 'old-style' extraction when the new Samitigram leaders have consolidated their position.

However, if, as is argued here, the aggregation of cultivators into groups is the expression of a new economic rationale which is systematically necessitated by changed opportunities and constraints in the economy, Samitigram groups will continue to function and opportunities for the productive use of resources will remain available to the majority of cultivators in the village. With irrigation-led increased productivity potential, economic advancement in rural Bangladesh is no longer necessarily or exclusively equated with the exploitation of others. For the policymaker and "development practioner", this presents the challenge to improve the conditions for the functioning of self-sustaining technology-user and input-access groups of the Samitigram type. The discussion of this will have to be continued elsewhere.

Here, it remains to be said that if defined as "a switch to exploitation via expanded reproduction" from a situation of extractive or "parasitic" exploitation (Adnan 1984 p.226; see also p. 5), the transformation to capitalism is clearly occurring in the area I studied.

NOTES

1) Similarly, Hamid et al (1978) find that mechanised minor irrigation reduces the per acre net income gap between small and large farmers but widens the per household net income gap. Qadir et al (1978) find for the seven villages that HYVs have turned smaller landholding categories into surplus producers.

2) In a comparison of two tubewell-irrigated villages, Alam (1984 p.113) reports two categories of tenants who differ in capital and labour endowment and finds the difference more pronounced in the village with better access to HYV cultivation inputs.

3) For the development of structures of power and dependence around new technology in rural Bangladesh see Lewis (forthcoming).

- 4) Findings VIII.1.3 a) & b) derive from the fieldwork material of chapters IV to VI.
- 5) My resources did not allow for the collection of much detailed cultivation cost and output data in the seven villages (but see Table VI.2).
- 6) Concluded from conversations and interviews in the research area.
- 7) See Islam, Faaland & Parkinson 1981; Sobhan 1982 on the foreign dependence of the Bangladesh state and Rahman 1986 (ch 8) for aspects of dependence between "peasants and the state".
- 8) See Januzzi & Peach (1980) for a particularly unlikely method to achieve land and tenancy reforms in Bangladesh.

BENGALI TERMS

amon	rained monsoon paddy (July to October)
aus	spring paddy
bali	sandy soil
bari	homestead
bazar	local daily market
bebsha	business
beel	low, swampy land
bideshi	foreigner
bidi	cigarette-like item
bigha	0.33 acres
bongsho	paternal line of family
bondhok	land mortgage
borga	sharecropping and other form of land renting
boro	winter paddy (irrigated; February to June) also: big, rich
boro lok	influential, rich people
chakri	employment contract of some permanence
chakor	annually or seasonally employed labourer
chula	cooking hearth
coolie	porter
dele	cowdung on jute sticks (fuel)
dhaner bebsha	paddy/rice business
doash	loamy soil
dokan	shop
dokkhin	South
dol	group, party (here: labour group)
doon	canoe-shaped traditional water-lifting device
dorkasto	application (to official institution)
gata	labour exchange
ghor jamai	man resident in in-laws' house
fokir	faihealer, beggar
girbi	form of land mortgage
goreeb manush	lit: poor person
hal	two cattle and plough
haj	Muslim pilgrimage to Mecca
haji	Muslim who went to Mecca
halkata	annual entertainment of and debt collection from business clients
hat	regional bi-weekly market
imam	Muslim religious preacher
jat	caste
kajna	market tax
karikor	weaver, labourer
khaikalashi	usufructary land mortgage
kham kata	to sell one's labour
khas land	government land (ex 'enemy property')
khesari	poisonous lentil variety
khola	threshing place for paddy
korbiraj	homeopathic healer
kua	dugwell or pond
lakh	one hundred thousand
lungi	male skirt-like garment
madrassah	Muslim religious school
matbor	village leader
mauza	revenue village
mohajon	moneylender

murri	puffed rice
para	neighbourhood
poscim	west
poribar	household
poribarar prodhan	household head
pukur	pond
purbo	east
pardah	seclusion of Muslim women
rabi	winter vegetable and pulses crop
ricksaw	cycle-trolley for transport of humans and materials
samaj	village society / those who attend the same mosque
samabaya	cooperative
samiti	group
sardar	group leader/spokesman
sari	female garment
seti	swing bucket (traditional water-lifting device)
shalish	village court
shon korali	form of land mortgage
sorkar	government
S.S.C.	secondary school exam (after about 10 years schooling)
union	smallest administrative unit
union parishad	local government council
upazila	second smallest administrative unit
uttor	north

ACRONYMS

ADP	Agricultural Development Programme
BADC	Bangladesh Agricultural Development Corporation
BARC	Bangladesh Agricultural Research Council
BARD	Bangladesh Academy for Rural Development
BAU	Bangladesh Agricultural University
BB	Bangladesh Bank
BKB	Bangladesh Krishi Bank
BRDB	Bangladesh Rural Development Board
BDS	Bangladesh Studies
BWDB	Bangladesh Water Development Board
C.A.	Command Area
DAE	Department of Agricultural Extension
DTW	Deep Tubewell
EPW	Economic and Political Weekly
GoB	Government of Bangladesh
GoB	Government of India
HTW	Hand Tubewell
IDA	International Development Agency
IDS	Institute of Development Studies
IRDP	Integrated Rural Development Programme
IESHR	Indian Economic and Social History Review
IRWP	Integrated Rural Works Programme
JDS	Journal of Development Studies
JoPS	Journal of Peasant Studies
JoSS	Journal of Social Studies
KSS	<i>Krishi Samabaya Samiti</i> Farmers' Cooperative
MIWDFC	Ministry of Water Development and Flood Control
MLGRDC	Ministry of Local Government and Development Cooperation
MOA	Ministry of Agriculture
MSS	<i>Mahila Samabaya Samiti</i> Women's Cooperative
MOSTI	Manually Operated Shallow Tubewell for Irrigation
NWP	National Water Plan
STW	Shallow Tubewell

BIBLIOGRAPHY AND REFERENCES

Abdullah A (1976) Land Reform and Agrarian Change in Bangladesh BDS IV (1) : 67-114

Abdullah T A, Zeidenstein S A (1982) Village Women of Bangladesh. Prospects for Change, ILO Women in Development Series Vol 4, Oxford, Pergamon Press

Abdullah Hossain & Nations R (April 1976) Agrarian Structure and the IRDP Bangladesh Studies

Addy, P & Azad I (1973) Politics and Culture in Bengal New Left Review No 79 May-June

Adnan S (1984) Peasant Production and Capitalist Development P.h.D. Churchill College Cambridge

Adnan S & Islam R (May 1976) Social Change and Rural Women BIDS Village Study Group Working Paper No 7 Dhaka mimeo

--- & al (1977) Differentiation and Class Structure in Village Shamraj Village Study Group Working Paper No 8 Dhaka mimeo

--- & Rahman H.Z (1978) Peasant Classes and Land Mobility Structural Reproduction and Change in Rural Bangladesh Village Study Group Working Paper No 9 Dhaka mimeo

Ahmad N (1968) An Economic Geography of East Pakistan London, Oxford University Press

Ahmed I (April/May 1973) Use and Benefits of the High-Yielding Varieties of Seeds in Bangladesh Paper to Seminar on Economic and Social Consequences of the Improved Seeds, Kendy Sri Lanka

--- (January 1976) Employment Effects of the Green Revolution BDS Vol IV

--- (July 1977) Technical Change and Labour Utilisation in Rice Cultivation BDS Vol V (1)

--- (1981a) Technological Change and Agrarian Structure Geneva ILO

--- (1981b) Farm Size and Labour Use: Some Alternative Explanations Oxford Bulletin of Economics & Statistics. 43 (1) :73-88

Alam J & Gisselquist D (June 1985) Methodologies for Evaluating Economic Aspects of Irrigation Systems International Seminar on Performance of Irrigation System BARC/Ford Foundation Dhaka Bangladesh 25-27 June

Alam M (1984) Capital Accumulation, and Agrarian Structure in Bangladesh A study on Tubewell Irrigated Villages of Rajshahi and Comilla Centre for Social Studies, Dhaka University

Alam N (April 1987) An Analysis of Rice Production in Bangladesh JSS No 36

Alamgir M (1978) Bangladesh A Case of Below Poverty Level Equilibrium Trap Dhaka BIDS

Alavi H (1972) The State in Post-Colonial Societies: Pakistan and Bangladesh NLR No 74

--- (1973) Peasant Classes and Primordial Loyalties JOPS Vol I (1)

--- (1975) India and the Colonial Mode of Production in: Miliband R & Saville J (eds) The Socialist Register London, Merlin Press

Alavi H & Shanin T (1982 eds) Introduction to the Sociology of "Developing Societies" London MacMillan

Arefeen H K S (1982) Muslim Stratification Patterns in Bangladesh An Attempt to Build a Theory JoSS No 16

--- (1986) Changing Agrarian Structure in Bangladesh; Shimula: A Study of a Periurban Village Centre for Social Studies Dhaka University

Arens J & Van Beurden J (1978) Jhagrapur: Poor Peasants and Women in a Village in Bangladesh Birmingham, Third World Publications

Arn A L (1978) A Case Study from Bangladesh: An Integrated Village in Mymensingh District Centre for Development Research Copenhagen

Asaduzzaman M (1984) Problems and Prospects of Groundwater Development in Singra, Rajshahi Agricultural Sector Team and Ministry of Agriculture Rajshahi

--- (December 1985) Handbook of Groundwater and Wells Dhaka BRAC Prokashana

Asaduzzaman M & Iman Ali S M (April 1984) Impact and Evaluation of Shallow Tubewell Development in Rajshahi, BADC Rajshahi unpubl.

Athreya V, Boklin G, Djurfelt G, Lindberg S (January 1987) Identification of Agrarian Classes: A Methodological Essay with Empirical Material from South India JoPS Vol 14 No 2

Attwood D & Baviskar B (eds) (1988) Cooperatives and Rural Development New Delhi Oxford University Press

Aziz K M A (May 1979) Kinship in Bangladesh International Centre for Diarrhoeal Disease Research, Bangladesh Dhaka

Bagadion B V & Korten F.F (1980) Developing Viable Irrigators' Associations: Lessons from Small-Scale Irrigation Development in the Philippines Agricultural Administration:273-287

Banaji J (1972) For a Theory of Colonial Modes of Production EPW 23:12

Bandyopadhyaya N (1975) Changing Forms of Agricultural Enterprise in West Bengal: a Note EPW April 26

Barbier P (1984) Inverse Relationship between Farm Size and Productivity: A Product of Science of Imagination EPW XIX (52-53) December 22-19

Bardhan P & Rudra A (April 1980) Terms and Conditions of Sharecropping Contracts: An Analysis of Village Survey Data in India JDS Vol 17

Bartsch W H (1977) Employment and Technology Choice in Asian Agriculture New York, Praeger

BBS (Bangladesh Bureau of Statistics) (1974) Population Census of Bangladesh District Census Report Rajshahi

--- (January 1985) Upazila Statistics 1979/80 - 1982/83 Basic Statistics, Land Utilisation and Irrigation Dhaka

--- (May 1986) The Bangladesh Census of Agriculture Vol I Dhaka

Bell C (1977) Alternative Theories of Sharecropping: Some Tests Using Evidence from North-East India JDS 13 :317-46

Bernstein H (1979) African Peasantries: A Theoretical Framework JoPS Vol 16 (4)

--- (January 1971) Modernisation Theory and the Sociological Study of Development JDS VII No 2

Berry R A & Cline W R (1979) Agrarian Structure and Productivity in Developing Countries Baltimore and London The John Hopkins University Press

Bertocci P (1970) Elusive Villages: Social Structure and Community Organisation in Rural East Pakistan Michigan State University

--- (December 1972) Community Structure and Social Rank in two Villages in Bangladesh Contributions to Indian Sociology New Series VI :29-52

--- (1975) Micro-region, Market Area and Muslim Community in Rural Bangladesh BDS III (3) :349-360

--- (1979) Structural Fragmentation and Peasant Classes in Bangladesh JSS 5 :43-60

Beteille A (1974) Studies in Agrarian Social Structure London Oxford University Press

Bhaduri A (1973) A Study of Agricultural Backwardness under Semi-Feudalism Economic Journal Vol.83 (1)

--- (1976) The Evolution of Land Relations in Eastern India under British Rule IESHR XIII (1) :45-58

--- (1980) The Economic Structure of Agricultural Backwardness DERAP Working paper A172 Bergen Christian Michelsen Institute

--- (1983) Economic Structure of Backward Agriculture London New York, Academic Press

Bharadwaj K (1974) Production Conditions in Indian Agriculture Occasional Paper 33 Cambridge, Cambridge University Press

Bhuiyan S I (1984) Groundwater Use for Irrigation in Bangladesh Agricultural Administration 16 (4) :181-207

Biggs S (1976) Appropriate Agricultural Technology in Bangladesh Discussion Paper No 90 Brighton IDS

--- (1987) in Stewart F (ed) Policies For Appropriate Technology: Irrigation in Bangladesh

Biswas et al (Dec. 1978) An Investigation into the Factors affecting the Command Area of Different Irrigation Facilities in Bangladesh Mymensingh Bangladesh Agricultural University

--- (November 1985) Evaluating the Role of Institutions in Irrigation Programmes Some Preliminary Findings Department of Irrigation and Water Management BAU Mymensingh Bangladesh

--- (November 1986) Water Market In Bangladesh: Inefficient or Inequitable Department of Irrigation and Water Management Bangladesh Agricultural University Mymensingh

Blair H (1978) Rural Development Class Structure and Bureaucracy in Bangladesh World Development Vol 6 (1)

--- (October 1986) Ideology, Foreign Aid and Rural Poverty in Bangladesh: Emergence of the Like-Minded Group JoSS 34

Blomström M & Hettne B (1984) Development Theory in Transition The Development Debate and Beyond London Zed

Boer L (July 1981) Migration and Social Mobility in Bangladesh: The Marginalisation of Peasant Migration JoSS 13

Bose S (1986) Agrarian Bengal: Economy, Social Structure and Politics Cambridge University Press

Boserup (1965) The Conditions of Agricultural Growth London George Allen and Unwin

Bottrall A (May 1981) Comparative Study of the Management and Organisation of Irrigation Projects World bank Staff Working Paper No 458 Washington

--- (Dec 1983) Review of Irrigation Management Practices in Bangladesh Dhaka Ford Foundation Centre for Development Science

Boyce J K (1987) Agrarian Impasse in Bengal: Institutional Constraints to Technological Change Oxford University

BRAC (Bangladesh Rural Advancement Committee) (1979) Who gets What and Why: Resource Allocation in a Bangladesh Village Dacca Bangladesh Rural Studies Series

--- (February 1980) The Net: Power Structure in 10 Villages Dhaka

Breman J (1974) Patronage and Exploitation Berkeley, Los Angeles, London University of California Press

Briscoe J (1979) Energy Use and Social Structure in a Bangladesh Village Population and Development Review 5 (4) :615-641

Brundtland Report (1987) The World Commission on Environment and Development Our Common Future Oxford University Press

Byres T J (1981) The New Technology Class Formation and Class Action in the Indian Countryside JoPS Vol 8 No 4

--- (1983 ed) Sharecropping and Sharecroppers London Frank Cass

Cain M T (September 1977) The Economic Activities of Children in a Village in Bangladesh Population and Development Review No 3: 201-277

Cardoso F H (1972) Dependency and Underdevelopment in Latin America New Left Review No 74 July/August :83-95

--- (1982) Dependency and Development in Latin America in: Alavi & Shanin 1982: 112-127

CARE (March 1984) Deep Tubewell Irrigation and credit Program Evaluation of Some Primary and Secondary Effects Dhaka Bangladesh

Carruthers I & Clark C (1983 2nd ed.) The Economics of Irrigation Liverpool University Press

CCDB (April 1983) Agricultural Development Project Rajshahi/Pabna Evaluation Report

Chakravarti U (1985) "Of Desais and Karmakeras" Servile Labour in Ancient India in Patnaik & Dingwaney (1985)

Chambers R & Harriss J (1977) Comparing Twelve South Indian Villages: In Search of Practical Theory in Green Revolution in: Farmer B H (1977)

Chambers R et al (1981) Seasonal Dimensions to Rural Poverty London Frances Pinter

Chambers R (1983) Rural Development: Putting the Last First London Longman

--- (1988) Managing JCanal Irrigation Practical Analysis from South Asia New Delhi Oxford and IBH Publishing Co

Chaudiri B B (March 1970) The Growth of Commercial Agriculture in Bengal 1859-1885 part I The Indian Economic and Social History Review VII No 1

Chaudri (1974) New Technologies and Income Distribution in Agriculture in Lehmann (1974) : 157-189

Cheung S. N (1969) The Theory of Share Tenancy Chicago University of Chicago Press

Chisholm N (1984) Whose Rural Development? Socio-Economic Change in DTW Pumpgroups in Bogra District North-West Bangladesh SIDA Dhaka

Chowdury A (November 1985 ed) Pains and Pleasures of Fieldwork National Institute of Local Government Dhaka

Clay E J & Schaffer B (1984) 'Room for Manoeuvre' An Exploration of Public Policy in Agriculture and Rural Development London Heineman

Clay E (January 1974) Planners Preferences and Local Innovation in Tubewell Irrigation In North-East India Discussion Paper No 40 IDS Sussex

--- (1975) Choice of Techniques; A Case Study of Tubewell Irrigation based on unpubl. PhD thesis University of Sussex mimeo

Clay & Khan (October 1977) Agricultural Employment and Unemployment in Bangladesh: The Next Decade Rural Social Science Paper No 4 BARC Dhaka

--- (March 1978) Employment Effects of the HYV Strategy in Bangladesh: A Rejoinder Agricultural Development Council Dhaka

Chowdury A (Jan 1978) A Bangladesh Village: A Study of Social Stratification Centre for Social Studies Dacca University

Coward E W (ed) (1980) Irrigation and Agricultural Development in Asia Ithaca London, Cornell University Press

Curtis D (September 1987) Organisation of Common Goods: The Case of Farmer-Managed Irrigation in Nepal DAG Birmingham Paper at DSA Conference Manchester

Dasgupta B (1984) Agricultural Labour under Colonial, Semi-Capitalist and Capitalist Conditions A Case Study of West Bengal EPW September

Dasgupta P & Ray D (December 1987) Inequality as a Determinant of Malnutrition and Unemployment: Theory The Economic Journal :1011-1034

David C & Meyer L (1980) Measuring the Farm-Level Impact of Agricultural Loans in: Howell (1980)

Day L B (1909) Bengal Peasant Life London MacMillan & Co

Dayal R & Elliott C Land Tenure, Land Concentration and Agricultural Output UNRISD Social and Economic Factors in Economic Development Report No 5

De Bandt J et al (1980 eds) European Studies in Development London MacMillan

Denzin N K (19787) Sociological Methods A Sourcebook New York MacGrawHill

Desai M, Rudolph S H Rudra A (ed) (1984) Agrarian Power and Agricultural Productivity in South Asia Berkely and Los Angeles, University of California Press

DeVylder S & Asplund D (1979) Contradictions and Distortions in a Rural Economy: The Case of Bangladesh Policy Development and Evaluation Division SIDA

Dutta S C & Mandal M (September 1985) Technical and Management Aspects of Proshika Landless Group Controlled Irrigation Schemes in Selected Areas of Bangladesh Ressearch Report for Proshika Dhaka

Eckert J B (1977) High-Yielding Wheat in Pakistan's Punjab in: Stevens et al 1977: 143-175

Edwards C, Biggs S & Griffiths J (February 1978) Irrigation in Bangladesh: On Contradictions and Underutilised Potential Development Studies Discussion Paper No 22 University of East Anglia

Eisenstadt S N & Roninger L (1984) Patrons Clients and Friends: Interpersonal Relations and the Structure of Trust in Society Cambridge University Press

Ellis F (1988) Peasant Economies: Farm Households and Agrarian Development Wye Studies in Agricultural Development London

Elson D (September 1987) The Impact of Structural Adjustment on Women - Concepts and Issues Paper to Development Studies Association Annual Conference Manchester

Epstein S (1962) Economic Development and Social Change in South India Manchester University Press

--- (1973) India Yesterday Today and Tomorrow London and Basingstoke, Macmillan

Van Eschen D & Bandyopadhyay (1988) "Villager Failure to Cooperate" in Attwood & Baviskar

Faaland J & Parkinson J.R. (1976) Bangladesh: The Test Case for Development London C Hurst & Co

Faaland J & Hossain M (1980) Structural Transformation and Rural Development in: DeBandt et al (eds 1980) : 281-291

Farmer B H (ed) (1977) Green Revolution? Technology and Change in Rice Growing Areas of Tamil Nadu and Sri Lanka London and Basingstoke, MacMillan

Frank A G (1971) Capitalism and Underdevelopment in Latin America Historical Studies of Chile and Brazil Harmondsworth Penguin Books

--- (1975) On Capitalist Underdevelopment

--- (1978) Dependent Accumulation and Underdevelopment London and Basingstoke, MacMillan

Friedman (Jan 1981) The Active Community: Toward a Political-Territorial Framework for Rural Development in Asia EDCC

Frykenberg R E (1977) Land Tenure and Peasant in South Asia New Delhi Orient Longman

Gellner E & Waterbury J (eds) (1977) Patrons and Clients London Duckworth

Ghose A K & Saith A (1976) Indebtedness, Tenancy and the Adoption of New Technology in Semi-Feudal Agriculture World Development Vol 4 (4)

Ghose A K (1979) Institutional Structure, Technological Change and Growth in Poor Agrarian Economies: An Analysis with Reference to Bengal and Punjab World Development Vol 7 :385-396

Ghai D et al (179) Agrarian Systems and Rural Development London MacMillan

Gill G J (November 1983) The Demand for Tubewell Equipment in Relation to Groundwater Availability Dhaka Bangladesh Agricultural Research Council

Glaser B G (1978) Theoretical Sensitivity San Francisco University of California

Glaser B G & Strauss A L (1975) The Discovery of Grounded Theory: Strategies for Qualitative Research Weidenfeld and Nicholson

Glaser M (May 1986) The Impact of Modern Small-Scale Irrigation Technology on Patterns of Accumulation and Development Preliminary PhD Fieldwork Report Dhaka

--- (October 1986) STWs in Bangladesh Demand, Markets and Distribution Water Master Plan Office Dhaka mimeo

--- (November 1986) Minor Irrigation and Socio-Economic Change at the Village Level: Some Findings in a Beel Area in Singra Upazila in: Biswas et al (1986)

--- (June 1988) Land Tenure and Shallow Tubewell Irrigation: Alternative Trajectories of Agrarian Change in Bangladesh Paper to VII World Congress of Rural Sociology, Bologna Italy

Government of Bangladesh & World Bank Bangladesh Minor Irrigation Sector Planning Commission Ministry of Finance & Planning Dhaka

Greeley M (June 1982) Feeding the Hungry: A Role For Post Harvest Technology IDS Bulletin Sussex

--- & Howes M (1982) Rural Technology, Rural Institutions and the Rural Poorest Bangladesh CIRDAP

Griffin K (1974) The Political Economy of Agrarian Change An Essay on the Green Revolution London MacMillan

Griffin K & Ghose A J (April/May 1979) Growth and Impoverishment in Rural Asia World Development

Griffin K & Khan A R (1978 eds) Poverty and Landlessness in Rural Asia Geneva ILO

Government of Bangladesh & FAO/UNDP Mission (April 1977) Irrigation Policy Working Paper VIII mimeo

Government of Bengal (1935) The Bengal Survey and Settlement Alipore Bengal Government Press

Gotsch C H (1972) Technical Change and the Distribution of Income in Rural Areas American Journal of Agricultural Economics 54 (2) :326-341

Habib (March 1969) Potentialities of Capitalistic Development in the Economy of Mughal India Journal of Economic History Vol 29 :32-79

Hagen E (1962) On the Theory of Social Change Homewood Illinois Dorsey Press

--- (1971) How Economic Growth Begins: A Theory of Social Change in: Kilby (1971 ed) :241-264

Hale S (April 1978) The Politics of Entrepreneurship in Indian Villages Development and Change Vol 9 No2 :245-275 The Hague Sage

Hamid M A November (1977) A Study of the BADC Deep Tubewell Programme in the North Western Region of Bangladesh Dep. of Economics, Rajshahi University Bangladesh

--- et al(1978) Irrigation Technologies in Bangladesh: A Study in Some Selected Areas University of Rajshahi Dep. of Economics

--- (December 1982) Shallow Tubewells under IDA Credit in North-West Bangladesh Rural Development Studies Dep. of Economics University of Rajshahi

Hayami Y & Ruttan V (1971) Agricultural Development An International Perspective John Hopkins

Hannah L M (October 1976) Handpump Irrigation in Bangladesh Bangladesh Development Studies Vol 4 No 4 :440-54

--- (1978) Choice of Groundwater Irrigation Technology in Bangladesh BDS 5 (1) :55-70

Hanratty M (April 1983) Minor Irrigation Development in Bangladesh USAID Dhaka

Haque M F (1975) A Comparative Analysis of Small-Scale Irrigation Systems in Bangladesh BDS III(1) :43-52

Harriss B (1981) Transitional Trade and Rural Development New Delhi Vikas Publishing House

Harriss J (January 1980) Why Poor People Stay Poor in Rural South India in Development and Change 1(1) London Sage

Harrison M (1977) The Peasant Mode of Production in the Work of A V Chayanov JPS 4(4)

Hasnat A H (ed. August 1985) Village Studies in Bangladesh BARD Kotbari Comilla

Herbon D (1988 ed) Socio-economic Strategies of Survival in Bangladesh A Preliminary Report on Empirical Findings Aachen Herodot

Herring R J (1977) Land Tenure and Credit-Capital Tenure in Contemporary India in: Frykenberg (1977 ed)

--- (1978) Share Tenancy and Economic Efficiency: The South Asian Case Peasant Studies 7 :225-49

Hirashima S & Muqtada M (December 1986 eds) Hired Labour and Rural Labour Markets in Asia Geneva ILO

Hossain M (January 1974) Farm Size and Productivity in Bangladesh Agriculture The Bangladesh Economic Review Vol II (1)

--- (1977) Farm Size, Tenancy and Land Productivity: An Analysis of Farm Level Data in Bangladesh Agriculture BDS Vol 15 No 3

--- (1978) Cost and Returns of Boro Paddy; A Pilot Survey in Barisal and Mymensingh Agro-Economic Research Bangladesh Ministry of Agriculture and Forestries Dacca

--- (September 1986) Technological Change and Factor Productivity in Bangladesh Agriculture International Food Policy Research Institute

--- (1988) Nature and Impact of the Green Revolution in Bangladesh International Food Policy Research Institute Report 67 Washington D.C.

Hossain M & Jones S (1983) Production, Poverty and the Cooperative Ideal in Bangladesh Rural Development Policy in: Lea & Chauduri (1983)

Howell J (1980 ed) Borrowers and Lenders - Rural Financial Markets and Institutions in Developing Countries London ODI

Howes M (October 1981) Confessions of a Fieldworker - How I stratified a Rural Population IDS Bulletin Vol 12 No 4 :40-46

--- (1982) The Potential for Solar-Powered Irrigation in Pakistan Commissioned Study IDS Sussex

--- (May 1985) Whose Water? An Investigation of the Consequences of Alternative Approaches to Small-Scale Irrigation in Bangladesh Dhaka BIDS

Howes R R (December 1983) Options in Powering Irrigation Equipment for Tubewells and Low-Lift Irrigation Pumps in Bangladesh Bangladesh Agricultural Research Projekt USAID Phase II BRC Dhaka

Huda S A (1983) The Small Farmer and the Problem of Access BARC Dhaka

Hussain M K (June 1984) A Study of Irrigation Systems, Institutions and Policy Implications Department of Economics Jahangirnagar University Dhaka

--- (April 1985) A Study on the Impact of Irrigation on Land Use, Farm Income and Employment Department of Economics Jahangirnagar University Dhaka

Hunt R C & Hunt E (1976) Canal Irrigation and Local Social Organisation Current Anthropology 17 (3) :389-411

Hussein Md G (Feb 1983) An Analytical Review of Non-Formal Rural Credit Institutions in Bangladesh Agricultural Development Council Dhaka Ford Foundation

Hutapea R Dirjasanyata P Nordholt N (1979) The Organisation of Farm-Level Irrigation in Indonesia in: Taylor & Wickham Inden R B & Nicholas R B Kinship in Bengali Culture University of Chicago Press London

Ishikawa S (1967) Economic Development in Asian Perspective Tokyo Kinokuniya

Islam N, Faaland J & Parkinson J (1980) Aid and Influence

Islam R (1979) What has been Happening to Rural Income Distribution in Bangladesh? Development and Change Vol 10 (3)

Islam S (1977) Rural History of Bangladesh: a Source Study Dacca Tito Islam

Islam Sh (1982) Exploring the Other Half: Field Research with Rural Women in Bangladesh Dhaka Women for Women Research & Study Group

Islam T (February 1977) Socio-Economic and Institutional Factors Determining the Efficiency of Low-Lift Pump Irrigation in Bangladesh Rabiul Planning Commission Dacca

Jabbar M A (January 1977) Relative Productive Efficiency of Different Tenure Classes in Selected areas of Bangladesh BDS Vol V No 1

--- (December 1977) Farm Structure and Resource Productivity in Selected Areas of Bangladesh BARC Agricultural Economics and Rural Social Science Research Papers No 3 Dacca

--- (Sept 1985) Commercialisation of Agricultural Equipment Generated by R&D Systems in Bangladesh World Employment Programme Research Working Paper WEP 2-22/WP155 Geneva ILO

Jack J C (1915) Economic Life of a Bengal District Oxford University Press

Jahangir B K (December 1977) Nature of Class Struggle in Bangladesh EPW :2063-66

--- (January 1978) Peasant Mobilisation: The Bangladesh Case JSS Vol I

--- (1979) Differentiation, Polarisation and Confrontation in Rural Bangladesh Dacca University Centre For Social Studies

--- (October 1981) Social Organisation, Process and Change JSS No 14

(October 1982) Rural Society, Power Structure and Class Practice Bergen DERAP Working Papers A228

Jairath J (1988) Class Relations and Technology Use: A Study of Tubewell Utilisation in Punjab (India) Development and Change Vol 19 pp. 89-113

Jannuzzi F T & Peach J T (1980) The Agrarian Structure of Bangladesh: An Impediment to Development Boulder Colorado Westview

Jansen E (October 1979) Choice of Irrigation Technology in Bangladesh: Implications for Dependency Relationships between Rich and Poor Farmers JSS Vol 5 :61-84

--- (1983) Rural Bangladesh: Competition for Scarce Resources DERAP Christian Michelsen Institute Norway

--- (1986) Rural Bangladesh: Competition for Scarce Resources London Norwegian University Press

Jensen K M (March 1981) Method and Fieldwork in Village-Level Research: The Bangladesh Case Asian Affairs Vol 3 No 1

--- (n.d.) The Basis of Local-Level Politics in Bangladesh (A Case from North Bengal) Centre for Development Research, Copenhagen

Johnson S H (April 1985) Economic and Technical Criteria for Location of Deep and Shallow Tubewells BARC

Kahrs F (1988) The Rural Non-Farm Sector of the Microregion in Herbon (1988) : 62-79

Khan A R (1977) Poverty and Inequality in Rural Bangladesh in: Poverty and Landlessness in Rural Asia Geneva ILO

--- (1979) The Comilla Model and the Integrated Rural Development Programme in Bangladesh: An Experiment in Cooperative Capitalism World Development 7

Khan A R & Lee E (1984 eds) Poverty in Rural Asia ARTEP Geneva ILO

Khan A R, Islam R & Huq M (1980) Employment Income and the Mobilisation of Local Resources: A Study of Two Bangladesh Villages Geneva ILO

Kidwai S (1985) Sultans, Eunuchs and Domestic: New Forms of Bondage in Medieval India, in: Patnaik Dingwaney (1985)

Kilby P (1971 ed) Entrepreneurship and Economic Development New York, The Free Press Collier McMillan

Laclau E (May-June 1971) Feudalism and capitalism in Latin America NLR 67

--- (1977) Politics and Ideology in Marxist Theory London NLB

Lal D (June 1976) Agricultural Growth, Real Wages and the Rural Poor EPW Vol II No 26

Learmont T & Rolt F (1982) Underdeveloping Bangladesh London War-on-Want

Lehman D (1974) Agrarian Reform and Agrarian Reformism London Faber & Faber

Lewis D (May/June 1987) Technologies and Transactions: A Changing Village and its Networks Research Report Dhaka/Bath

--- (forthcoming) Technologies and Transactions PhD Thesis Centre for Development Studies, University of Bath

Lipton M (April 1968) The Theory of the Optimising Peasant Journal of Development Studies:327-351

London P A (1975) Merchants as Promoters of Rural Development An Indian Case Study New York Praeger

Long N (1984) Family and Work in Rural Societies London Tavistock

Longhurst A, Kamara S & Mensurah J (January 1988) Structural Adjustment and Vulnerable Groups in Sierra Leone IDS Buletin 19 (1)

Lea D, Chauduri D P (1983) Rural Development and the State London New York Methuen

Lynch B D (March 1985) Community Participation and Local Organisation for Small-Scale Irrigation Water Management Synthesis Report 34 Cornell University Ithaca

Maloney C & Ahmad A B (February 1986) Informal Savings and Credit Groups in Bangladesh Dhaka USAID

Mandal M A S (1978) Hand Pump Irrigation in Bangladesh: A Comment BDS VI (1) winter

--- (August 1983) Characteristics of Successful Irrigation Schemes Bangladesh Agricultural University Department of Agricultural Economics Mymensingh

Maniruzzaman M M (July 1983) The Nature of Rural Underdevelopment in Bangladesh JSS No 21

Marshall A (1961 ed) Principles of Economics London MacMillan

Martius H Development Oriented Mechanisation of Agriculture An Empirical Study at the Farm-Level Verlag Breitenbach Publishers Saarbrücken Fort Lauderdale

Marx K (1950 ed) The 18th Brumaire of Louis Bonaparte Selected Works Vol I Foreign Languages Publications

McCarthy F & Feldman S (1983) Rural Women Discovered: New Sources of Capital and Labour in Bangladesh Development and Change 14 (2) :211-236

McCarthy F (1984) The Target Group: Women in Rural Bangladesh In Clay & Schaffer (1984 ed) : 49-57

McClelland D C (1961) The Achieving Society Princeton New Jersey Van Nostrand

McEachern D (1976) The Mode of Production in India Journal of Contemporary Asia Vol 6 No 4

McGregor A (September 1987) Credit and th Rural Poor: The Changing Policy Environment in Bangladesh Paper to DSA Annual Conference Manchester forthcoming in Public Administration and Development

--- (forthcoming) The Political Economy of Rural Credit in Bangladesh PhD Thesis Centre for Development Studies University of Bath

Moreland (1962) India at the Death of Akbar Delhi Atma Ram

MPO (Water Master Plan Organisation) (December 1985) National Water Plan Project Minor Irrigation Infrastructure Survey: Report on Study of Minor Irrigation Singra Upazila Dhaka

--- (July 1985 b) National Water Plan Project Draft Final Report Vol I Dhaka

Müller H P (1988) The Land Use System of the Microregion in Herbon (1988) : 35-60

Mukerjee R (1971) Six Villages of Bengal: A Socio-Economic Survey Bombay Popular Prakashan

Muqtada M (1975) The Seed-Fertilizer Technology and Surplus Labour in Bangladesh Agriculture BDS III No 4

Muqtada M & Alam M (1986) Hired Labour and Rural Labour Market in Bangladesh in: Hirashima & Muqtada (1986):21-74

Murshid K A S (1985) Is there a Structural Constraint to Capacity Utilisation of Deep Tubewells? BDS Vol 13 No 3 & 4

Myrdal G (1957) Economic Theory and Underdeveloped Regions London Duckworth & Co

--- (1968) An Enquiry into the Poverty of Nations Vol I-III New York Pantheon

Nadkarni M V (December 1976) Tenants from the dominant Class: A Developing Contradiction in Land Reforms EPW (Review of Agriculture)

Narain D (1961) Distribution of the Marketed Surplus of Agricultural Produce by Size Level of Holding in India 1950-51 Bombay Asia Publishing House

Nations R (July/August 1971) The Economic Structure of Pakistan: Class and Colony NLR No 68

Nebelung M (1986 ed) Bangladesh im Schatten der Macht Aachen Rader Verlag Aachener Studien Sozialwissenschaften

--- (1988) Organisation von Kleinbauern und Landarbeitern im Ländlichen Bangladesh - Bedeutung und Perspektiven einer von Nicht-Regierungsorganisationen verfolgten Entwicklungs-Strategie PhD Thesis Institut für Soziologie RWTH Aachen

Newbery D M G (1975) Tenurial Obstacles to Innovation JDS Issue 11

Nunberg B S (1983) Institutional Issues in : Wilkinson (ed)

Papanek H (1964) The Woman Fieldworker in a Purdah Society Human Organisation 23 :160-163

Parsons T (1964) Social Structure and Personality

Patel A M (July 1963) Rural Markets of Rajshahi District Oriental Geographer VII No 2 :140-151

Patnaik U (1972a) On the Mode of Production in Indian Agriculture: A Preliminary Note EPW Vol 17 (52)

--- (1972b) The Development of Capitalism in Agriculture Social Scientist Vol I No 2 New Delhi

--- (September 1976) Class Differentiation within the Peasantry EPW (Review of Agriculture)

--- (1979) Neo-Populism and Marxism: The Chayanovian View of the Agrarian Question and its Fundamental Fallacy JOPS Vol 16

Patnaik U & Dingwaney M (1985) Chains of Servitude: Bondage and Slavery in India Madras & London Sangam

Pearce R (1983) Sharecropping: Towards a Marxist View in: Byres (1983) :42-70

Piesch R (1988) Human Labour Use Strategies in the Microregion in: Herbon 1988 :107-136

Pitman G T K (December 1983) Groundwater Planning in Bangladesh:Some of the Major Issues Dhaka Water Master Plan Office

Qadir S A (1964) Village Dhanishwar - Three Generations of Man-Land Adjustment in an East Pakistan Village Pakistan Academy for Rural Development Comilla East Pakistan

Qadir S A, Emmert J P, Chowdury B A & Dey R N (1978) Productivity and Equity in IRDP Irrigation Schemes An Analysis of a 1976 IBS Survey of 7 Villages in Singra Thana Honolulu East-West Centre

Quasem M A Financial Return of Irrigation Equipment to Owners and Users: The Case of STWs in Bangladesh 1981-85 DERAP working Paper A373 Bergen

Räder C (1988) The Rural Household Economy in the Microregion in: Herbon (1988) : 80-106

Rahman A (1979) Agrarian Structure and Capital Formation PhD Cambridge

--- (1979a) Usury Capital and Credit Relations in Bangladesh Agriculture BDS Vol 4 :1-46

--- (July 1979b) Rural Power Structure: A Study of the Union Parishad Leaders in Bangladesh JSS No 4

--- (1986) Peasants and Classes London Zed Books

Rahman M (October 1973) Development of Agricultural Marketing in Bangladesh BARD Comilla

Rahman M & Howes M (1977) A Preliminary Assessment of the Determinants, Consequences and Policy Implications of Hand Pump Irrigation in Bangladesh BDS

Rahman T (October 1984) Social and Political Implications of Changing Land and Labour Relations in Rural Bangladesh D Phil Thesis Darwin College Cambridge

Rao C H (1971) Uncertainty, Entrepreneurship and Sharecropping in India Journal of Political Economy Vol 14 (11) :578-595

--- January 1988) Fragmented Rural Labour Markets JoPS: 238-257

Rashid M (1986) Die neue Reistechnologie und die Zerstörung des ökologischen Gleichgewichts in: Nebelung 1986 :128-145

Ray R & Ray R (June 1973) The Dynamics of Continuity in Rural Bengal inder the British Imperium: A Study of Quasi-Stable Equilibrium in Underdeveloped Societies A Changing World Indian Econmic and Social History Review 10 :103-128

Ray D (1978) The Small Lessor and the Big Lessee EPW No 51-52 (Review of Agriculture)

Reason P & Rowan J (1981 eds) Human Enquiry Chichester John Wiley & Sons

Redclift M (1984) Development and the Environmental Crisis: Red or Green Alternatives? London New York Methuen

--- (1987) Sustainable Development: Exploring the Contradictions London New York Methuen

Reid J D (1975) Sharecropping in Theory and History Agricultural History
Vol 49 :427-440

Redfield R (1965) Peasant Society and Culture University of Chicago Press

Robertson A F (1980) On Sharecropping MAN (N.S.) Vol 15

Rosenberg N (1960 ed) The Economics of Technological Change

Rudra A (1978) Class Relations in Indian Agriculture I & II EPW 3/10/17
June:

Sayer A (1984) Method in Social Science A Realist Approach London
Hutchinson & Co

Schaffer B, Wen Hsien et al (April 1975) Special Issue on Access
Development and Change VI (2)

Schaffer B & Lamb G (1974) Exit Voice and Access Social Science Information
13 (6) :73-90

van Schendel W (1981) Peasant Mobility: The Odds of Life in Rural
Bangladesh Assen van Gorcum

--- (May 1986) Self-Rescue and Survival: The Rural Poor in Bangladesh Paper
to the Asian Studies Association of Australia Sixth National Conference
Sydney

Schultz T (1969) Transforming Traditional Agriculture Yale University Press

Scott J E (1972) The Erosion of Patron-Client Bonds and Social Change in
Rural Southeast Asia Journal of Asian Studies Vol XXXII No 1 :5-37

--- (1972a) Patron-Client Politics and Political Change in South-East Asia
American Political Science Review :91-113

Shanin T (1972) The Awkward Class: Political Sociology of Peasantry in a
Developing Society: Russia 1910-25 Oxford Clarendon Press

--- (1979) Defining Peasants: Conceptualisations and Deconceptualisations -
Old and New in a Marxist Debate Peasant Studies No 4 Fall

Sen A (1962) An Aspect of Indian Agriculture Economic Weekly 14 (4-6) :243-
46 Annual Number

--- (1981) Poverty and Famines An Essay on Entitlement and Deprivation
Oxford Clarendon Press

--- (1987) On Ethics and Economics Oxford Basil Blackwell

Siddique A 1976 ed) Bangladesh District Gazetteer: Rajshahi Dacca
Bangladesh Government Press

Siddiqui K (1982) The Political Economy of Rural Poverty in Bangladesh
National Institute of Local Government Dacca

Singh I (February 1979) Small Farmers and the Landless in South Asia World
Bank Staff Working Paper No 320 Washington

Singh M & Iyer G (1985) Migrant Labourers in Rural Punjab in: Patnaik & Dingwaney (1985) :219-57

Sinha N K (1965) The Economic History of Bengal Vol I Calcutta K L Mukhopadhyay

--- (1970) The Economic History of Bengal Vol III Calcutta K L Mukopadhyay

Small L E (July 1983) Economic Aspects of Minor Pump Irrigation Development Report for USAID

Smith A (1961 ed) The Wealth of Nations London Methuen

Sobhan R (1980) Growth and Contradictions within the Bangladesh Bourgeoisie JSS No 9

--- (July 1981) Bangladesh and the World Economic System Development and Change Vol 12 No 3

--- (1982a) The Crisis of External Dependence: Some Policy Options for Bangladesh Dhaka JSS 18 :17-64

--- (19982b) The Crisis of External Dependence: The Political Economy of Foreign Aid to Bangladesh London Zed

Spinatsch M (1984) Boda: Ein Dorf am Rande der Welt (Eine Untersuchung zur politischen Ökonomie der Unterentwicklung in einem Ostbengalischen Dorf, im Nationalstaat Bangladesh und in der Weltgesellschaft) Saarbrücken, Fort Lauderdale Breitenbach

Spear P (1965) A History of India New York Penguin

Stepanek J (1979) Bangladesh: Equitable Growth? New York Pergamon Press

Stevens R D (1977) Tradition and Dynamics in Small-Farm Agriculture Ames, Iowa State Press

Stewart F (1987 ed) Macro Policies for Appropriate Technology in Developing Countries Westview Press Boulder Colorado

Stroberg P A (March 1977) Water and Development: Organisational Aspects of a Tubewell Irrigation Project in Bangladesh mimeo Dacca SIDA

Taylor D c & Wickham T H (eds 1979) Irrigation Policy and the Management of Irrigation Systems in South East Asia Bangkok: The Agricultural Development Council Inc

Taylor J G (1979) From Modernisation to Modes of Production London MacMillan

Tarak B K (1986) Farmer-Managed Irrigation Systems in Nepal: A Case Study MSc Dissertation Development Administration Group University of Birmingham

Timmer C, Thomas J W et al (1975) The Choice of Technology in Developing Countries Harvard Studies in International Development Cambridge Mas. No 32

Thorner D (1956) The Agrarian Prospect in India Delhi University Press

Timberg T A (July 1986) The Economic and Social Impact of Rural Electrification in Bangladesh Dhaka USAID

Vyas V S (1970) Share Tenancy in a Dynamic Setting EPW 5 :A73-80

Wade R (1975) Irrigation and Income Distribution (3 papers) Discussion Paper 85 IDS University of Sussex Brighton

--- (1979) The Social Response to Irrigation: An Indian Case Study JDS 16 (1) :3-26

--- (1980) India's Changing Strategy of Irrigation Development in: Coward (1980 ed)

--- (1988a) Why some Indian Villages Cooperate EPW April pp. 773-776

--- (1988b) Village Republics: The Economic Conditions for Collectice Action Cambridge University Press

Warr P G (1978) Share Contracts, Limited Information and Production Uncertainty Australian Economic Papers II(30) :110-123

Warren B (1982) Imperialism: Pioneer of Capitalism London New Left Books and Verso

Wennergren E B (1984) Agricultural Development in Bangladesh Colorado, Westview Press

Westergard K (August 1978) Mode of Production in Agriculture: A Bangladesh Village Study JSS No 2

Widstrand C (1980) Water Conflicts and Research Priorities Oxford Pergamon

Wittfogel K A (1957) Oriental Despotism: A Comparative Study of Total Power New Haven Yale University Press

Wolf E (1966) Peasants Englewood Cliffs New York Prentice Hall

Wood G D (1977) Rural Development and the Post-colonial State: Administration and the Peasantry in the Kosi Region of North-East Bihar, India Development and Change 8 : 307-323

--- (1978a) Class Differentiation and Power in Bondokgram: The Minifundist Case in: Huq (1978)

--- (February 1978b) Class Formation and Antediluvian Capital in Bangladesh IDS Bulletin Vol 9 (3) :39-43

--- (1981) Rural Class Formation in Bangladesh 1940-1980 Bulletin of Concerned Asian Scholars Vol 13 No 4 :2-17

--- (1984a) Provision of Irrigation Services by the Landless - An Approach to Agrarian Reform in Bangladesh Agricultural Administration 17: 55-80

--- (1984b) A Study of Government Approaches to the Rural Poor in Bangladesh Dhaka/Stockholm Government of Bangladesh/SIDA

--- (December 1984c) State Intervention and Agrarian Class Formation: Dimensions of the Access Problem in the Kosi Development Region of North-East Bihar India Public Administration and Development Vol 4 (4)

--- (1985 ed.) Labelling in Development Policy London The Hague Sage Publications

--- (December 1986) 'The Vertical Integration of Capital in Bangladesh Agriculture Paper to Institute of Commonwealth Studies

Wood, Palmer-Jones & Ahmed (forthcoming) Provision of Irrigation Services by the Landless (provisional title)

World Bank (March 11 1983) Bangladesh - Selected Issues in Rural Employment Report No 4292-BD

--- (May 17 1983) Staff Appraisal Report - Bangladesh Rural Development II Project Report No 4348-BD South Asia Projects Department

--- (February 27 1984) Bangladesh: Economic Trends and Development Administration Vol I Main Report 4822 South Asia Programmes Department

--- (March 10 1987) Bangladesh: Promoting Higher Growth and Human Development Report No 6616-BD South Asia Programmes Department

Yoder R et al (1987) Variations in Irrigation Management Intensity: Farmer Managed Hill Irrigation Systems in Nepal Water Management Synthesis Report 67 Cornell University Ithaca

Zaidi S M H (1970) The Village Culture in Transition - A Study of East Pakistan Rural Sociology Honolulu East West Centre

Zaman M R (1973) Sharecropping: Economic Efficiency in Bangladesh BDS I :149-72