A POLITICAL ECONOMIC STUDY
of
AN INDIGENEOUS IRRIGATION SYSTEM

Thesis submitted for the award of the degree of

DOCTOR OF PHILOSOPHY

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JANUARY 1984

PREFACE

The present thesis is the study of a specific indigeneous irrigation system following the general method of political economy. A couple of years back when I had written for the first time about this little-known but widespread irrigation system the article had drawn considerable attention. The present study is a much detailed exposition of the same system. The age old system of irrigation however, is not merely a matter of historical interest. It also raises many different questions regarding development strategy and planning. I have developed the study so as to be able finally, to deal with such questions of practical interest.

The framework of analysis is that of Marxist political economy. This raises a problem since there are many explanations and many views here. The lively though inconclusive debate on 'mode of production' is now a well-known academic topic. Although I have made some contribution to the debate elsewhere, in this study I have deliberately refrained from entering into a discussion of the merits and demerits of the different points of view. The present study is an application of the position that I consider correct. The test of a pudding is in the eating. Needless to say that the particular view of political economy underlying this study is not my original contribution. In the text and glossary I have indicated its sources, mostly in the form of extracts from the recognised authority in the field. Not that these extracts are the final word in the related controversies. But the results that we obtain by pursuing the framework supported by such extracts will certainly help in judging their merits.

It is in the very nature of the method of political economy that it does not admit traditionally accepted disciplinary boundaries in dealing with concrete social situations. Consequently the treatment in this thesis travels across many different social science subjects. To specialists in particular disciplines the treatment may appear at times, incomplete and superficial. For the purpose of our study the question is not whether the treatment measures up to the expectations of individual disciplines but whether it is able to understand the working of the indigeneous irrigation system and provide answers to some practical problems.

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Chapter - I

SCOPE AND METHODOLOGY

1.1 Introduction

Irrigation technology has made spectacular progress in the recent past. Civil Engineering techniques at present, are able to deal with mammoth projects and help harnessing of water from sources of any size. Chemical technology can eliminate almost any variety of impurity making water usable from any type of source. Availability of mechanical and electrical power has made groundwater exploitation much easier. Experiments with artificial rains have achieved moderate success. Technical devices like sprinkler or drip heads are available facilitating efficient distribution of water. None of these things could have been imagined a century back, leave alone talking of the remote past. What then may be the reason for looking into the old traditional systems, except, with a casual historical interest?

But it is a fact that interest in indigenous irrigation works has increased considerably in recent years. Not because of a single reason; at least three distinct perspectives exist which have contributed to the increased interest. We will introduce all the three perspectives in the very beginning so that one may appreciate properly the importance of the subject of this study. The perspectives have emerged on the world

scene including the particular case of India. While introducing the perspectives therefore, I have first described the general cases, followed by brief overviews of the developments within India.

1.1.1 Techniques of Irrigation

In the great progress that has been made by irrigation engineering, it has learnt a lot from the traditional techniques of irrigation those have existed in many places all over the world. During the last century, the famous works like those on the Nile or in Cauvery delta were not only revived, but in the process helped enrichment of knowledge of the European engineers about certain techniques of irrigation earlier unknown to them. The process of learning of newer and newer irrigation techniques from the old irrigation systems has not subsided even at present. One may cite the example of Israel in this effort. The present Negev desert in Israel had once been an area of prosperous agriculture. But the technique of irrigation which provided the basis for the prosperity was forgotten for thousands of years. Excavations and investigations of the ancient irrigation techniques, followed by the experimental reconstruction and running of some farms on the bases of those principles (in 1960 and 1971), have shown promising results [Evenari, Shanan and Tadmor, 1971]. Revival of techniques have occurred in many other countries [A.I.D., 1974]. There are cases where the governments have

not yet taken up such works, but knowledgeable people have already started campaigns demanding that such techniques be revived as early as possible /e.g. Masao, 1974/.

Although lacking the grandeurs of the massive works like those on the Nile or the Cauvery, another indigeneous system, namely the surface drainage reservoirs for the use of irrigation, has received considerable attention since the last century. The underground tunnel method of irrigation (quarez, kanat etc.) are not found beyond the borders of the Indian subcontinent, which is, at the same time the dividing line between the monsoon Asia and the drier West Asia. On the East, various forms of run-off water collection, in particular surface drainage irrigation tanks and diversion channels have been in use, providing irrigation facilities to considerable expanse and dating back sometimes to several millenia. These systems have received various degrees of attention from the points of modern irrigation techniques and developments. Even during the colonial period certain measures, though insufficient, were taken for restoration and preservation of tank irrigation systems in South India and Ceylon. The Japanese government was deeply concerned about the indigeneous technologies even during the early twentieth century. In the colonial countries however, such deep concerns were lacking. In many of these countries the traditional technologies, have survived but in deteriorated conditions. It is only in the more recent period, after

these countries became independent, interests in the traditional irrigation systems have increased. In particular, the surface drainage irrigation techniques (like tanks, ponds etc., also diversion channels) of smaller or medium sizes have received considerable improvement efforts in countries like Philippines, Indonesia, Ceylon or India as well as in Socialist China.

In the Philippines, government efforts to support locally managed small scale irrigation systems have been going on for over half a century. In the more recent period National Irrigation Administration has stepped up its activities for the development and consolidation of the indigenous systems of irrigation. The well-known indigenous systems of Indonesia have been backed up recently by the subsidy dasa programmes. After the formation of the People's Republic of China, the new government took up an active interest in the consolidation and extension of indigenous irrigation systems. In Japan indigenous technologies have received due care at all times. The country has been able to consolidate and greatly improve those techniques. In countries like Ceylon or in parts of India (South India in particular) the colonial government had to take notice of such economic activities even during the nineteenth century. Certain measures were undertaken - thanks to the capabilities of a handful of imaginative engineers and administrators like Sir Arthur Cotton or

Sir Henry Ward. After the independence and intensive developmental efforts on all fronts, indigenaous irrigation techniques too have received extra attention. At least three international organisations,[1/] besides many small country based studies - have undertaken studies on tank and similar indigeneous irrigation systems in Asia. The question of modernisation, improvements and better management too are drawing increasing interests, to which we will return in the next section.

The colonial government in India had an irrigation policy highly inclined towards sponsoring of the bigger irrigation works /Ludden, 1979/. Following the famine situations, the first Irrigation Commission was set up which had pointed out the importance of some of the indigeneous works in some parts of the country. But the measures taken were rather half-hearted. In certain parts of the country, e.g. in Tamilnadu, some measures were undertaken; in certain other parts e.g. in Bihar, very little was done. The reasons for as well as the effects of such measures need not be described here because part of these details will be included

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1/ (i) Project on Sharing Traditional Technology, United Nations University, Tokyo.

(ii) Project on Tank Irrigation under World Employment Programme, I.L.O., Geneva.

(iii) Several Projects by the Ford Foundation, U.S.A.

in the analyses following. In the post independence period, when development of irrigation facilities attained increased interests, certain other measures were taken up. Although the stress was still on the major and medium projects, and modern methods like tubewells received probably larger share of interests among the different methods of minor irrigation, in certain parts of the country where its importance was already recognised in the official circles, some additional works were done on traditional irrigation systems[2] too. The stress has remained different from state to state. In certain states like Tamilnadu or Karnataka, the state governments have shown some interest. In certain other states like in Bihar the attitude is still one of neglect. The problems of efficient use [e.g. von Oppen and Binswanger, 1977; von Oppen, 1978] as well as the problem of modernisation [3] have also been considered from time to time. Sometimes it has been suggested [e.g. Puttaswamaiah, 1977] that the shift of stress in the irrigation policy from the major and medium works to minor works including the indigeneous varieties seems to be more justifiable from the point of cost-benefit analysis. On the whole, the interest is still very limited though a few parts

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2/ The Committee on Plan Projects (Irrigation and Power Team), Planning Commission undertook a series of studies on minor irrigation works in several states. In 1966, the compiled report was published [India, 1966]. Some of the state reports are also available.

3/ E.g. Workshop on "Modernisation of Tank Irrigation", Madras, February 10-12, 1982.

of the country have fared slightly better. It is enough to indicate that the country has not been able to adopt any well-defined policy as yet with respect to indigeneous systems of irrigation. However, of late, recommendations have begun to be made[4], which makes the studies on indigeneous systems all the more important.

1.1.2 Management of Irrigation Systems

Wherever an indigeneous mode of irrigation had survived it was endowed with an indigeneous mode of manngement. In all the cases mentioned earlier, whenever any government had shown an interest in preservation and perpetuation of indigeneous irrigation works, it was imperative to take into consideration the existing mode of management. Sometimes the modern governments were inclined to introduce modern modes of management. At other times, very often after the failure of an experimental new system, attempts were made to revive the traditional modes of manngement. That too was not an easy task, and the governments were forced to start at a more fundamental level, from attempts to understand how these traditional modes of management worked so that those could be preserved. We do not suggest that this obvious case is the major one that has gone to increase interest in indigeneous irrigation systems from the question of management. In any

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4/ ICRISAT has already made such a recommendation.

case, these attempts to replace, preserve and study the traditional modes of manngement provided, in course of time, the maximum amount of information available today about the social organisations of indigeneous irrigation works.

To mention only a few, when Japan took to the path of modernisation in the Meiji restoration period, there was no second thought about the perpetuation of traditional irrigation technologies. But there were enough number of experiments about how to introduce a modern management system /Tamaki, 1979/. The policy that succeeded finally was to preserve the old organisations and transform those only gradually to suit to the subsequent modernisation programmes for indigeneous irrigation works. Even now, thousands of irrigation co-operatives, both formal and informal, manage the irrigation works /Eyre, 1955; Beardseley, Hall and Ward, 1959; Tamaki, 1979; Hatate, 1979/. Considerable work has also been done in Socialist China in both perpetuation and transformation of traditional systems of irrigation management /Nickum, 1977, Vaidyanathan, 1983/. In Philippines, care was taken to perpetuate the indigeneous system of management and even to this date, traditional organisations keep managing nearly a half of the total irrigated area in the country /Coward, 1979 : 34/. Another important case is that of Ceylon. When the colonial government took up the responsibility of facilitating irrigation from indigenous

works in the early nineteenth century, almost immediately it became imperative for the government to revive and reorganise the traditional systems of management (Roberts, 1980; Karunanayke, 1980; Gunasekera, 1982).

Every attempt did not achieve desired degree of success. Nor were the governments in all these countries equally interested. Thus there has been only moderate success in many other attempts which were made in many other colonial countries including India. But the failures contributed to increase the importance of studying the indigeneous irrigation organisations in further details. As Coward (1980 : 213) has put it, "These local "systems" can be used only if they are known and understood. While it is relatively easy to know about the existing physical systems, it is easy to be unaware of the organisational arrangements that are in place." The statement does not only bring out the necessity but also point out the great challenge involved in this field.

However, the interest in indigeneous irrigation systems has arisen for the purpose of management of much more general types of irrigation works. It is hoped that such studies will benefit even in the management of modern social (not privately owned and managed) irrigation works. This too has its background. For a long time, irrigation planning all over the world was highly pre-occupied with technical details. The experience however, was not very satisfactory. In spite of high technical competence the achievements often differed

distressingly from the desired targets. Complaints of a different nature, such as the water users failed to complete local irrigation and drainage facilities, or that the cropping patterns were not modified as intended etc. were found to be almost universal. In any social irrigation system, at one stage or the other, the control of water and the responsibilities have to be handed over to the users. That, apart from the technical details, knowledge about the behavioural patterns of the water-users are also important, began to dawn more and more in the policy makers' circles. Planning and administration of irrigation works in the more recent period have been showing increasing awareness about the problem of articulation between the administrative authorities and the water users that arise at the terminal level of irrigation works. The interests in traditional irrigation systems have arisen also out of this question.

In order to improve the situation at the terminal level the irrigation authorities have sometimes taken up more and more tasks like construction of field channels, farm ditches, at times even going to the extent of determining the crops to be grown. This amounts to the elimination of any initiative from the water-users apart from escalation of project cost. A second different strategy has been to encourage the water-users to undertake desired tasks by giving economic incentives through water pricing etc. Of late, a third solution to this problem has drawn much attention. This strategy envisages the

promotion of organisation of potential beneficiaries at the terminal level and ensuring their co-operation for better management.[5/]

The last strategy is not exactly a new one; but it has been treated with unparalleled importance in the more recent period. Almost all the countries, by now, admit this as a part of irrigation development strategy although the stress differs from country to country. Recommendations have been many. But, through all these recommendations, policy suggestions and declarations, "runs the same unanswered question - what can agencies do to help develop farmer organizations that can distribute water, maintain channels and resolve conflicts? This is a question desperately in need of answer given the rapid push for expanded and improved irrigation coverage throughout the third world." /Bagadion and Korten, 1979/. The handful of such existing organisations and success cases have been studied[6/] with care hoping to

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5/ For a long list of papers making such a recommendation see Bromley, Taylor, Parker /1980: fn.1./

6/ For example, VanderMeers' /1968/ study for Taiwan, Lewis /1971/ and later Ford Foundation studies /e.g. Bagadion and Korten, 1979/ for Philippines or that of Bacdyan /1974/ for the mountain irrigation in Philippines, a study by Coward /1976/ on a case in Laos, studies by Hafid and Hayami /1979/ and Duewel /1981/ about recent efforts in Indonesia, Harriss /1977/, Karunanayke /1980/ and Gunasekera /1982/ about the same in Ceylon and some studies in India /e.g. Chambers, 1977; Hart, 1978; Wade, 1979a; Jayaraman, 1981; Patil and Kulkarni, 1982/. Organisations in some other countries too have been studied with the specific purpose of formation of guidelines for water-users' associations in third world countries e.g. studies on Japan by Hatate /1979/ and Tamaki /1979/ or of Italy /Wade, 1979b/.

formulate some answers to this question. But these examples are rare. In advanced capitalist countries like the U.S.A., the farmers themselves have sufficient initiative to form water-users' associations for purchasing water from the distributing authorities in wholesale and then retailing those to individual members. In Socialist China such associations have been formed successfully as a part of the universal collectivization campaign. The real problems arises in the Third World countries where such initiatives are rare and no co-operation programmes attain much success. The handful of examples of successful formation of water-users' association in modern irrigation systems therefore, become extremely important.

In this connection Coward /1977/ has suggested a very interesting and promising approach. He begins by making an important distinction. The people in the Third World countries do not lack initiatives in general. The examples of successful water-users' associations in modern systems may be scanty. But the same areas are very rich in traditional irrigation organisations, some of which survive even to this date. The study of such organisations can make up for the deficit of examples of the first type. It is not that the traditional systems can simply be duplicated in other situations. But these may suggest important principles of organization which can be applied in other specific settings. Thus, the interest in the study of the indigeneous irrigation

systems has arisen from the question of management of not merely the specific systems but also for a wider purpose, for the management of social irrigation systems in general. We may add that the scope of generalisation need not be restricted to irrigation organisations. It is a promising approach for finding out principle of organization for co-operatives in general.

Let us now review briefly the development of the government policies in India regarding irrigation facilities. Indigeneous irrigation works had existed even before the establishment of the British rule. The colonial government began to take interest in this subject as a protective measure against the ravages of great famines that occurred during the nineteenth century [Gustafson and Reidinger, 1971]. The indigeneous irrigation works, particularly those of bigger sizes, received some attention. Modern canals were dug out. But neither the traditional organizations nor the modern ones received much attention. On the contrary, in certain areas like in Bengal, the government policy resulted in damaging consequences for the traditional irrigation practices [Willcocks, 1930].

The outlook changed immediately after the independence. Irrigation began being considered a necessity, not merely for protection against drought or famine but also for development [e.g. Gadgil, 1948]. Not only irrigation facilities were

extended greatly, the changed concern also led to the formulation of a new type of irrigation policy in course of time. As subsequent investigations opened up the various dimensions of developmental potential of irrigation, it also became clear that much of it remained unrealised. [e.g. Thorner and Thorner, 1962] Suggestions for improvement, e.g. encouraging the potential beneficiaries to welcome the extended facilities, helping them adapt to the new situations or increasing the commitment of the irrigation bureaucracy began to appear more and more in the policy suggestions [e.g. Hart, 1961; Jain, 1967]. In course of time such stray suggestions merged into an integrated approach. During the Fourth Plan, an Ayacut Development Programme was launched on an experimental basis [vide, Anagol, 1969] under the newly adopted Integrated Area Development Approach. Very soon it was made Command Area Development (CAD) Programme and has now been adopted for several major irrigation projects in the country. The CAD strategy includes, as an integral part of it, systematic efforts to promote water-users' associations. Although similar attempts have been made earlier, this indeed, has the distinction of being the first one to stress the formation of such associations on a systematic footing.

The acceptance of such a strategy only opened up a new area of thought. Uptil now the success in the formation of water-users' associations in the new command areas has been very marginal. Commenting on the CAD strategy, Hart wrote

/1978 : A1337 ; "Fostering collective responsibility generally in India will undoubtedly call for training of irrigators in this new joint roles; extension has yet to face this challenge." In the face of this new challenge any study which may throw light on how to undertake the new task, has become all the more important.

Attempts to preserve community participation in irrigation works under the modern government system may be traced back to the last century when efforts were made in parts of South India mainly through enactment, to force villagers to contribute labour for repair of irrigation works. Attempts to promote such associations may be traced back to the early 'twenties of this century when the Co-operative movement was launched and some irrigator co-operatives, reportedly, were formed /vide Bihar and Orissa, 1932 : 457. The first Famine Commission (1878-80) had recommended that the government should take up the responsibility of repairing the dilapidated tanks and then transfer the management to the villagers. Some half-hearted attempts were made in the subsequent years, without any thorough investigation of the method and later the whole programme was abandoned /India, 1903 : 110-17. Throughout the rest of the colonial period not much of an initiative was shown. In independent India the first such effort may be accredited to the U.P. government who amended the Northern Indian Canal and Drainage Act, 1873 in the year 1963 to provide for the participation of Gaon Sabha (village associations)

in the construction of water-courses. Yet, this was only an initial effort undertaken without a detailed understanding of how such Sabhas are formed and function. Nor have some other such suggestions /e.g. Jain, 1967; Asopa and Tripathi, 1976/ made later been based on detailed study and understanding. Research on water-users' associations in India has rarely been undertaken. Even the handful of examples were disregarded. As Wade /In Coward ed. 1980 : 356 fn.7/ noted that in at least some of the canals in northwest India, the Bhakra for example, some village-based irrigation panchayats had come up. But no study was taken up. Regarding the traditional irrigation systems, the old records as well as the District Gazetteers prepared during the earlier periods contain detailed description of the traditional irrigation practices surviving in many a region in the country. But those have rarely been used for any practical purpose like policy making or extension. The large number of socio-economic studies, as we will discuss in the next section, are strangely reluctant to pay any attention to the irrigation organisations and therefore, do not provide any useful information for practical purposes. Only very recently some studies have come up /e.g. Chambers, 1977; Bhargava, 1980; Jayaraman, 1981; Patil and Kulkarni, 1982/ which undertake the task of understanding the intricacies of existing water-users' associations in both traditional and modern irrigation works.

1.1.3 Study of Social Systems

The third perspective that has given rise to increased interest in the study of indigeneous irrigation systems is the study of social systems. Quite a large part of the great number of sociological and anthropological studies, conducted all over the world over a period of almost half a century, concern societies irrigated by one or the other type of indigenous method of irrigation. However, the wide range of variations in social forms found in all these studies makes an additional study over a new area fully welcome. Studies on traditional social organisation of irrigation are welcome for another reason. Because those are able to cast light in another area of current interest, namely the Asiatic mode of production controversy. Indeed, many studies [e.g. Leach, 1959; Godelier, 1965; Mitchell, 1973; Steward, 1977; Price, 1981] originally undertaken as socio-economic investigations, have later been used for the understanding of Asiatic mode of production.

On the other hand, the increased interest in the Asiatic mode of production debate in the recent period[7] has made the necessity of detailed case studies of irrigated

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7/ It is not necessary to describe the history of the debate so as to establish the fact that there has occurred a revival of interest in the field. A large number of books have been written on this. Two very useful collections are by Bailey and Llobera [1981] and Dunn [1982].

societies more important, for those may be used for comparative purposes. It must be noted however, that the Asiatic mode of production controversy does not always revolve round the irrigated societies. Indeed, some authors [e.g. Gunawardhane, 1976] have suggested that Marx and Engels later withdrew their stress on irrigation works as a factor explaining the Asiatic mode of production. However, this remark is necessary only to avoid a confusion otherwise possible - it does not alter the premise of our interest that irrigation works have been considered so important as even to structure a whole mode of production.[8] No wonder, with the increasing interest in understanding the structure of pre-capitalist societies the interest in indigeneous irrigation organisation too has increased.

A note may be added here that another system of categorisation of societies too ascribes immense significance to irrigation works in determining the character of the society. Eric Wolf [1966] developed a schema in which peasant societies were categorised as 'closed corporate' and 'open' societies. Rambo [1977] has shown that a traditional irrigation organisation contributed significantly to develop a 'corporate peasant society' in one part of Vietnam due to which the response of the Vietnamese peasant during the liberation war

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8/ Mention must also be made of the works of Gordon Childe [1972] which in a distinctive manner, stress the importance of irrigation works in social development.

period, differed in that region from the rest. This particular schema is not well-known. But it too goes to draw special attention to indigeneous irrigation works and organisations in determining social characteristics of a society dependent on irrigation.

Let us now undertake a brief review of the attention paid to irrigation works and irrigation organisations in the socio-economic and historical studies conducted in India. There is practically no study which assigns significant weightage to this aspect even when they make references to irrigation systems. To mention a few : at least three of the villages included in Marriot's [1955] celebrated book mentioned the existence of indigeneous irrigation organisations. M.N. Srinivas's village Rampura had canals and tanks for irrigation and at one place he even referred to a clash on the question of allocation [Marriot, 1955 : 297. The Tanjore village of Kathleen Gough was located in a region famous for its traditional irrigation works remodelled during the colonial rule. The village under study was endowed with an irrigation system about a thousand years old, but little information is obtained about the organisation of irrigation works old or new. In fact a comparison of this article with the very recent study of Gough [1980] may give an idea how the interest in indigeneous irrigation works have increased in the more recent period. At Ranikhera, Oscar Lewis found the works of cleaning of the village ponds and repair of the sub-canals were included among

the small number of such tasks when the hostile factions in the village united for some common action /Marriot, 1955 : 192-9/7. Yet, he did not enter into this highly significant aspect. Orenstein /I965B7 in his study and Epstein /I962/ in her comparative study of two villages considered irrigation works as important factors determining economic conditions in the villages. But the questions regarding irrigation management or the existence of social organisations or customs about irrigation have remained out of their purview. Djurfeldt and Lindberg /I976/ in their Marxian framework for village studies were ready to consider irrigation as one of the factors of production like land and tools. But in their village Thaiyur, although the traditional irrigation works had worked efficiently in the past, those had become more or less useless by the time the study was made and therefore 'deserved little attention' /Djurfeldt and Lindeberg, 1976 : 119-120/. Harriss /I982 : 72-75/ has aptly challenged this contention of Djurfeldt and Lindeberg and he has considered irrigation system with more attention.

In comparison to these socio-economic studies, historical studies have been more attentive to the problem. In particular, studies on South India[10] /e.g. Krishnaswamy, 1968; Mencher, 1978; Gough, 1980/ by historians and sociologists undertaking

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9/ Page nos. are as per 1962 edition.

10/ Also for closely related systems in Sri Lanka /e.g. Leach, 1959; Gunawardhane, 1971; 1978/.

historical studies in the more recent period have shown much wareness. The studies concerning North Indian cases are much less ware with one exception, namely that of U.P. by Whitcombe /1972/. Regarding indigenous works in other parts of Northern India not much is available. Certain specific aspects have been discussed by Wilcocks /1930/ for the case of Bengal, for Bihar by the present writer /Sengupta, 1980/. It may be added that certain other studies /e.g. Ludden, 1979; von Oppen and Binswanger, 1977; von Oppen and Subba Rao, 1980/, all in South India, have discussed the historical systems of management of irrigation works although their major concern has been different.

1.2 Scope of the Study

All these areas of current interest may appear to be independently problematic.[11/] But in reality they are not so. Indeed, in the previous discussions it has come up from time to time that increased interest in the indigenous irrigation techniques has necessitated understanding of the traditional irrigation organisation too or that "these local systems can be used only if they are known and understood." Out of the three problematics introduced in the foregoing section the first two are concerned with questions specific and practical (applied) in nature. The third one calls for

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11/ See Glossary for these and other political economic terminologies.

a general theoretical understanding of the whole social system of irrigation. However, the specific must be included in the general framework and a meaningful general study must be able to cast sufficient light on specific problems. A good applied analysis must be based on sound theoretical grounds and a good theory must provide guidelines to action. Such connections have already been confirmed in the previous section. Therefore, the scope of the present thesis is theoretical - the study of the irrigation social systems; but the theoretical treatment is so carried out that it is also possible to provide answers to certain practical problems including the ones introduced earlier.

In this effort we face a serious problem. It might have been noted that though the first two problematics call for the study of the social system, the third one does not raise by itself problems of practical importance. As a framework for analysing social systems we may follow the general framework of historical materialism. But the same framework has been known to lack practical use. Let us therefore, explain at the outset, how we propose to use the same framework for answering some questions of practical interest.

A mode of production is described by the combination of productive forces and relations of production constituting the economic base on which rises a superstructure and to which corresponds definite forms of social consciousness. Such

concepts as 'productive force', 'production relations' etc. are far closer to reality than the composite concept of 'mode of production'. Even these simpler concepts can be divided into their elements which are still nearer to the concrete. Thus Stalin /1938/ defined :

> "The instruments of production wherewith material values are produced, the people who operate the instruments of production and carry on the production of material values thanks to a certain productive experience and labour skill - all these jointly constitute the productive forces of society." (emphasis by Stalin).[12]

Similarly, production relations have been identified /Stalin, 1952/ as having three components :

a) The forms of ownership of the means of production.

b) The status of the various social groups in production and their interrelations that follow from these forms, or what Marx calls : "mutual exchange of their activities".

c) the forms of distribution of products, which are entirely determined by them.

Each of these elements may be subdivided. Thus Mao /1977/ noted:

> "Much remains to be written about human relations in the course of labour, e.g., concerning the leadership's

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12/ Instruments of production can be divided into 'instruments of production' and 'subject of labour'. See glossary.

adopting egalitarian attitudes, the changing of certain regulations and established practices, "the two participations" (worker participation in management and management participation in productive labour), "the three combinations" (combining efforts of cadres, workers, and technicians), etc. Public ownership of primitive communes lasted a long time, but during that time people's relations to each other underwent a good many changes ....."

Evidently the concepts at this level e.g. 'attitude of leaders', 'workers' participation in management' etc. are very near to concrete, so much so that those are common even in official documents in countries like India.

There still remains the problem of hierarchic arrangements of these elements, their inter-relations and related issues. Nor are these divisions complete. In fact "much remains to be written" in this area, on almost everything. Yet, it shows how the framework of historical materialism can be used for practical purpose by going from the very low level of abstractions to higher and higher levels of abstract concepts ultimately reaching such concepts as 'productive forces' or 'production relations' and then 'mode of production'. It may be noted that the debate regarding socialist transformation has referred to the concept of mode of production rarely, to concepts like productive forces or production relations more frequently, and has tried to enter into the details of subcategorisation of these elements.

The two problematics of current practical interest may easily be considered within this framework of social analysis. Probably those are considered in a much thoroughgoing manner within this framework. For example, the revival or perpetuation of indigeneous technology may be desirable but remains a utopia if the social situation is such that the required social relations - the ones corresponding to the particular productive force - are not attainable. The holistic framework does not only help by specifying all the various areas which demand attention (i.e. production relations, superstructure) for materialisation of the technological programme, but also indicate the specific types of relations and superstructure necessary for achieving the desired end. Similarly, a success in the formation of water-users' associations in a particular region may provide guidelines for the extension of such organisations, if only the required measures are taken in the required manner in all different aspects, be it the technology or the cultural practices of the people. The framework is able to indicate what are the points of stress, how long an effort may sustain and what may be the right direction for change. We intend to carry out the study so as to provide answers to such practical questions.

A last point needs to be discussed to outline the exact scope of the study. A holistic framework such as this, may raise a confusion that we propose to study all the different

elements with equal emphasis. Extension of a productive force to a new area also includes detailed hydrological and civil engineering works. Do we intend to study these too in details? The answer to this query is that this is a political economic study. Though technological and such aspects need to be dealt at some length, for those are interconnected and essential for understanding the political economy, those do not form the major scope of investigation. The exact scope of political economic (Marxist) studies has been brought out very lucidly by Mao [1977] :

> "The main object of study in political economy is the production relations.[13] But to study clearly the production relations it is necessary to study concomitantly the productive forces and also the positive and negative effects of the superstructure on the production relations. ..... Of course, in the process of studying political economy, the study of productive forces and the superstructure should not become over-developed. If the study of productive forces goes too far it becomes technology and natural science. If the study of superstructure goes too far it becomes nation-state theory, class struggle theory."

13/ Mao certainly was not the first one to identify it. This scope has been pointed out in all text-books of political economy in the socialist countries. In contrast what Kula [1976 ; 16] described as what "Every economic theory ought to be able to explain" seems related but incomplete and to some extent arbitrary. His first point includes appropriation of economic surplus and is close to distribution of product. The second point is partly the same as ownership of means of production. Thus, he too considered the scope of economic theory the elements of production relations though missing a third element - the relations among people during the process of production.

In the next section we will discuss in detail the methodology of our study. Suffice here to state that the framework of our analysis is that of Marxist political economy, and that we understand it in the manning conveyed in the foregoing paragraphs. On the whole, the major part of the present thesis is an effort to understand the social organization of a particular indigeneous irrigation system by using the above framework of analysis. For the better part of it, it is a theoretical analysis though our primary purpose is to answer some questions of practical relevance. This is because we too feel the same as did other researchers, that "These local "systems" can be used only if they are known and understood" /Coward, 1980 : 213/. Naturally, we have made earnest effort to understand the system as thoroughly as possible. However, we have been cautious to avoid being drawn by the theoretical understanding process. The theoretical study has been carried out in such a manner that the understanding can be used for concrete practical purpose. In the concluding chapter, chapter VI, we have returned to questions of practical relevance, including those of current interest introduced at the beginning.

The indigeneous irrigation system of our concern is located in the South (Gangetic) Bihar. The system will be introduced in greater deails in the following chapter.

Suffice here to indicate that while it is comparable to the 'tank' irrigation systems of South India,[14] it may also be described mainly as 'canal' system of irrigation. The tanks are fed by diversion channels and the description either as 'tank irrigation' or as 'diversion canal irrigation' is applicable. Of course neither of these terms describe the system correctly, nor are the names 'tanks' or 'canals' fully justifiable. These will be discussed later. The local name for these 'tanks' is ahar and for the diversion channels - pyne. We include in the scope of our study both ahars and pynes.

1.3. Methodology

How do we study the social organization of ahar-pyne irrigation system? The choice of a framework of analysis does not eliminate the necessity of going into methodological details. There are questions like what are the social aspects one should look for. What are the different dimensions of irrigation organizations? One thing is certain that there is no satisfactory study of social organization of ahar-pyne system and that we have to make a first hand investigation of the functioning of the system. But how many unit organizations must we study and for what period in order to arrive

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14/ This needs to be mentioned that the irrigation statistics in Bihar does not include this source under the head 'tank' as in South India.

at generalisation, spatially and temporarily, over the whole system? Indeed, questions arise at levels as fundamental as to the definition of a unit. What must be described as a unit organization?

A detailed methodological consideration is therefore, a precondition for a meaningful study of the social organization we are interested in. Certainly it is not possible to study the organizations of each and every unit of ahar-pyne system. Even a statistical generalisation necessitates studies of so many units that it is beyond one's individual capacity to conduct so many intensive studies. Nor does statistical method permit generalisation over time when one can select at the best, a cross-sectional sample for the study. Thus, we were left with no choice but to build up a model, for the working of the system, from the intensive investigation of only one unit of the system. However, care may be taken to verify the validity of the model by comparing the implications of it with many different varieties of information that may be available for the system. We have not disregarded such a scope for verification.

Accordingly, the study consists of two stages. In the first stage, detailed socio-economic investigation of the selected unit was undertaken in order to grasp its modus operandi and thereby, construct a model for its functioning. In the second stage, different implications of the hypothetical model were compared with the actual incidences, thus providing

for verification of the model. It may be noted that if it is successfully constructed, the model must be able to reflect even the same socio-economic phenomena which were used during the investigation stage for arriving at the model. This eliminates the necessity of presenting seperately the socio-economic information collected at the investigation stage. Instead, like all other information pertaining to the system, these too should come out as implications of the model. In other words, even the original information which led to the building of the model, should be reconstructed from the model itself once it is built. Along with additional information these too would then help verification of the model.

The investigation stage therefore, need not be presented anywhere except for the ultimate result of it. Thus, quite conveniently, we may label the two different stages of the study as (i) investigation and (ii) presentation stages.[15] In its actual content, the presentation includes reconstruction of the observed phenomena, the same phenomena which were used

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15/ We have retained Marx's terminology for that conveys clearly the distinction between the two stages.
Note:

"The method of presentation must differ in form from that of inquiry. The latter has to appropriate material in details, to analyse its different forms of development, to trace out their interconnections. Only after this work is done, can the actual movement be adequately described. If this is done sucessfully, if the life of the subject matter is ideally reflected as in a mirror, then it may appear as if we had before us a mere a priori construction." /Marx, 1873/
Also in Marx /1857 : 100-1/

to arrive at the model, as well as other implications of the model and whatever are available information that may help verification of the model. Since the works done at the investigation stage will not be presented as that anywhere in the following chapters, let us introduce here, very briefly, those undertaken at that stage.

1.3.1 Method of Investigation

Hundreds of researchers have done socio-economic investigations before us and certainly there exists several methodologies for this. Yet, there are certain areas where convention rather than scientific attitude guide the investigations. In fact most of these conventions have come under criticism as we will introduce later. Suffice it for the time being to indicate that we had begun our inquiry in accordance with the conventional methodology of studying socio-economic aspects. As the unit of study we had selected a single village with a reference period of one year. As regards the scale of the irrigation work to be studied, we selected a medium irrigation scheme - a considerably long pyne system. The concrete tasks were observed according to the five categories - construction, maintenance, allocation, conflict resolution and rituals - enumerated by Hunt and Hunt [1976] in their analysis of canal irrigation in general. But as we collected more and more information and were able to enter deeper and deeper into the system, all these characteristics

began to appear as objects requiring explanation instead of aiding the explanation. On the positive side, the simple elementary concepts capable of serving as explanatory variables, began to surface.

It was found that the starting point for conceptualisation is the labour process. It combines such elementary concepts like productive force and production relation, enabling one to describe the productive works. Construction, maintenance and allocation are indeed, different types of productive works while conflict resolution and rituals are tasks belonging to the superstructural level which arises on the basis of production process. Identification of such interconnections is essential for building up a compact model. Thus, in the investigation stage we finally identified all the labour processes and their characteristics - which arise in different points in the system under inquiry. This constitutes the starting point for presentation.

Let us consider the choice of scale in the study. To begin with, we had considered a medium scale irrigation system. But gradually it became clear that such a unit is largely an administrative attribute; any branch of the 'system' as well as many other similar units sharing a single source of supply could well be used as a unit with certain other advantages. There is an additional problem here. The question of feasibility related with the choice of scale such as the impossibility of undertaking a detailed survey of all

villages in a considerably large system, often decide the type of questions to be answered. Thus, Chambers [1977 : 344-57] suggested that three different approaches - top-down, bottom-up and middle-upward approaches might be taken from different levels of the irrigation system, the choice being dependant on the subject matter of the inquiry and the orientation of the observer. A closer scrutiny of the scheme, however, reveals that the questions in the three different approaches are not very distinct, nor is it likely, since a system is essentially a totality.

Indeed, the scale cannot be decided as arbitrarily as Chambers suggested. In the conclusion drawn in a symposium on scale, Barth [1978 : 254] pointed out that :

> "..... scale is a property of systems - of <u>any</u> system. Though this implies that it is a property of the models which we construct, it does not follow that scale needs to become an artifact of our investigation : that we can arbitrarily represent phenomena as small-scale and large-scale according to how we choose to construct our models. The concept of scale becomes useful only when linked to a discovery procedure : it should depict properties of system 'out there'."

In course of investigation we also found support for such an observation. The concept of the scale in the presentation in this thesis is a property of the system. Hence it need not be discussed here.

The village as a socio-economic unit for the study was the initial position which too broke down in course of investigation. It may be recalled here that this too is a long-known problem and whether the Indian villages have any social reality has been amply debated /e.g. Bailey, 1959; Dumond and Pocock, 1957; 1960/. In course of investigation we had to form the concept of the proper socio-economic unit too. It was found that this unit is not exactly, though largely, a geographical area. The matter is further complicated by the fact that a unit here in the system is composed of different layers comparable to core and periphery. The unit selected ultimately is an abstract unit, largely the same as the cultivators irrigating from a single distributory in the nhar-pyne system (ayacut) as the core group, along with its peripheral group, the margin of the latter not being very clear always. The concept will be clearer in course of the discussion in chapter III.

Lastly, about the concept of time. Essentially, a unit time period is described as a period within which all the changes specific to a whole cycle (reproduction or revolution) occur. If the phenomena to be observed are quickly adjustable, the period for study may be a single year, or a part of it or a few years. If it is a very slowly changing process the proper period should be sufficiently long - a whole era sometimes. We have observed all these varieties of change and therefore, different periods of reference have been used in this study. We will discuss these in details, for the sake of convenience, in the sub-section on the method of presentation.

1.3.2 Method of Presentation

The presentation begins with the introduction of the model already referred to and moves on to discuss its implications. A formal model consists of a set of postulates[16], the premise, and includesdeductions arrived through a logically valid chain of reasoning. A scientific model has in addition to the formal frame, an empirical content. The postulates of a scientific theory cannot be arbitrarily selected, but are representatives or counterparts of world experience and the implications therefore are empirically verifiable approximation to complicated reality. Hence, that this is a political economic study (Marxist) does not merely specify the scope of it, but also the basic postulates of the model. Those are the same set of principles that Marx [1859] called the "guiding principles" of his study.[17] But those are merely the basic ones, providing

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16/ The discussion here is based on Koopmans [1957] and Kurien [1970].

17/ We are aware that there are certain weaknesses or scope of confusion in the principles enunciated by Marx [1859], e.g. the question of correspondence between the base and superstructure or whether property relations always express correctly the relations of production in legal terms. However, we contest that these are fundamental weakness of the principles. We submit that these are not sufficiently specific and need improvement. Once a set of postulates has been adopted, the subsequent reasoning may prove such weakness of the postulates [Koopmans, 1957: 133]. Those may be modified or completely rejected depending on the nature of the weakness. We certainly agree that the former is the case for the guidelines, though we are not the ones capable to undertake the task. Instead, we have specifically referred to the criticisms and clarifications of expressions in the Preface whenever we have entered into the discussion of these principles.

for a very preliminary approximation to a wide variety of realities. By specifying certain additional premises we restrict the scope of the model to deal with a narrower variety of realities but at the same time, create a condition for reaching closer approximation to reality.

The presentation therefore, starts with the description of the additional premises. This enables us, through the use of certain basic principles, to reflect more concretely - the indigenous irrigation system of our concern. The specification of the characteristic productive forces, production relations, superstructure and levels of consciousness along with the basic principles of political economy (Marxist) therefore, constitutes the premise, the postulates of the model. Once the set of postulates has been adopted, logical reasoning lead us to develop the implications of the model - the functioning of the system, which is verifiable. Obviously one such set of verifiable implications is the phenomena observed at the investigation stage, the same set of phenomena which led us to identify the additional premises that characterise the system and the unit of our concern. But we need not restrict ourselves to that alone. Some of the additional premises may be representatives of only a limited number of empirical situations, but others may be valid over a wider

scope.[18] We may select out such generally valid premises and through the use of those may deduce implications which should be valid in relatively more general cases. The presentation also includes such successive generalisations using this principle. The different chapters describe more specific and more general models. The premises of the specific models include all the premises of the more general models[19] and therefore, in the context of empirical reality, the implications of the more general models should also hold good for the empirical cases explained by the more specific models. In the observation and analyses however, it is not possible to express meaningfully all aspects of a concrete situation through the study of a single situation. Therefore, in the presentation here, the models differ in their scope and every chapter intro-

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18/ These properties of a model have been brought out by Kula in the following paragraph:

> "If the elaboration of a theory is not to be a mere intellectual game, the premises taken as a whole must correspond to the existing conditions in the society under examination. Such a theory, once constructed, will be valid only in relation to the societies (known today or to be discovered tomorrow) in which the elements comprising our model are actually present. The more elements we introduce into the model, the richer will be the theory we construct; but the number of societies to which this theory could be applied will decline commensurately." /Kula 1976: 207

19/ Since all of them include the "guiding principles" of political economy (Marxist) the specific and general models in our presentation are specific models under the Marxist model of social development in general.

ducing a different model has different scope of explanation. "Each model is defined by a set of postulates, of which the implications are developed to the extent deemed worthwhile in relation to the aspects of reality expressed by the postulates." /Koopmans, 1957: 142/

The models which include only a limited number of postulates may appear to be simpler ones. But except in a formal sense they are not so. Representation of a complex reality with very few premises corresponds only to the essence of the complexity. The 'simpler' models are therefore, the more abstract ones; increasing specification of the premises help us to describe the reality in more concrete manner. We started with the concrete, identified many different premises to approximate our model to it and only then were we able to indicate which of these premises are more fundamental. The presentation therefore, includes a more concrete model with an elaborate premise. In the subsequent expositions, number of assumptions are much less, but the models are more abstract.

We have already noted how we propose to overcome one of the well-known difficulties in the detailed specification of the premises. The terms like 'productive force' or 'production relations', used in the basic principles are abstract concepts whose interpretations raise certain difficulties. We have discussed already that these are composite concepts and that they can be disaggregated into elements and their components

which are at a low level of abstraction of the concrete. The presentation therefore begins with the introduction of the additional premises characterising the system under study. The characteristic productive forces and production relations have been introduced component by component. For the sake of better understanding we have seperated the introduction into two chapters. Since the characteristics of the physical system under inquiry are little known we have described those in one place, in chapter II. We have gradually proceeded from the general characteristics of the char-pyne technology to the detailed introduction of the productive forces (and partly the social setting) in the unit selected for field study. Even then, only the bare essentials are included in this chapter. Some more information, interesting but not necessary for the model, have been retained in Appendix - I.

Chapter III does not merely include the rest of the premises but also the implications which follow logically from them. As implications we obtain certain behaviour as the rational ones under the given natural and social conditions and postulated economic principles. But we had also observed empirically a set of behaviour, a type of functioning of the system. Would there be any difference between the two, between those observed as facts themselves and those deduced logically from a set of premise? It may be recollected here that this indeed, is a verification of the model. If any of the impli-

cations is not compatible with the reality, the model is certainly not a correct presentation of the system under study and the postulates need revision. It may also turn out that the postulates are not sufficiently specific or numerous to have the kind of implications we are looking for. Alternatively, it may be that some of the postulates originally adopted, are redundant. In both cases, the postulates need refining. All such exercises remain in the background. The presentation includes the final set of postulates which are able to reflect the reality correctly and to the extent deemed desirable for verification. And certainly we have not waived away any factual information pertaining to the system under study, collected during the investigation stage. Those find place either in the premise or in the propositions.[20/]

In the presentation in chapter III, the two parts - introduction of the premise and logical implications of those, have not been separated in sections. It has already been indicated that in the subsequent chapters we propose to retain only certain parts of the premise and drop the rest. Therefore, a stepwise procedure of drawing out all possible implications from each particular part of the premise will make the subsequent expositions easier. Chapter III includes production relations introduced element by element for detailed

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20/ In consequence, Appendix-I contains information pertaining to the upper level of the system.

specification. The three elements of the production relation are hierarchically arranged - ownership of means of production being more fundamental than the other two. We are introducing the premise from more detailed breakdown than in terms of these elements. Some of these may be valid over more general empirical situations some others may be more specific. A definite answer about what are the fundamental aspects of production relation characterising the system in question can be obtained only through the generalisation in the subsequent chapters. But while introducing the production relations we may do it in a systematic manner by introducing the more fundamental aspects of it[21/] first. By deducting all the implications in each step we may gain some additional insight useful for the subsequent generalisation.

Detailed specification of the premise of the system and the unit under study helped us in chapter III to reflect the actual functioning of the system in great details. Once we drop many of the additional premise and retain only a few, the implications of the model cannot be so detailed. But such an exercise has some advantages. Since the model may now be generalised, not only over space but also over time, it becomes possible to study certain phenomena which may be studied only over time. In other words, such a step provides the scope

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21/ The fundamental aspects of production relations in general may or may not be the same as the fundamental aspect of production relations characterising the system.

for treatment of historical phenomena as observed hence to be explained from the model. Whether essentially the same model constructed in chapter III from the intensive study of one unit, is able to reproduce the historical instances is also an additional verification of its validity. But verification is not the primary purpose for the exercises carried out in the two subsequent chapters.

The productive forces and production relations together describe not merely the productive works. They constitute the base on which rises a superstructure and consciousness. But the correspondence between the base and the superstructure exists only in 'ultimate' sense /Engels, 1890/, only with respect to time. Every instance of short duration may not witness such correspondence between the base and elements of the superstructure. But when the scope of the model extends so as to include long period of time, such corresponding superstructure may be observed. Indeed, what we propose to study as historical phenomena, as phenomena which may be studied only over time, are the superstructural elements and consciousness. Generalization as above helps us to move much beyond the scope of study in the chapter III. The superstructural phenomena and consciousness, which were considered as external to the model presented in chapter III, may then be treated as objects of explanation.

Through the chapters IV and V we increase our comprehension of the class of model which represent the system under study. We have indicated at the beginning of each of these chapters the parts of the premise (additional to the "guiding principles" of Marx) retained for the treatment. The discussions in the chapters are only deductions on the basis of the generalised model. The plan of the two chapters, has been intimately related with the concept of unit time. What is meant by correspondence of base and superstructure only in the 'ultimate' sense is that whenever imbalances occur, given sufficient time those ultimately reach the state of balanced existence. In other words, balanced conditions are reproduced from time to time. But different social phenomena follow different cycles of adjustment. Some of these may be reproduced in a short time, some others, once being in a state of imbalance, may adjust only in a prolonged process. There are rigid social phenomena showing high resistance to change; there are flexible phenomena adjusting quickly. Obviously, different social phenomena need different units or reference period for meaningful observations.[22/] The chapters have been divided on the basis of reference period, in order to facilitate the study of different social phenomena. Since it is not possible to allow separate chapters for each different social phenomenon

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22/ Not necessarily a period covering a whole cycle of reproduction, but at least sufficiently long to permit observation of the trend.

and corresponding reference period, we have treated those as groups. Thus the three chapters chapter III to V, permit the study of three different types of social phenomena, from the quickly reproducible ones, to the very rigid ones[23], by being divided according to the reference period. Chapter III has a small reference period, a single year for most of the information. We have kept it largely as a synchronic study[24]

23/ That the correspondence between two different elements of mode of production does not occur at all instances is not true only for base and superstructure. Mao /1977/ has brought out this point in an interesting manner :

"Between superstructure and production relations, between production relations and productive forces - some say balance is only relatively attainable for the productive forces are always advancing, therefore there is always imbalance. Balance and imbalance are two sides of a contradiction within which imbalance is absolute and balance relative. If this were not so, neither the superstructure nor the production relations, nor the productive forces could further develop; they would become petrified."

The fact that the imbalance between base and superstructure endures for long, that contradictions between these two are resolved only after long struggle, has easily called attention and their 'correspondence' came to be questioned. But the imbalance and correspondence only in the 'ultimate' sense is also true for the productive forces and production relations. For them too, imbalance is absolute, balance relative. The only difference is that for them the balance is attained quickly, corresponding features are reproduced within a short time. That is why we say that there is no qualitative difference between the process dealt in chapter III with the next two. Here too, there are contradictions, imbalances and cycles of reproduction.

24/ The titles of the chapters include not merely the object of study but also the style of exposition e.g. a "synchronic" (see glossary) study of a unit instead of a descriptive one.

in order to facilitate the introduction of the elements pertaining to the model. But frequently, reproduction cycles of various social phenomena have surfaced demanding diachronic presentation. Some of these have been reproduced within the single year of reference. Some others were found to be so in a couple of years. We have preferred to waive way the single year time period (as well as synchronic presentation) for the sake of better comprehension. This chapter describes social phenomena which are easily reproducible. Chapter IV has a much longer reference period, a whole historical epoch - beginning with the colonial rule till at present. This permits the study of compatible social phenomena which need much longer time for being reproduced. The next chapter, chapter V, provides scope for studying such phenomena which are even more rigid, which may require centuries to get disturbed or reproduced. We have not specified, rather, it is not possible to specify any reference period for this chapter. Implicitly, it takes the whole historical period under the system as the reference period - the period within which even the most rigid social phenomena corresponding to the system should evolve and dissolve. Roughly speaking, the three chapters, III, IV and V, help us to understand three types of social phenomena - those related to immediate production, the juridico-political ones and the psycho-social ones respectively - which are compatible with the irrigation system. Thus, through these chapters we

hope to understand the system as thoroughly as possible. The knowledge may then be used for answering practical questions including the ones introduced in the beginning of the chapter.

A last point regarding the plan of the study. We had expressed our eagerness to use the deductions also as a verification of the model. If the model has been successfully built, the deductions should correspond to the observed reality. Since we can observe the reality and enrich ourselves with verifiable data, thorough verification may be made in chapter III. For the historical information however, scope of verification is limited though not altogether absent. We may make the comparison with only those information which are already available. But there are not many. Further, there is a difference here between chapter IV and V. For the colonial and post-independence period some concrete information are available. But for the whole historical epoch of ahar-pyne system such information are extremely rare. Therefore, in chapter IV, though it is not as thorough as in chapter III, we have referred occasionally to some established facts permiting comparison with the implications of the model. But for chapter V, not even such occasional comparisons have been made within the chapter itself, for we rarely came across any undisputed information. Such information, sometimes supplemented by conjectures made by us, has been separated from the chapter and retained as an appendix. Chapter V along with Appendix - IV provides the meagre scope of verification.

We may now summarise the basic features of data and the collection procedures. For chapter III, the synchronic study, the source is primary - collected by ourselves through on-the-spot inquiry. For the next chapter, whatever verifiable data has been presented, has been collected mostly from secondary sources. For chapter V, as we have already explained, little data has been used in the text. Whatever information pertaining to the subject of this chapter has been collected for inclusion in Appendix IV, has naturally been collected from secondary sources. However, we had to follow a thorough scrutiny while using the historical data from the secondary sources. The subjective views were avoided because those need not be true to the reality. Only material information has been retained as verifiable historical data.

A parallel precaution had to be adopted in the collection of primary data. Such situations are frequently studied with concepts and categories much too alien from the Indian reality. Those do not help to clarify the Indian situation; instead, leads at times, to draw ridiculous conclusion /Thorner, 1956/. At the investigation stage, along with other elements of conventional methodology, we had also adopted many such standard but unsuitable concepts and categories for descriptions and measurements. But in course of investigation not merely the futility were demonstrated but the suitability of some of the indigeneous concepts were also observed. Consequently, the presentation includes description and measurements in terms of categories many of which are indigeneous. Many conventional categories have not found any place in the thesis.

Chapter - II

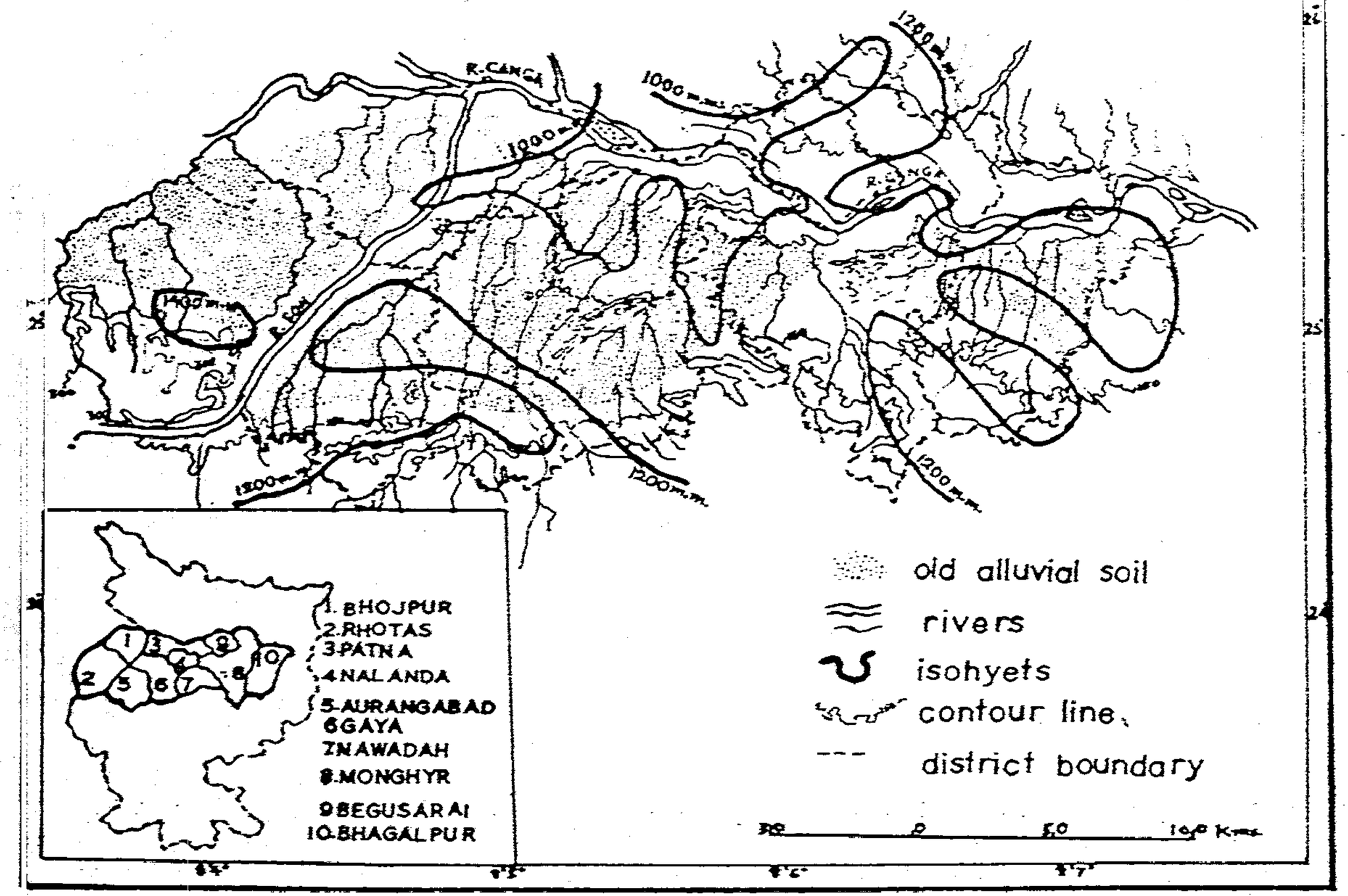
GENERAL INTRODUCTION TO AHAR PYNE SYSTEM

2.1 Ahar - Pyne Technology

The state of Bihar, extending over an area of 173.9 thousand sq. kms., is composed of three distinct geogra-phic zones : North Bihar, South Bihar and Chotanagpur. The Gangetic plain in the north half of the state is divided inthe north and south banks, popularly known as North Bihar, and South Bihar. But 'South Bihar' is not the southern extreme. Actually the hilly region of Chotanagpur is in the extreme south of the state. 'South Bihar', the southern half of the Gangetic plain, is not a plain in the true sense of the term. The plain descends gradually from the hilly regions in the south extreme to river Ganga with a slope averaging roughly a metre per kilometre. That of course, is only the average; the whole region is an undulated terrain sprinkled with numerous outlyers of the Chotanagpur highlands. (Ahmad, 1965; Singh and Kumar, 1970).

Average rainfall is low, about 1000 millimetres around Patna. This is rather inadequate for cultivation of wet rice varieties. In addition, variations in rainfall are high, and because of the slope rainwater drains out quickly. In fact the conditions are so adverse that normally the cultivation of rice would have been an impossibility. But it has been made possible by an indigeneous system of irri-gation known as the ahar-pyne system.

Figure - 1 : PHYSICAL MAP OF SOUTH BIHAR



A large number of small rivers, rising either in the Chotanagpur hills or downwards in the plain itself, cut across the length of the South Bihar plains to meet Ganga or its tributaries. Most ot these rivers remain dry for the major part of the year. But during the rains they swell up into rushing torrents to discharge the water quickly to their confluences. At times the force is so high that the discharges overtop the banks and flood the adjacent country. Thus the recurrence of flood and quick loss of water are the twin difficulties which the settlers in this plain have to face. But both of these difficulties have been overcome by the system of indigeneous waterworks which, by using the knowledge[1/] of the characteristic terrain conditions, did not only divert the run-off water to the desired direction but also made it available for irrigation purposes. The knowledge has been used (i) to create surface-drainage tanks called ahars at stratergically selected positions so that much of the water flowing over the country gravitates towards these tanks and is stored for future use in agriculture, and (ii) to breach the rivers and rivulets in strategic positions so as to lead water from them to artificial channels called pynes used for similar purpose.

An ahar consists of a major embankment (alang) across the line of drainage, with two side embankments (bandhuas) running backwards up the line of drainage, gradually loosing their height because of the gradient of the terrain. Thus,

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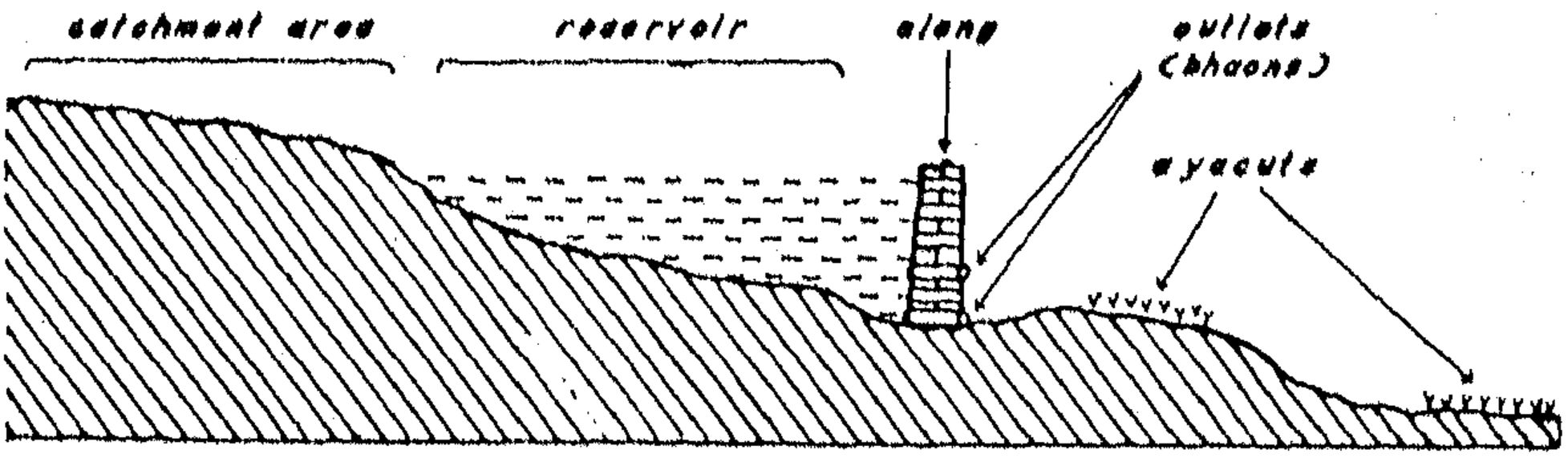
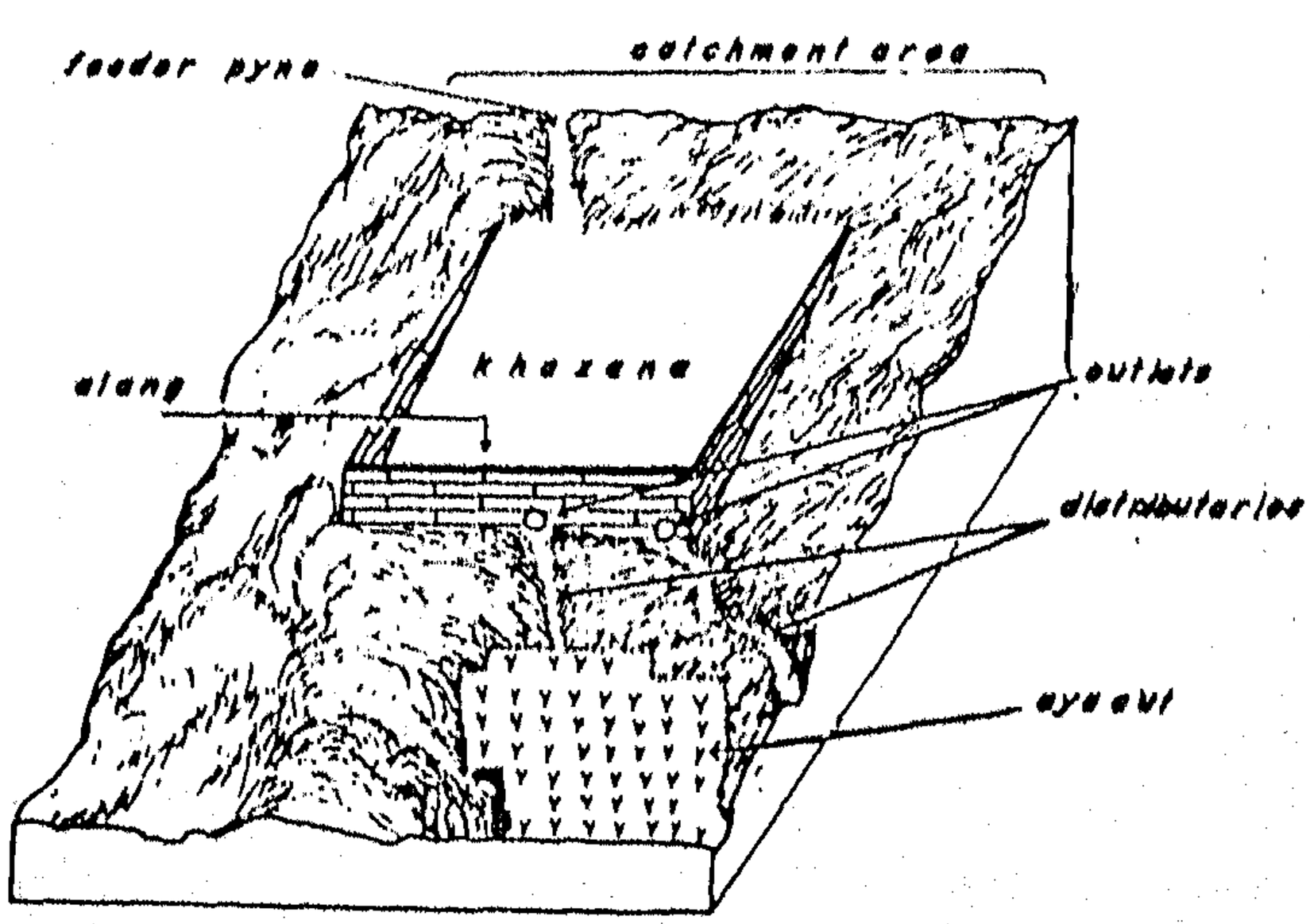
1/ Note that it is an element of productive force.

Figure - 2

SKETCH OF AN AHAR



LONGITUDINAL VIEW



THREE DIMENSIONAL VIEW

an ahar resembles a rectangular catchment basin with only three embankments (see figure [illegible] - 2), the fourth side being left open for the run-off water to enter the reservoir being guided by gravity. The ahars are very different from the regular tanks; neither are their beds dug like the tanks nor do the tanks possess elevated embankments like the ahars.

Ahars receive their supplies after rainfall in the catchment area. The run off water enters through the high side and collects in the ahar bed. Sometimes pynes are impounded into the ahars, supplying water from adjacent rivers. The reserved water, because of the physical structure of ahars, has maximum depth near the alang. The elevation of the embankments range at times up to a couple of metres. For the purpose of irrigation, water is drawn out through controlled sluices at the base of these embankments (alang) and is led into agricultural fields located at still lower levels through open channels. Sluices may be located at different heights in the alang. Those at higher levels may still have sufficient height to permit for gravitational flow into nearby areas, while those at the base may require long channels to pass through before those reach the ground level for facilitating irrigation. In other words, the sluices at higher levels may be used for irrigating adjacent areas while those at the bottom can only be used for irrigation of distant areas by leading those through longer channels and allowing the water level rise gradually because of the slope

of the country. Unlike in dug out tanks, in irrigation from ahars mechanical water lifts are not necessary.

Technically these channels are the same as pynes, though the name pyne is generally not used for such distributaries. Any channel constructed in this country possesses an interesting feature. Because of the terrain gradient, the depth of such channels can be reduced gradually while they still retain sufficient slope to permit downward flow of water. As the channels travel long distances and their bottoms rise gradually, the levels of water flowing through these too rises gradually ultimately reaching the ground level or even above that. The water can be tapped and used for gravity irrigation if only the channels are long enough. Pynes are generally the names used for such channels which draw water from diversion of the rivers - we have already discussed that the country is cut across by innumerable small rivers. The same principle is followed in the construction of branches, sub-branches, distributaries, field channels as well as for distribution from ahars, although these are not generally called pynes. The branches reaching many other villages are called sakh, darsakh etc. The distributaries and field channels from both ahars and pynes are called by such names as karha, bhokla, terua, although there is no hard and fast rule about the names. Some of the pynes are very long with several branches and are referred to as desiain pyne, meaning 'with ten branches'. Others may be smaller. Many of these pyne systems meet ahars and supply water to them.

. For diversion of water from one stream to another it is necessary to cut off further flow in the source stream and direct it to a new stream. This is effected by erecting temporary embankments in the beds of the source streams beyond the point of diversion. Accumulating water then finds its outlet. Although based on the same principle, the training works of this type vary in size from small works over field channels to large works capable of arresting torrential flows in major channels or rivers. The smaller embankments are called gandis, the bigger ones bandhs. Obviously, the construction of bandhs require thorough knowledge and specialised skill in many subjects, be it the choice of location or the choice of materials or worksmanship.

Over large parts of the whole system water flows above the ground level facilitating gravitational flow directly. Elevated embankments are frequent over the system, in ahars and pynes alike. Breaching the embankments are enough for effecting irrigation. But it involves other works. Apart from the skill required during original construction, considerable effort is needed for the protection and maintenance of these embankments. The embankments are liable to erosion, overflow and at times even burst out. Those have to be repaired regularly. Besides, there is the danger of sudden damage which needs to be noticed immediately and rectified to avert calamity. During the monsoon period it becomes necessary to keep constant vigilance against such mishaps.

Another constant problem is the silting of the beds of these waterworks. Since many of these supplying rivers originate in the hills, they carry huge quantities of silt which in turn, gets distributed throughout the system through supply lines. It becomes necessary to undertake desilting works at regular intervals. Otherwise the beds gradually rise and within a few years it becomes difficult even to identify the original structures.

The appropriation at the field level does not require, in general, much effort. The field channels are often located above the ground level and once water is diverted into those channels the adjacent areas get flooded. The operation requires in the main, control of flows in distributaries and field channels which are effected through control at the intake points. At times gandis are erected in the beds of field channels to raise the waterlevel. But because of the undulated terrain condition there exist certain patches of land which cannot be irrigated by gravitational flow. Part of this land remains unirrigable but some part may be provided with irrigation facilities, by the use of waterlifts. If there is a supply available adjacent to the plot, be it a groundwater source like a well or an ahar or pyne, water may be lifted with some effort. The distributaries and field channels which contain water only occasionally, are not suitable for such operations. But those parts which retain some water for longer periods may be used for irrigation of small patches

in this manner. The lifts that are generally used are lever and bucket (latha kundi) or canoe (karin). Persian wheels are not used in this country. Both of these require long drawn manual labour. In each turn a karin raises almost five times the volume of water contained in a kundi but the lift is much less in height. Thus the two methods of lift have specific uses. Karin has one disadvantage however. Those are set by cutting the embankments and require ready repair. Recently pumpsets have made some headway in replacing the traditional water lifts.

It follows that the whole area can be classified roughly into two types of land : that irrigable by gravity flow and the rest. The former type, roughly the low lands, are the ones which are irrigable from ahars and pynes. The local system of classification of land in reality follows this principle. The lowlands are called dhanhar and the rest are known as bhit. A sub-classification is also made within the category bhit lands. Those which are irrigable by some means (mechanical waterlifts) are termed gila bhit (gila - wet) and the rest as dry bhit. As these different types of land are suitable for different types of crops the knowledge that has led to such a schema of classification should be appreciated for its significant contribution to agricultural production and should be included as an element of productive force.

Irrigation of land in itself has little meaning. Different types of crops require different schedules and the amount of irrigation water and supply must follow this required pattern. The discussion of irrigation technology therefore, is never complete without reference to cropping practices and water requirements. Rice is the major crop in this region. Rice, being a quick-maturing crop, can be harvested twice or even thrice from the same field if conditions permit. In adjacent Bengal two crops are quite common, though the third is restricted by the marked seasonality of rainfall. In South Bihar the deficiency of rainfall restricts it to only one crop. The pre- (March to May) or post- (October to December) monsoon rainfall remains much below the requirement for rice cultivation. It can be done only during the full monsoon period that begins around June. Even then, it cannot be cultivated in all parts. Rice plants need to remain standing in water for about three quarters of its period of growth and the rate of growth is conditioned by the availability of sufficient amount of water at the required times. In South Bihar rainfall is scanty, irregular and in addition, water drains out rapidly. Rice cultivation therefore, cannot achieve much success if it has to depend on the natural rainfall alone. The indigeneous irrigation system partly reduces the difficulties by making water available in plenty and with some regularity. Therefore rice cultivation is restricted to those parts alone which are irrigable by ahars and pynes, that is the dhanhar lands. Actually the name also means paddy lands (dhan = paddy).

Since water needs to be retained in the paddy fields, those are cultivated in small plots thoroughly levelled and separated from each other by small embankments (al). The plots are able to retain rainwater but any additional quantity required has to be supplied from ahars and by artificial means. Paddy is sown after the onset of the heavy monsoon. The water requirements are met largely by direct rainfall. Irrigation needs arise to supplement the supply in addition to direct rainfall. Particular mention must be made of another characteristic of paddy crops which largely regulate irrigation needs. The plants grow best if they are allowed to grow in dry fields for a few days. In such adverse conditions the plants attain a certain firmness which may be useful if the demand is not made very high, that is, if the period does not last too long. The operation can be avoided, but alternate dry and wet periods raises the productivity to a considerably high level. Obviously such a practice cannot be carried out under the vagaries of nature. The cultivators of South Bihar carry out the whole process by artificial means. If the plots have not naturally dried out at the required times they drain off (nigar) water from the plots by providing an outlet in the al. After a few days, if no rain has occurred, the artificial means of irrigation are used to flood the plots once again. It is understandable that such risky operations cannot be undertaken unless there is a certainty about water availability after the drying period. If ahars contain sufficient water then only one may dare to take up such an operation and increase

the yield rate considerably. Therefore, the contribution of ahars and pynes in the production process cannot be measured in actual amount of water supplied. The complicated and highly productive practices could not have been carried out if the irrigation system had not been there to ensure the supply of water.

In fact the crop practices change, not merely from season to season but even within the seasons according to the availability of water. If the captive ahar is dry a particular round of nigar operation is avoided. If the ahar remains dry for most parts of the season, the paddy crop may still grow depending on the rainfall pattern but the yield rate is low. And if there is a failure of rains too the production of rice fails. In all such conditions the cultivators can cope with the situation best by diverting their attention to other productive activities. This includes the cultivation of other land areas.

Only about a third part of the total geographic area in this tract account for dhanhar land (land irrigable by ahar or pyne). The bhit is not absolutely useless. A small part of the bhit is irrigated by groundwater sources like wells and although it requires too much of effort in lifting water, the availability is certain. These parts can be used for cultivation of valuable crops including cash crops and vegetables. But the dry bhit is also useful for the cultivation

of dry crops. The open, sandy and perfectly drained soil of the Peninsular foreland is particularly suitable for grams and other pulses. But here too the monsoonal rainfall is the only source for the minor requirement of water and humidity. The cultivation of dry bhit therefore follows the monsoonal cycle.

It is possible to start cultivation of the bhit land immediately after the first rains (March-April). Crops like marua, bajra (inferior cereals) or maize may be raised with scanty rainfall. However, heavy rainfall during the following months are not by any means rare. In such circumstances these dry crops fail to survive. Otherwise they mature by the month of bhado (autumn) and hence are called bhadai crops. Rabi crops may be sown after this, when the monsoon has just stopped and the land still retains sufficient moisture for the seeds to sprout. This includes all varieties of pulses, from gram to khesari (a cattle feed) and also wheat, barley and oilseeds. But each of these crops require a specific climatic pattern and are often damaged by the lack of humidity or untimely rainfall. The time schedule for cultivation of bhadai and rabi crops permit raising of two crops from the same land. Paddy cultivation however, engages the land for most parts of the monsoon and it cannot be used for a second time save for a few inferior cereals. Paddy is sown around July and is harvested in the month of aghan (November-December). It is therefore known as aghani rice (winter rice).

Corresponding to this pattern the cropping seasons are divided into two major and two minor seasons. The kharif and rabi are the two major seasons. A third season is bhadai. The last one is known as garma (summer), and the major produce is vegetables. Cultivation of garma crops are strictly restricted to the areas irrigated by ground-water sources and are very limited. The kharif crop accounts for the cultivation of the major part of dhanhar lands and is overwhelmingly a single crop - paddy. The bhit land, both dry and wet, may be assigned to bhadai and rabi cultivation.

Such a wide range of classification of soil and cropping seasons and the existence of many varieties of crops with different climatic requirements makes it impossible for a complete failure to occur. Whatever be the pattern in a particular year, one or the other of these crops would find it suitable. There is of course, a gradation - from superior to inferior crops. Paddy is the most important (which means cultivation of dhanhar land, kharif season). But if paddy fails because of water shortage, rabi cultivation may be stressed by advancing the period and sowing more acreage. The bhadai crops like inferior cereals are not generally of interest. But if monsoon does not break in time and paddy is not sown, more acres can be sown with marua or bajra. We need not go into the details. Suffice it to mention here that in case of scanty rainfall when dhanhar lands are of little

use, the ahar beds may be cultivated with intensity; the mechanical water lifts may be used intensively to draw the last drops of water from the surface water sources as well as for extracting more of groundwater. The cropping practice may be changed e.g. by avoiding nigar operations. An interesting feature in rabi cultivation is intermingled sowing - wheat, barley and gram are often sown together so that at least one would survive. The whole of the agricultural practice (and also forecast of climates) show a detailed knowledge of many things which have been used to cover risks against the vagaries of nature. The primary interest is of course, success in paddy cultivation and the knowledge of all these details bear relevance to the ahar-pyne system through this.

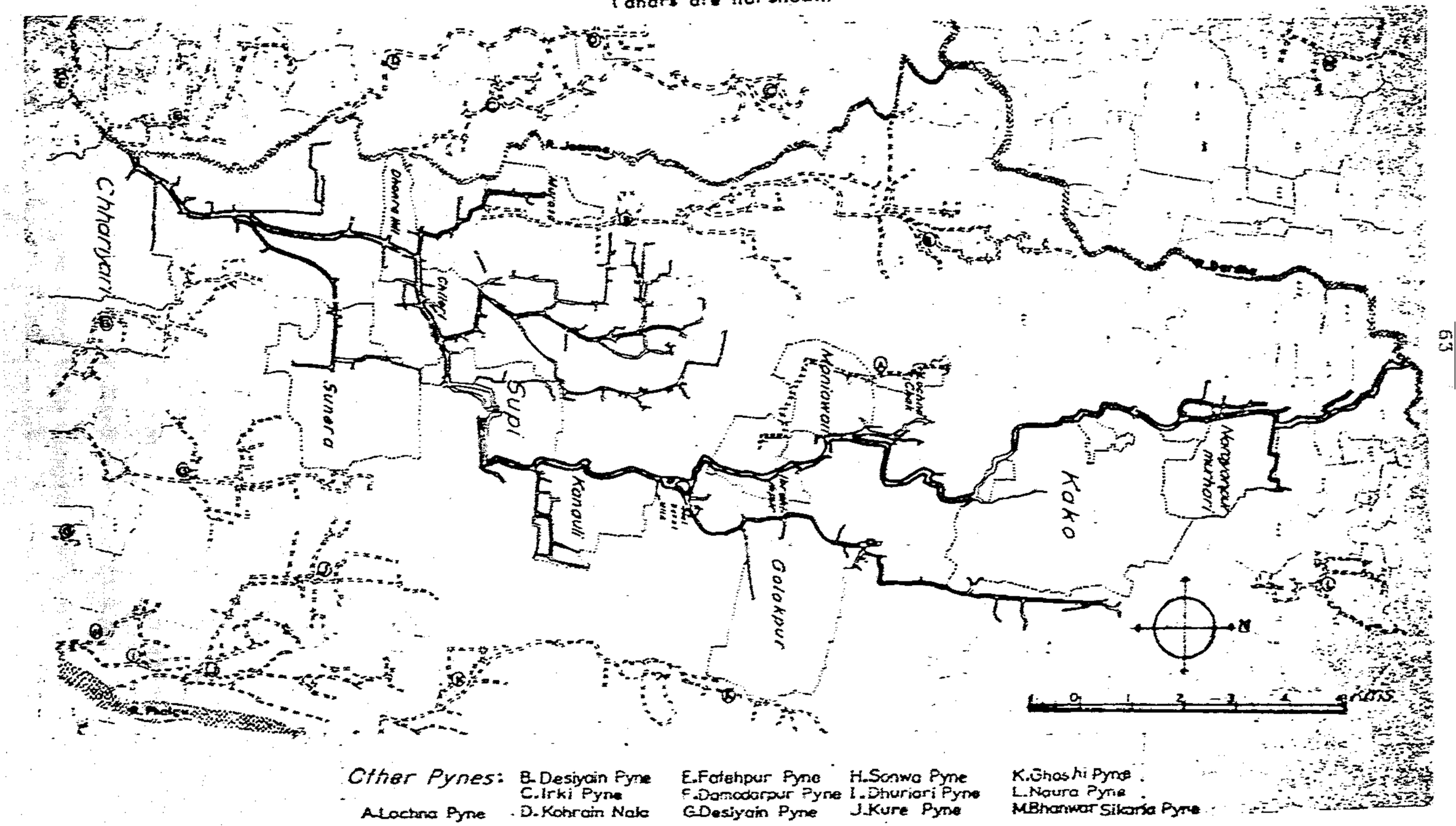
2.2. Supi Desiyain Pyne

Apart from such general information we need also to know the specific details of the units we selected for field study. Supi desiyain pyne (hereafter S.D.pyne), as it is found named in official records, was chosen for the study. The details of the pyne system as per the official record has been noted in Appendix I. Much of it is irrelevant for the presentation which follows. Therefore we will introduce only the relevant parts of the system.

The pyne originates from river Jamuna at village Chhariyari and travels a distance of almost 30 kms. before it meets

Figure- 3: SUPI DESIAYIN PYNE

(Others are not shown)



Other Pynes: B. Desiyain Pyne, C. Irki Pyne, D. Kohrain Nala, E. Fatehpur Pyne, F. Damodarpur Pyne, G. Desiyain Pyne, H. Sonwa Pyne, I. Dhuriari Pyne, J. Kure Pyne, K. Ghoshi Pyne, L. Naura Pyne, M. Bhanwar Sikaria Pyne, A. Lochna Pyne

river Dardha on the border of Gaya and Patna districts. Jamuna is a small rivulet which originates in South Bihar plains and travels about 90 kms. before it meets Dardha, another small river. S.D. Pyne is the last in a series of pynes which draw their supplies from river Jamuna. As Jamuna originates in the plains, the pyne systems emerging from Jamuna river do not suffer much from the problem of silting. For most part of the year the river remains dry. But during the monsoon period it often swells up and discharges rapidly large quantities of water which are diverted into different pyne systems. The S.D.pyne located at the tail receives only those parts which are not already diverted into other systems. However, it receives supplies throughout its course, from many other sources.

The whole course of the S.D.pyne may not be artificial. After travelling a length of about 10 kms. the pyne gets impounded in a big ahar at village Supi. It starts again from the ahar and the rest of its course, also known as Karua Nala, is considered to be natural. It might or might not have been created artificially in the past; conversion of an artificial water-course into natural drainage course has been witnessed even in this century. The flow in Karua Nala too is largely diverted into the big ahar at Kako after it has traversed another 10 kms. The last part emerges from Kako ahar and meets river Dardha after flowing through another 10 kms. All throughout this length the pyne receives supplies

of excess water from many other pyne systems and in turn discharge its excess water to many other systems. All these systems are intertwined and their parts are at times so much inseperable that it is difficult to assert technologically, which parts exactly belong to a particular system. The officials however, have administrative descriptions.

For the sake of convenience let us follow the official description. The accompanying map shows the lay out of the pyne system as it existed in the 'twenties. That is the last time such details were collected - by now some of the branches are out of function. The main pyne passes through 32 villages and contains as many as 53 diversion points (mohana). Neither the locations nor the number of these mohanas can be changed to any considerable extent, for, diversion structures from such wide channels require careful selection of locations and elaborate technical details. Some of these mohanas are permanent breaches in the embankment. Whenever water flows through the main channel a part is diverted through these mohanas. At times these mohanas are located slightly above the bottom level of the main channel so that water is diverted into these only when the levels in the main channel are sufficiently high. For such mohanas no extra effort is needed for diversion. But some other mohanas need substantial amount of work for receipt of water.

It should be remembered that the intake point of a channel should be above the level of the fields which are to be irrigated by it. Otherwise the gravitational flow of water does not occur. Because of this reason some of the mohanas cannot reach below a particular depth. Thus many mohanas are located above the bottom level of the pyne. If the height above the bottom of the pyne is less, during the high tide periods the main channel may reach a sufficiently high water level so as to get diverted naturally into these mohanas. But those which are at still higher levels require special training works. The simple process is to erect an embankment in the bed of the pyne and cut off further flow downward allowing water to collect before the embankment and gradually rise in height ultimately reaching the required level. The process cuts off completely any flow of water down the embankment, but it can be resumed by removing the obstruction. These bandhs (sometimes also referred as gandis) are generally made of soil but some of these have been converted into masonary structures with sluices.

Once in a while the main channel passes through depressions in land where the adjacent plots are at lower levels and the flow has to be contained in elevated embankments. The diversion in this case is effected by making a breach in the embankment. It has to be repaired to restore the downward flow.

For the S.D.pyne system only two mohanas may receive water supply in this manner. The rivers like Jamuna, originating in the plains do not carry silt and in consequence, their beds are deep. The pynes originating from such rivers too are therefore deep, making diversions difficult. But the same reason eliminates much of the necessity of repair works. Absence of erected embankments, and silting problem imparts some amount of permanency to the structures. The main channel of the S.D.pyne system particularly the Karua nala part does not need much of repair work. May be this has contributed to its description as a natural watercourse.

Apart from the above methods of diversion, sometimes a mechanical waterlift like karin or latha kundi can be used for diverting water into adjacent plots. The deep bed of Karua nala restricts the use of karin over most parts and latha kundi is the major mode. At times however more than one karin are used in a series to raise the water. Obviously this method is able to divert a very small amount of water.

Out of the 53 mohanas as many as 12 lead to channels which travel through more than one village. Such channels are called branches (sakhs) though there is no reason that these will be necessarily longer or will carry more water than the channels which do not reach beyond a particular village. Probably social, rather than technical reasons are at the back of such a classification and at this stage we

need not pay much attention to this. However, it may be added that by this description the S.D.pyne system contains 12 branches and hence is the name desiyain pyne. Also that these branches reach an additional 28 villages apart from the 32 through which the main channel passes.

Water is diverted through these 53 mohanas to may other channels, some of which open directly to agricultural fields. Many of these branch channels are quite large and have several mohanas. A few of the mohanas, in the main channel as well as in the branches (technically speaking) divert water to ahars for storage. The whole system feeds as many as 19 ahars, and 7 of these are served directly by the main channel. Although many more mohanas are used for direct irrigation from the main and smaller channels of the pyne system, together they divert much less water and benefit much smaller areas compared to the volume of water appropriated or area benefited by the ahars. In a sense therefore, the primary purpose of the pyne system is to supply water to the ahars.

The main channel does not contain water all the time, though during the monsoon period it rarely becomes completely dry. Because of rainfall in the catchment basin or release of surplus water from many other pyne systems above it, there is some water in the main channal for most of the time. But such water is of little use for irrigation except for irrigating small patches using karins. Once in a while a substantial volume of water flows through the main channal. This may

happen following heavy downpour in the catchment basin of the S.D.pyne system or even in the far south, in the catchment area of say, river Jamuna. At such times the pyne may be enriched by receiving substantial volume of supply from Jamuna. But Jamuna is not the only source. Some other river may carry run-off water to enrich its own pyne system and in turn those pyne systems may also release surplus water to enrich ahars such as at Supi or Kako. When the ahar is full the surplus water is again drained out from the ahar which rushes in rapid stream through respective parts of Karua nala. At all such times the major part of diversion is effected. Water enters through the mohanas either naturally or by being directed through artificial works. The amount of water appropriated depends on (i) the height of the intake point, (ii) the size of it and (iii) the duration of the flow. Alternatively, by regulating these, the proportion of water allocated to different mohanas may be regulated.

We have selected a part, at the middle of the S.D.pyne system for intensive study. Therefore, before we close this section let us introduce with some more details, the appropriation techniques at the middle part of the main channel. Water received from many different sources, not merely from the first part of S.D.pyne, collects in Supi ahar. One of the major sources at present is the surplus water released by the partly completed Uderasthan Irrigation Project on Falgu river. Whatever be the source, when the ahar is full, excess water is

drained out by making a deep scour (khanr) in an embankment, which then flows into Karua nala. Although the nala contains some water for most of the time, this flash flow provide the major part of supply.

It is understandable that such rapid flow cannot be resisted by simple structures. It requires substantial effort to erect strong embankments to withstand such force and they are therefore very limited in number. Only three such bandhs are erected over the ten kilometres length of Karua nala before it is impounded in the ahar at Kako village. The first of these is erected at village Kanauli to divert water to its captive ahar. This is done in the traditional manner, using bamboo poles, bundles of straw and clay. It cuts off further flow into Karua nala and after some time either is removed or washed away by the force of water whereby flow is again resumed. The second bandh (Goh bandh) is erected near the village Qazi Sarai Milk. This too is a traditional type and needs to be erected every time that the diversion of water is necessary. It feeds a long channel going through many villages but mainly feeding an ahar at village Golakpur. This bandh does not completely cut off the flow downstream in Karua nala since a part of it bypasses the bandh through another channel. The last of the three bandhs is erected at village Ibrahimpur to provide water supply to the ahar located in the adjacent village Maniawan. The base of this bandh has been converted into a masonary structure

(chahka) with sluice (patri) facilities. But earthen embankment has to be erected above this masonary structure. The advantage of the masonary structure is two fold : the earthwork may continue even during the steady flow period since water is allowed to drain out through the open sluice, (ii) the bandh does not cut off the flow completely necessitating its removal and rebuilding every time. It may be retained as long as it survives.

In its course up to Kako ahar, Karua nala contains 18 mohanas. From three of these mohanas water is diverted through the erection of bandhs, into ahars. The rest are always open and receive part of the flow. Practically every mohana is located above the bottom level of the nala and unless there is sufficient flow, water does not enter into those. Small gandis, which may resist the steady stream or or karins may be used to divert water into these mohanas. Total water appropriated however, is very small in amount.

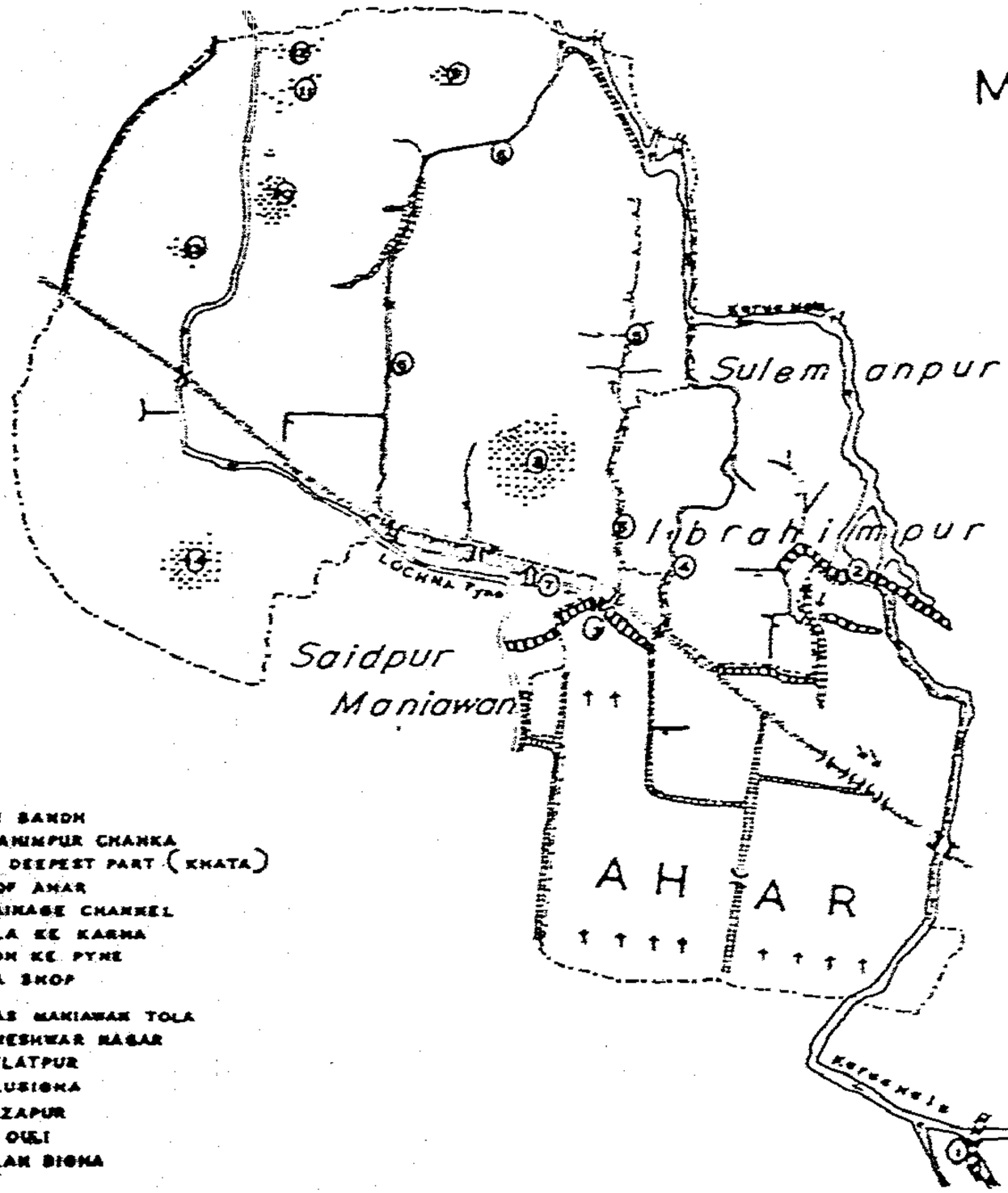
2.3 Maniawan Ahar

In order to divert water to Maniawan ahar it is desirable though not essential, to remove Goh bandh and erect Ibrahimpur bandh. Once the Ibrahimpur bandh is erected, water collects before the band gradually rising in height and ultimately rising above the low lands, that seperate Karua nala from Maniawan ahar, to enter the ahar. It is difficult

Figure - 4

MANIAWAN VILLAGE
& AHAR

0 ½ 1 kms.



to erect a bandh on a rapid stream though that is not impossible. Ibrahimpur bandh is erected during the dry spell in Karua nala and the process is further facilitated by the fact that there is a chahka installed at the base of the bandh which drains out the steady stream. However, once in a while the bandh gives away to the force of the water if it is not properly constructed or if the force is too high. If the ahar is not already filled up it becomes essential to reconstruct the bandh even during the rushing stream. It is a difficult task and can be accomplished by making an elephant stand before the bandh location to block the flow partly while erecting the bandh quickly in its shadow. Otherwise, the stream remains untapped and one has to wait till the next dry spell for erecting the bandh and the next flash flow for filling in the ahar.

Even if the ahar was already filled in, there is a danger that in case the Ibrahimpur bandh collapses the flow would follow a reverse direction; the water stored in the ahar would drain out through the adjacent lowlands back into Karua nala. To protect against such outcomes the whole ahar is divided into several compartments by erecting embankments within the ahar bed. The embankments are fitted with small outlets which are generally left open for free flow of water but are immediately closed if the bandh shows any sign of weakening. It may be seen from the map-4 that the ahar in the Maniawan village is not fully rectangular nor does it possess only

three embankments. It is divided into several different parts by embankments in the middle as well as by the Jehanabad-Ghosi road embankment. All these embankments are fitted with hume pipes which may be closed when required.

Maniawan ahar is not fully rectangular. The embankment of Karua nala serves as one of its side embankments. The alang however is the main structure which gives it a different appearance. The alang is quite irregular in shape, part of it lying on the south side of the road and another part on the north. Such a shape has resulted out of careful seperation of highlands from the lowlands suitable for storing water. The slightly projected extreme north-west part of the alang has the maximum depression and therefore stored water in the ahar tends to flow to this part. In fact this area contains some water almost throughout the season and is referred to as pokhra (pond). The outlets are located in this part since that ensures drainage of maximum of the reserve water in the ahar. The side of the projected part of the alang has a spill over system (kanwa). When the ahar is full, excess water spills out of this cut and is led to meet Karua nala beyond the Ibrahimpur bandh location. In this way the ahar is protected from being burst. If the Ibrahimpur bandh is still in shape, once the ahar is full, excess water bypasses the bandh and returns to Karua nala through the drainage channel. The provision of such an alternate course for flow of water eliminates the need of destroying Ibrahimpur bandh

for resumption of flow in Karua nala. The earthen bandh, however, erodes out and collapses after some time; in certain years of heavy monsoon even twice or thrice in a single season. It is possible to introduce a permanent masonary structure with sluices to replace the old chahka and the old technology.

The soil required for the earthwork of this bandh is collected by digging an adjacent piece of land which has by now, become a deep pond and retains water for a long time. It is becoming increasingly difficult to get soil for the bandh. The soil required for repair of ahar embankments is collected by digging land near the projected extreme part. The depression (Khata) therefore increases constantly and part of it has already turned into a pond. The rest of the ahar bed (excluding khata) is called khazana and is used for cultivation, apart from as storage.

Once it is full the ahar can retain water for about three weeks. If it does not receive further supply during this time it may dry out due to evaporation alone. The command area of the ahar is, by a rough estimate, about 800 acres. Three major channels, all drawn from the khata part, account for the major part of this. In addition, there are some minor channels drawing water at convenient locations, from the ahar or the pond near Ibrahimpur bandh. The small channels from ahars do not have the outlets at the base of the alang. Those are almost at the top and therefore, may receive

water only when the ahar is almost full. It is only the three major channels which have outlets at the bottom of the alang and therefore can draw practically the whole of the water the ahar contains.

There are altogether four outlets (bhaons) at the khata. One each lead to the two smaller channels called Bala ke Karha and Badh ke Pyne. The two other bhaons, one located above another, both lead to the third called Lochna Pyne. The bhaons are made of hume pipes and are closed and opened from the other side of the alang. The two openings of Lochna Pyne are located below the level of the two other outlets. Thus Lochna pyne is able to receive water at double the rate of either of the two others. In addition, it is also able to receive some supply when the water level in the ahar has fallen below the level of the outlets for the other two channels.

Of the three, Bala ke Karha lies on the extreme east-side with its outlet at the highest level and irrigating fields nearest to the ahar. As the name indicates, it flows through sandy (Balu - sand) soil. As such, it requires regular desilting. Its command area is about a hundred acres. Several field channels (bhoklas) carry water to the farthest corner of the command area. At the margin its ayacut gradually dissolves in the ayacut of Badh ke Pyne. Excess water in the main channel is released into Karua nala, but that in the

bhoklas is released into the drainage channel on the east and into Badh ke Pyne ayacut on the west side.

The distributary Badh ke Pyne is led first westward along the road and then its course is given a turn towards the north to reach a natural depression which is the ayacut. Whenever water flows through the channel it overtops the banks and inundates the whole of the depression. This distributary therefore, does not contain any field channels. The method of irrigation is from field to field (khetakheti). There is no watershed between this and the Bala ko Karha ayacut; the two are at two different levels. The ayacut of Badh ka Pyne is enclosed by uplands on both side and has a tendency to get waterlogged. The channel is therefore carried through the depression by enclosing it in small elevated embankments. It is drained off in Karua nala. In fact the nigar operation can be carried out only with difficulty and it often fails, since following mild rain in the village the channel may carry run-off water in sufficient amount to overtop the banks. As such, this ayacut is inferior to Bala ke Karha ayacut from the point of productivity. Desilting is not important but the embankments have to be repaired regularly. The command area of Badh ke pyne is about 150 acres.

On the extreme west is Lochna Pyne which serves almost two-third of the total command area of Maniawan ahar. Lochna Pyne is drawn at the lowest level of the alang, has a deep bed

and rises to the ground level only after it travels more than two kilometres. As such, the whole of its command area lies beyond this distance from the ahar. A few adjacent plots may be irrigated by the use of mechanical water lifts - but that is too small. Like Badh ke Pyne, Lochna Pyne too is led first westward and then towards the north. The embankments of Lochna Pyne get damaged frequently due to natural erosion as well as due to karin operations. It requires repair works regularly, at times twice or thrice in a year.

Besides these three major channels, small patches of land are irrigated through smaller channels. The land lying between Lochna Pyne and the road is lowland and is irrigated by a small bhokla drawn directly from the ahar, at a very high level in the alang. Similarly, on the north-east side of the alang too there is another bhokla. The initial part of Badh ke Pyne retains some water for days even after the bhoklas are closed. A small bhokla uses this water for irrigation. Similar arrangements exist near the pond or the drainage channel. The plots adjacent to Karua nala may use water lifts for irrigation. But altogether these account for about 30 acres at most. The quality of available irrigation facilities too is not very high.

2.4 Revenue Village Maniawan

For detailed studies we have focussed our attention on one irrigation unit at each scale - on Bala ke Karha, on Maniawan ahar, and on Supi Dosiyain system. Since the information is available according to administrative units, a comparative picture between the irrigation and administrative units will be of help. The revenue village Maniawan includes :

(i) the ahar as its southern boundary

(ii) most parts of the land irrigated by Bala ke Karha, though a small part has been included in village Ibrahimpur

(iii) the whole of the Badh ke Pyne ayacut

(iv) that section of the Lochna pyne which is not fit for gravity irrigation

(v) the uplands on the south and west of Lochna pyne which are not irrigable by any other surface irrigation work. The adjacent villages too have, or in the past had, irrigation works. The watersheds between those systems and the Maniawan ahar system has been divided between those villages and Maniawan village. The eastern boundary is marked by the deep channel of Dharaut pyne which is dead at present.

Except for a small part, Karua nala describes the eastern boundary of the village. A small part has been included in village Ibrahimpur and the diversion structure for Maniawan

ahar is located on this part. Therefore it is called Brahimpur bandh.

The total area of Maniawan village is 874 acres. Out of this, the ahar accounts for about 200 acres and command area of the ahar for about 250 acres. Lochna pyne does not serve the irrigation needs of land in Maniawan. Thus two-third of the ahar command area lies outside the village.

Large parts of the village land is upland. The residential localities are situated in these uplands in order to avoid reduction of irrigable lands. Altogether there are 8 tolas (hamlets). One of these is uninhabited. The biggest tola, Khas Maniawan is located on the highlands adjacent to the head of the distributary Bala ke Karha. As such, it is also nearest to the ahar, the khata in the ahar and Karua nala. Another big tola, Daulatpur is located at the head of the ayacut of Badh ke Pyne. Three other smaller tolas, Bedouli, Balubigha and Mirzapur are located around Daulatpur on the uplands on the west side of Badh ke Pyne. Tola Janeshwarnagar has been established in the more recent period on a piece of land donated in Bhoodan. It is a small tola located near the tail ends of the two distributaries. The last of the inhabited tolas, Jolah Bigha, is a big tola. It is located on the uplands on the south side of Lochna Pyne. The population of Khas Maniawan tola is about 1000, those of Daulatpur and Jolah Bigha about 500 each and the rest are of

the sizes of around a hundred each. The total population of Maniawan village as per 1971 Census was 2,478.

On the extreme west side of the village there is a mound on which there is a ruined structure which may be of historical interest. There is a devisthan (temple, place of deity) in Khas Maniawan tola called Kamla Devi temple. Ghoshi-Jehanabad road passes through the village and on the two sides of it are the khata of the ahar and Khas Maniawan tola. There is a tea stall near the bus stop which is very near to the tola and the ahar. These are some of the interesting features which have been referred to, in the following discussions.

The area irrigated by the ahar are dhanhar category of land. The ahar bed is known as khazana. The rest may be described as bhit. Part of this is unusable for agricultural purposes. But the rest, about a half of the total geographical area of the village is cultivable. As it was discussed, irrigation facilities may be extended to bhit lands too through groundwater sources. But this requires a lot of effort and is used only to a limited extent. Only about ten per cent of the bhit area is provided with such means of irrigation (gila bhit). The uplands around the residential localities are the ones which receive attention first and well irrigation is confined to uplands around the tolas.

Most of the lifting is done by manual labour. Of late, diesel pumps have been purchased by some residents of the different tolas including five by those of Khas Maniawan tola.

Apart from the dhanhar lands the khazana is also cropped for paddy. After the kharif season the dhanhar lands may be used for growing khesari which is a cattle feed, an important crop. The khazana however, is very suitable for cultivation of rabi crops since it contains the maximum subsoil water during the post-monsoon period. After the irrigation needs of the kharif season are met, water from the ahar is drained out, the paddy is harvested and then rabi is sown. The gilabhit is used for cultivation of cash crops. Those lands which are adjacent to the wells and can be repeatedly irrigated are generally cultivated for vegetables. Those slightly away are cropped with such crops which require less water e.g. wheat, mustard or chillies. Some of the dry bhit have good subsoil humidity and porous qualities and are cultivated for producing grams and other pulses, at times wheat and barley. Very often intermingled crops are sown in these plots with the hope that one would find the climate in that year suitable for its growth. The rest of the bhit is often sprinkled with some seeds and left to the mercy of nature for any output. This latter parts are often used in pre-monsoon period for cultivation of bhadai crops like marua or jowar. Once again these are inferior cereals and are not stressed.

The bhit land sown with wheat or barley is also sown with maize in the pre-monsoon period. Depending on the pattern of rainfall the crop schedule and cropping programmes may be changed, stressing the cultivation of those parts which have the best chances of success.

Except for the pumpsets, the agricultural implements are traditional. Improved seeds and fertilisers are used but for the cultivation of gila bhit lands. There is not a single tractor or harvester. We have not heard of application of fertilisers in any part of the two ayacuts in the whole of the village. Livestock consist of bullocks and cows, fed with straw. No field is used round-the-year for grazing.

Chapter III

SYNCHRONIC STUDY OF A UNIT COMMUNITY

So far we have described only one element of productive work - the productive forces. Those are but only a part - they do not tell us how the works are performed; whether under the brutal lashes of the slave-owners or under the keen eyes of the capitalists or under some other different system. In the present chapter we will characterise the production relations (also some other parts of the premise) which combine with the aforementioned productive forces and let materialise the productive work of irrigation. We will be concerned here with the understanding of one specific instance of irrigation work. Hence is the chapter titled 'a synchronic study', though we have taken the liberty to supplement it with diachronic information whenever such interesting information has been available.[1/]

The synchronic study refers to a unit of irrigation work at one instance, i.e. at a specific locality in a single year (1980).[2/] The unit of work studied is the irrigation works at Bala Ke Karha, and includes tasks internal to Bala

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1/ These relate to very short cycles of reproduction and could have been included in an additional (but tiny) chapter after this. But that seems unnecessary since readers may take notice of this division.

2/ Relaxed for diachronic information.

Ke Karha ayacut as well as tasks at upper levels which are essential for the irrigation of the same ayacut. The observed production relations have been categorised and then described element by element in the chapter. Each section therefore, starts with the introduction of one category of the production relations introduced in great details and used to reconstruct the actually observed productive works, in accordance with the theme explained in the methodology. The final parts in each section therefore, are rich in details of observed productive works presented as implications of the model.

3.1 Ownership of Means of Production

3.1.1 Means of Production other than Irrigation Water

(i) Ownership of land in Bala Ke Karha ayacut :

The total command area of Bala Ke Karha is approximately a hundred acres. Of these about forty acres are accounted for by irrigation ditches not available for cultivation, unirrigable uplands located within the command area and lowlands which are easily waterlogged. About eight acres out of the remaining sixty acres consist of orchards and pasture land. In the year of the field survey, altogether 52.4 acres were utilised for kharif irrigation crops. Let us first concentrate on the ownership of this area.

The total area is owned by 36 households[3/]. The topmost landholding size is 8.1 acres. Obviously the landholding pattern is highly uneven. The following table shows the

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3/ Our definition of 'household' and 'family' need to be noted since we are not following conventional definition here as indicated in the methodology. A residential household is generally described as persons taking food from a common kitchen. But such a definition is often incorrect for describing the management of landholdings. Close relatives like the brothers or uncle and nephew, though they are separated in the matter of kitchen, often follow a division of work. One member looks after the agriculture while others pursue other economic activities inside the village or as migrants or remain idle due to old age. Such a division of labour can easily be pursued when the landowners work mostly in the supervisory capacity employing tenants or agricultural labourers. It is not an uncommon practise. In reality, in all such cases, the residential households have been separated but the agricultural households have remained undivided. This is so, very often in the legal sense too. The original records of ownership in the name of the late father may not have been recorded separately against each different brother. The actual agricultural operations too are conducted by one person among the joint owners. In the foregoing section we have used the term household in this sense, as actual agricultural units. Those are not necessarily the same as households taking food from a single kitchen.

A third concept of household exists in the village. Under the public distribution system ration cards are issued against 'families' as units. Although the quantities distributed are generally proportionate to the number of members, sometimes certain specific items are distributed in the same quantity against each card (family). Evidently, it is advantageous to hold more cards and therefore many a household actually taking food from one kitchen has been shown as more than one family unit in the public distribution register. This is the third concept of household that is identifiable in the village.

We have used the term 'family' following the public distribution records & the term 'agricultural household' or simply 'household' the agricultural units. The term 'household' has never been used in this thesis to denote persons taking food from a common kitchen.

distribution of different fractiles arranged according to size of landholding in the 52.4 acres area described above (not the total landholding size of the household).

Table 3.1 : DISTRIBUTION OF IRRIGATED AREA ACCORDING TO HOLDING SIZES

Sl.No.	fractile group	total area owned (acres)
(1)	(2)	(3)
1	top 10 households	34.3
2	middle 10 households	11.9
3	lowest 16 households	6.2
	TOTAL 36 households	52.4

However, excepting a handful of small cultivators (not even all of them) all the landowners have their total holdings divided in several parcels. By parcels we do not mean plots separated by als. Separate plots adjacent to each other are considered as a single parcel. Parcels are parts of holding of a single owner which do not have common boundaries. The following table shows the average number of such parcels for each fractile group.

Table 3.2 : AVERAGE NUMBER OF PARCELS IN EACH FRACTILE GROUP

Sl. no.	fractile group	average number of parcels
(1)	(2)	(3)
1	top 10 households	6.9
2	middle 10 households	4.6
3	lowest 16 households	2.2

The distribution of these parcels follows an interesting pattern. With rare exception, the total landholding in the particular ayacut of any particular household is distributed in parcels located in such a manner that the household possesses equal interests in both the head and the tail of the distributary.[4/] Exceptions are there, but are confined to the lowest size holdings. In the bigger holding sizes no exception was observed.

4/ We have considered only the actual landholdings not the juridical ones. Here is an interesting case that will make it clear. All but one of the watercourses are recorded in the village settlement record as gairmazrua am, meaning owned by the government for public uses. One bhokla however, was recorded during the survey and settlement operations in the early 'twenties as privately owned by an owner of an adjacent plot. It has come to the notice of the owner only recently, in course of the scrutiny of the old village map during the Revisional Survey and Settlement Operations that is

contd...

We have brought out this geographic distribution pattern in the accompanying figure-5. The locations of each of such parcels may be expressed in co-ordinates. The effective location of the total landholding belonging to one particular household may then be described as the resultant co-ordinates obtained by adding different parcels with their areas as weights. Figure-5 shows the irrigated area in the B.K. ayacut and the effective locations of landholdings of each of the top 10 and the middle 10 households. It may be noted in the map that the effective locations of total holdings (in ayacut) of these households are scattered over a much narrower area around the middle part of the irrigated ayacut.[5/] Since the

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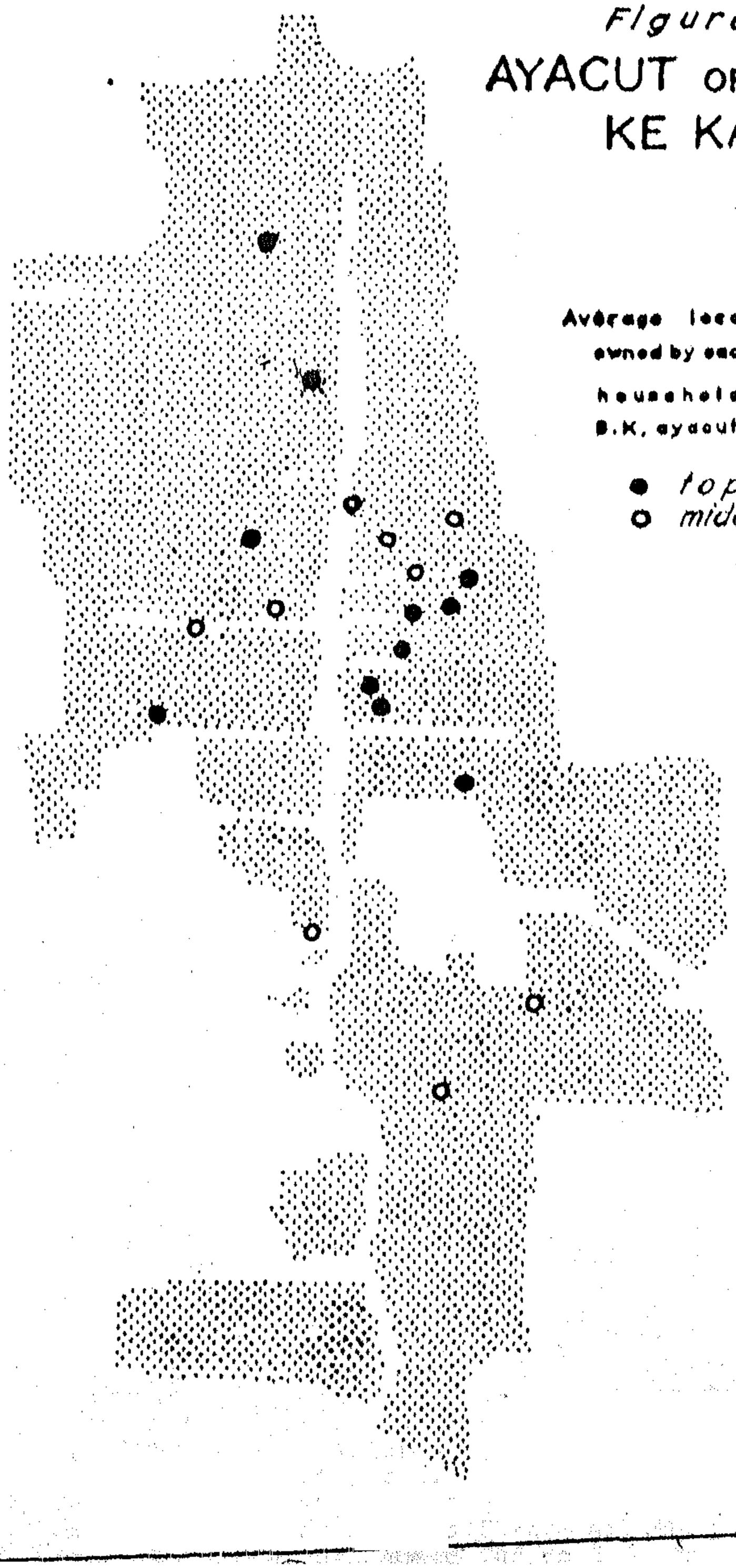
going on at present. The person does not want to relinquish his title but has not shown any initiative to convert it to privately used; the plot still serves as a bhokla benefiting several members. We have not considered this plot as privately owned. We are citing this minor case as an additional case in point to stress the necessity of making a distinction between formal and real categories for a meaningful study. In a hypothetical case where many of such watercourses were written as privately owned, the use of juridical ownership instead of the actual property relations would have prevented the discovery of any such relation amongst the parcels as noted by us. Also, this is a concerot example that formal title over property does not imply real ownership, that the juridical expressions are not always true to the real property relations.

5/ The variance of effective locations (mean location of total landholding in the ayacut for any land-owner) is only 26 per cent of the same for plot locations in the ayacut. This may also be stated as that 74 per cent of the locational variation from the centre of B.K.ayacut is eliminated for individual holdings through the particular pattern of parcellised landholding.

Figure - 5

AYACUT OF BALA KE KARHA



Average location of plots owned by each individual household within B.K. ayacut –

- ● *top 10 hh.*
- ○ *middle 10 hh.*

20 households together account for nearly 90 per cent of the irrigated area such a scatter could not have been obtained because of all landowners having their holdings located at the middle of the ayacut. It is the result of an elaborate schema of parcelled distribution in which all the major landholders have almost equal interests both at the head and the tail regions of the distributary.

We have to wait for introduction of some more of the premise before its implications are found.

(ii) Ownership of Residential Locations :

Only one out of the 36 landowners[6/] benefiting from B.K. ayacut reside in a hamlet different from Khas Maniawan tola - namely, at tola Jolah Bigha. One of the landlords is the temple (devisthan) of Khas Maniawan tola - Goddess Kamala. The temple is the village deity of village Maniawan as a whole; it is located in Khas Maniawan tola and is affiliated to the Ughara Mandap Trust of Darbhanga[7/]. The rest

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6/ Not to be confused with landlords. Many of them have very small total landholding.

7/ The temple is interesting in many respects. It has no idol and is believed to be the Goddess of water. The name is probably linked to Kamala river in Darbhanga district in North Bihar for the temple belongs to the Kamla temple (Ughara Mandap) Trust of Darbhanga. The earnings are deposited in the Trust Head Office. The regular care is taken by the Bhumihars of Khas Maniawan tola but on one day in the year the Head Priest of Darbhanga temple visits the Maniawan temple. The most fascinating thing is that this Head Priest is Gwala by caste, the other most numerous caste in the village. Although Bhumihars are considered to be higher in caste ranking to Gwalas, the priest is to be shown the highest devotion, so much so that even today the Bhumihars on that occasion wash his feet. All these indicate that the ritual has somehing to do with the water-irrigation [illegible]. But this is beyond the scope of the [illegible]

of the 34 landowners are individual residents of Khas Maniawan tola. Following the abolition of zamindari the plots in the B.K.ayacut, owned previously by the zamindar (only a part was owned by the zamindar), had passed to his erstwhile tenants residing in the other hamlets in Maniawan village. Thus, during the mid-fifties there were a sizable section among the landowners in B.K.ayacut who was not residents of Khas Maniawan tola. But in course of the next thirty years transactions have occurred in a manner effecting the present type of distribution.[8/] Some of these outsider landowners have exchanged their holdings with irrigated plots in Badh ke Pyne owned by residents of Khas Maniawan tola. Some others have sold their holdings. As a result, at present only one resident of a different hamlet owns land in B.K.ayacut (that too a small plot at the margin of the ayacut).

The following table shows the caste composition of the 34 households of Khas Maniawan tola who own land in B.K.ayacut.

Table 3.3 : CASTE COMPOSITION OF HOUSEHOLDS OWNING LAND IN B.K. AYACUT

Sl. No.	Caste	No. of households	No. of families
(1)	(2)	(3)	(4)
1.	Bhumihar	28	51
2.	Dusadh	3	3
3.	Chamar	1	2
4.	Kahar	2	6
	Total	34	62
5.	Gwala (of Jolah Bigha)	1	1
6.	Temple	1	does not arise

8/ Diachronic information.

The caste composition of the households cannot be compared directly with that of the residential community since landless families cannot be described as agricultural households even if we take the trouble of identifying others as household units. Therefore, we have transformed the caste composition of landowner households in table 3.3 to the families[9/] the unit in which, caste composition of the residential communities can be expressed. Table 3.4 shows the caste composition of different tolas of village Maniawan.

Table 3.4 : CASTEWISE DISTRIBUTION OF FAMILIES IN DIFFERENT TOLAS OF MANIAWAN

A. Major Tolas

Sl. No.	Caste/religious group name	no. of families residing in (major tolas)		
		Khas Maniawan	Daulatpur	Jolah Bigha
(1)	(2)	(3)	(4)	(5)
	UPPER CASTES :			
1.	Brahmin	5	-	-
2.	Kayastha	-	3	-
	MAJOR PEASANT CASTES			
3.	Bhumihar	79	-	-
4.	Gwala	-	-	15
5.	Koiri	-	-	23
6.	Kunjra Muslims*	-	30	-

contd...

Sl. No.	Caste/religious group name	no. of families residing in (major tolas)		
		Khas Maniawan	Daulatpur	Jolah Bigha
(1)	(2)	(3)	(4)	(5)
	TRADER & ARTISAN CASTES			
7.	Bania (merchant)	8	3	2
8.	Teli (Oilman)	1	3	-
9.	Sonar (Goldsmith)	-	3	-
10.	Lohar (Ironsmith)	-	5	-
11.	Kumhar (potter)	7	-	-
12.	Barhi (Carpenter)	2	-	1
	SERVICES CASTES			
13.	Nonia	-	3	-
14.	Nai (Barber)	2	-	3
15.	Dhobi (Washerman)	2	-	3
16.	Dom (Scavenger)	-	1	-
	TENANT & LABOURER CASTES :			
17.	Kahar (Palanquin bearer)	24	-	22
18.	Chamar	36	30	-
19.	Dusadh	9	-	7
20.	Pasi (Toddytapper)	-	5	-
21.	Mali (Gardener)	-	2	-
22.	Gareria (Herdsman)	-	-	9
23.	Beldar (Earthcutter)	-	6	-
	TOTAL	175	94	85

*A religious group not caste.

B. Minor Tolas

Sl. No.	Name of Tola	Name of caste	No. of families
(1)	(2)	(3)	(4)
1.	Janeshwarnagar	Dhobi	2
		Chamar	12
2.	Bedouli	Gwala	21
3.	Balubigha	Gwala	14
4.	Mirzapur	Gwala	18
5.	Na Chirag	Uninhabited	

A comparison between tables 3.3 and 3.4 shows that the large majority of the Bhumihar families residing in Khas Maniawan tola receive irrigation benefits from Bala ke Karha. Some families of the tenant and labourer castes too have landed interests in B.K. ayacut. None of the other castes have land in the same ayacut.

An additional information must supplement the table. Out of the 20 top and middle sized landowners in B.K.ayacut as many as 18 are Bhumihars, only one being a Dusadh. The other is the temple.

A comparison between tables 3.3 and 3.4 shows that 28 Bhumihar families residing in Maniawan tola do not have any land irrigated by Bala ke Karha. This does not mean that they are landless (nor should such a confusion be made regarding the other caste families). Indeed, all the Bhumihar caste

families have some land. The 28 families constituting 19 agricultural households have land in areas other than the B.K.ayacut, sometimes receiving the benefits of Maniawan ahar. We will come to the details of it later. Let us now turn to locational characteristics of Khas Maniawan tola and other tolas in the village without which the introduction of the premise remains incomplete.

Khas Maniawan tola is located not merely at the head of Bala ke Karha channel but it is also the nearest to Karua Nala, Ibrahimpur bandh site and the bhaons (outlets) from Maniawan ahar. It is so very near that almost all these structures are directly visible from the tola. All other tolas are more than a kilometre away from Khas Maniawan tola as well as the structures like Ibrahimpur bandh and outlets from the ahar. Tola Daulatpur is located at the head of another distributary, Badh ke Pyne. Tola Jolah Bigha is located at the centre of the unirrigable but cultivable land in the deep South-west corner of the village. These are the three major tolas of the village. Three others, Bedouli, Balubigha and Mizarpur are located around Daulatpur, hence near Badh ke pyne. The other tola Janeshwarnagar lies near the tail of Badh ke Pyne.

The proximity of Daulatpur to Badh ke Pyne is comparable to that of the Khas Maniawan tola to Bala ke Karha. Daulatpur happens to be the place of residence of the landowners appropriating the major part of the land irrigated by Badh ke Pyne. However, the concentration is not as high as in the case of

Bala ke Karha. Nearly a half of the irrigated area here is owned by landowners from the other tolas. The third major tola, Jolah Bigha, has no specific locational advantage to any of the ayacuts. Its members own mainly unirrigated (from ahar) land, but there are some who go as far as Badh ke Pyne or Bala ke Karha to own irrigated land. It may be recalled that the only outsider owning land in B.K.ayacut came from Jolah Bigha. Residents of this tola owning land in Badh ke Pyne are more than just a lone individual.

In a sense therefore, the 8 tolas of Maniawan village can be grouped into two groups:[10]

(i) Khas Maniawan and Janesharnagar tolas with 189 families defining a compact group around Bala ke Karha. Janesharnagar was established in the more recent period by the landowners from Khas Maniawan tola by donating land in Bhoodan and establishing some of the agricultural labour families from Khas Maniawan tola on those lands.[11]

10/ This is another term where instead of the concrete we intend to use an abstract concept. Description of residential characteristics according to tolas follow the concrete settlement pattern. But those do not describe the functional social group which should constitute the premise of the model. The description here will help the readers to judge how far the groups used in our premise are representative of the reality.

11/ The landlord who took the initiative for the establishment of Janesharnagar has substantial land around the place which is far off from Khas Maniawan but closer to the other tolas. I guess his consideration was to retain some persons to look after the plots by being there.

(ii) A second less compact group consisting of tolas : Daulatpur, Balubigha, Mirzapur, Bedouli and Jolah Bigha accounting for 232 families having practically no interest in Bala ke Karha. Within this group a subgroup dominated by Daulatpur may be conceived which is centered around interests in Badh ke Pyne.

One tola is uninhabited.

The major landowning caste (social group) of Daulatpur - is Kunjra Muslim. Hence they hold the major interest and are located in the most advantageous position to look after Badh ke Pyne. The major landowning castes of Balubigha, Mirzapur, Bedouli and Jolah Bigha are Gwala and Koiri who are very close in social matters and for our purpose will be treated as a single group. They have some interest in Badh ke Pyne.

It will be evident from table - 3.4 that :

a) any residential tola or group of tolas strictly excludes the members of any major landowning caste belonging to another group. Thus no single Bhumihar caste member is found to reside in any of the other tolas while no single member of Kunjra Muslims, Gwalas or Koiris are found in either Khas Maniawan tola or Janesharnagar.

b) some of the services are available locally within either of the group of tolas. Thus the families belonging to barber or washermen castes are not concentrated in a single tola but are divided between the two groups of tolas.

c) both the groups have sufficient members of tenant and agricultural labour castes.

On enquiry it was found that the landowners of Khas Maniawan tola employ, almost as a rule, tenants and agricultural labourers from among the residents of Khas Maniawan and Janesharnagar tolas as well as from adjacent village Ibrahimpur but not from other tolas of Maniawan. Alternatively, the lower caste members of these two tolas rarely find employment extended by the landowners of other tolas of Maniawan. The services of the barbers and washermen are also localised within each group of tolas. It may now be concluded that the revenue village Maniawan indeed has two groups, mutually exclusive in residential and most areas of economic activities. Further, the two groups correspond more or less to the two major ayacuts in the village. The separation is also social for the major landowners (who are also the most numerous families), since they belong to different castes.

It will be most curious to understand how these highly independent groups combine year after year for certain works of irrigation.

(iii) Ownership of land at places other than B.K.ayacut:

We have already mentioned that the scope of the present chapter is to characterise only one unit community. We had started with the B.K.ayacut and have established the correspondence between the ayacut community and the residents of

Khas Maniawan (including Janesharnagar) tola. In this section we will therefore confine ourselves to the discussion of ownership of land by the residents of this tola alone.

(a) At Badh ke pyne ayacut : Only three households of Khas Maniawan tola own land irrigated by Badh ke Pyne. All three of them are major landowners of B.K.ayacut, and the sizes of their holdings at the other ayacut is much less than that in the B.K.ayacut. Naturally, their major interest lies with the success of production at the B.K.ayacut.

As to the effect in Badh ke Pyne ayacut, all these holdings are located at the tail end of the Pyne. It may be noted that the tails of both the distributaries lie very close and the watershed is not very well-marked. It is in this area where the holdings of owners of B.K.ayacut also extend to adjacent areas irrigated by Badh ke Pyne.

(b) At other smaller ayacuts : Apart from the two major distributaries (Bala ke Karha and Badh ke Pyne), the village Maniawan receives ahar water through many other small channels irrigating a few acres. It is also possible to use waterlifts for irrigating adjacent plots while water is flowing through Lochna pyne. Some of the landowners of Khas Maniawan tola own such lands. As only a few acres are irrigated in this manner, land owned in this part by a major landowner of B.K.ayacut is of marginal importance to the owner. For those households

(including the Bhumihar households) who have no land or only very small acreage at the B.K.ayacut, ownership of irrigated land here becomes economically significant. They have interests in the ahar though not necessarily at B.K.ayacut.

(c) Land not irrigated by ahar (excluding housesites) : Such land are of two types - those irrigated by exploiting groundwater and those which are not irrigated by any means but cultivated. Traditionally, wells have been in use for exploitation of groundwater. All the major households have such wells which are also used for collecting drinking water. But well irrigation requires so much labour that it never can compete with ahar irrigation. Thus if the scope of irrigation from ahar exists no one turns to well-irrigation.

The requirement of manual labour is reduced by the use of electrical energy. Five households in Khas Maniawan tola have purchased electric pumps. But we observed during our field survey that these pumpsets have been used for irrigating plots where surface-water irrigation was not available. In the main, those are used for irrigation from wells. Sometimes those are used instead of manual water-lifts (karin or latha kundi) to irrigate plots adjacent to the ahar or pyne embankments which are not benefited through any channel. It is understandable that even in bad years, when ahar water would not be available, the use of these pumps would be confined to the same plots. Those cannot be used to irrigate the ayacut lands simply because

there is no excavated well or other water source open for the use of the pumps. No groundwater source has been worked out in the ayacuts. In fact the modern technology has been adopted only to facilitate the traditional sources of irrigation. It has not opened up new sources - the tola in question does not yet have any tubewell.

Land not irrigated by any means are owned by many a household, particularly by the lower castes. If one has a plot irrigated by ahar he certainly would treat it with more importance than unirrigated land. Others may not have any direct interest in ahar irrigation from the point of land-ownership.

(d) Ownership of ahar bed (khazana): Except for the depressions (khata and pokhra) the rest of the ahar bed is privately owned by landowners of all different tolas of the village. Inquiry about the landholding sizes of the major landowners show that all of them have total landholding in the irrigated ayacuts at least two times or more than the acreage they own in the ahar bed.[12/]

12/ At present consolidation operation is going on in the village. It may be mentioned that the villagers have insisted that the officials follow certain norms: (a) plot ownership in khazana and outside must not be consolidated and (b) the acreage owned at different ayacuts and in khazana by any landowner must be at least in 2:1 ratio.

One may question why have we not studied the consolidation operation for the parcellisation analyses. This is for two reasons. The operations are not yet completed and the period of objection is not yet over. Till then it is what the officials have thought as proper not the natural distribution. Secondly, we have to wait to see whether the consolidated holdings can sustain the irrigation system as the old system of holding did.

(iv) Property Relations other than landownership :

So far we have discussed only ownership of land. Landowners as well as landless may own other means of production. Apart from the ownership, there are many different occupations -- describing other relations with means of production -- in which people are also engaged. We have to take note of those too. Many of the lower caste families, landless or having small holdings, are employed as tenants and agricultural labourers[13/] by the landowners. Their positions have been discussed in the next section dealing with distribution of product. There are traders and artisan caste members who should have little interest in irrigation matters. But property relations describe only one aspect of production relations; it will be found that even these people may have interest in irrigation being connected to it through other aspects of production relations.

The above categories of people are different from the major land-owners of the tola. But there are some landowner households, even among the major ones in the B.K.ayacut, who have other occupations. They may have business interests outside. Some of the households have emigrant members doing service but returning to the village frequently. All these

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13/ The terms 'tenant' and 'agricultural labour' signify production relations belonging to a different system. Such expressions may not be suitable or may require redefining. We shall discuss it in appropriate place.

divide their interests and that has some implication for irrigation works. We are refraining from giving the details of such additional interests here since that will be rather, a digression from the major aspect. At our convenience, we may describe the details along with their implications in one place, after we have introduced the major aspects of the model.

Let us now summarise the above discussion on ownership of means of production. Agricultural land must not be seen as a uniform category. It should be understood as different types of property dealt with in different manner[14]. The different varieties of agricultural land include :

a) dhanhar (ahar irrigated) - i) in B.K. ayacut
ii) in other ayacuts

b) bhit (uplands) - i) irrigated uplands
ii) dry uplands

c) khazana (ahar bed)

Many of the landowners have all different varieties of land in their possession.[15] What we have discussed earlier shows

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14/ It is to be noted that there is no difficulty in extending the definition to include non-agricultural properties and other occupations. The principles noted later may subsequently be modified while implications for ayacut cultivation remain the same.

15/ On the whole therefore, distribution of landholdings in as many as 10 or 12 parcels are by no means, uncommon.

that the parcelled ownership pattern is not arbitrary, that there is a set of principles which guide the size and location of various parcels.

(1) the major landowners of B.K.ayacut, with rare exception, have only such interest which do not override the interest in the success of B.K.ayacut cultivation. If conditions permit the cultivation of B.K.ayacut, then that is the work which guarantees the best use of productive labour and no one has any reason to allocate such labour at any other place, be it the cultivation of khazana or bhit or other ayacuts (or any other economic activity) at the cost of B.K.ayacut cultivation.

(2) Within the B.K.ayacut, the major landowners, with rare exception have their holdings parcelled and located in such a manner that they are interested to get the whole of the ayacut satisfactorily irrigated.

What is meant more concretely by such implications as primacy of ayacut cultivation will be clear as we proceed further. There is a third principle which we have introduced in this section.

(3) The landowners of B.K.ayacut, with rare exception, are close neighbours residing at a vantage point from which many irrigation structures of their interest may be kept under surveillance. Its implication too will be understood later.

3.1.2 Distribution of Irrigation water (Ownership of means of production)

From the point of the final product of agriculture, irrigation must be seen as a means of production. This is why we have considered this part only a subsection of the ownership of means of production; the second element of production relations, namely, the distribution of products, does not include this. Yet we intend to discuss it as a distribution process, as the product of the ownership of other means of production, for much of it just follows from the earlier premises. Only such parts of distribution of irrigation water which are not consequences of the property relations discussed earlier, specify additional premises. By making it a subsection we hope to bring out clearly that most of this, though means of production, imply from the landholding pattern.

Water is available primarily from rainfall, no matter whether it is appropriated by artificial means. As availability (of productive force) differs from year to year, the premise of the model varies from year to year. We will discuss a single year, the reference year, as a detailed case study, once in a while touching upon the point as to what could have happened, under the same property relations, if the rainfall pattern was different.

(1) At Bala ke Karha ayacut :

With the setting of the first monsoon in early April in the year of inquiry the landowners had sown most parts of the uplands with maize or marua. The pre-monsoon rainfall was not good in that year and the cultivators fell back upon saving the summer crops as far as possible by using well irrigation. The months of May and June remained almost without rain and part of the summer crops was scorched. It was unimaginable to sow paddy in this condition.

The first heavy rains started in late June. After about two days, when the texture of land had changed, cultivators, of Khas Maniawan tola and other tolas found individually that it was the time to sow the khazana with paddy seeds. It was not a difficult decision; they just availed the first opportunity. The bed was sown almost in a single day - only some stray individuals sowing it on the next day or day after. The seeds were simply broadcasted - no transplantation was to be done in the Khazana.

After this spell of heavy rains was over, seed nurseries were sown and throughout the first part of July paddy fields were prepared for transplantation. Following the heavy downpour that occurred in the second week of July, once the sky was clear again, transplantation started. Once again, everyone began to do the same work simultaneously as soon as the sky was clear. But the areas given priorities were different for different owners.

Apparently, the B.K.ayacut was given the last priority. Almost everyone paid attention to the transplantation of this area only after the rest of his lowland holdings were transplanted. On inquiry it was found that the land in this ayacut was known to have the highest water-retaining capacity. Therefore, the rest of the holdings were transplanted before those dry up. The deferment however, was nominal. On the whole all parts of the ayacut was transplanted within a week's time from around the late third week of July. The bandh at Ibrahimpur was erected after the transplantation was over, on a Sunday by contribution of labour. We shall come to the details of it later since it involves the participation of beneficiaries of several other ayacuts too. Let us for the time being concentrate on the irrigation of B.K.ayacut.

The landowners of B.K.ayacut are close neighbours in a single tola and meet one another all the time during their normal daily routines. Among the many different subjects of talk, the agricultural conditions naturally constitute one of the most common subjects. When the necessity of irrigation began being felt by individuals, it also began being communicated without any explicit effort, in course of such discussions to other landowners of the ayacut. In particular, the lone tea shop by the side of Khas Maniawan tola, which functions like an informal club for the younger people of the tola, is the place where such discussion continues for hours. Since the time of transplantation there was little rainfall in that

year. The tea shop assembly began to lament from the second week of August about the possibility of a bad harvest. With worsening of the situation every day the lamentaries increased. They began to accuse themselves that the bandh at Ibrahimpur was erected at a late stage. Otherwise the ahar would have been filled up by collecting the water flowing through Karua Nala during the heavy downpour of late June. Once in a while, when there was a brief shower, some amount of optimism was shown among the assembly. But then it would lapse into the same depression. Talks would centre around the qualities of 'Peter' - pumpsets, now understood by the name of the Company only. Talks would waver to planning for action - they should make the Ibrahimpur bandh a permanent structure to avoid such year to year complications.

And then on a clear day in the late third week of August water came rushing through Karua Nala following a heavy shower in the far south of the district. The water faced the obstruction at the erected bandh, got diverted towards Maniawan ahar, filled it up and drained out after it was full. The next day the bhaons were opened and the ayacut was irrigated. It was a unanimous decision, for everyone of the landowners was feeling the acute need.

The particular case may be an extreme one. It may be argued that the unanimity was reached because of natural

causes - because of the long duration of water shortage.16/ But it must be noted that such is not the case. As the crops were sown and transplanted within a short span of time, as the same crop was grown with similar operations, the growth rates of the plants varied only slightly from plot to plot. The necessity of irrigation, therefore, was felt by all the landowners almost at the same time. Indeed, the discussions between the members continue in a vocabulary of commonness of the problem, not of individual problems. This may be brought out more clearly if we discuss here the next occasion of irrigation in the B.K.ayacut. After another spell of rainless days in mid-September, one by one, the landowners began to feel the necessity of irrigating the fields. The ahar contained water this time. As the owners began to voice their feelings, in about three-four days time it was clear that the task has to be undertaken. The group which had assembled in the tea shop on the afternoon of that day - I felt that after the talk began the attendance to the tea shop too had begun to increase - proposed and immediately accepted the decision to open the B.K.Karha next morning. There was little formality - it was rather trivial. If any-

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16/ That is how it appears to the villagers. Similarly, in the case of transplantation, the B.K.ayacut appears to have received the lowest importance. It must be noted that through the model we are calling attention to certain other features of the system which are latent.

thing, some young members of some of the bigger landowners of the B.K.ayacut (including the village Mukhia) was present and they too gave their consent to the decision. Asking them was rather a gesture - none in particular figured as leader in the whole process. The decision was then circulated to everyone which too was done in an informal manner. Whoever had come to know the information communicated it to the others he met throughout the rest of the day. Within the close neighbours it took little time to get circulated.

After the bhaons are opened and water flows through the distributary, the plots at the head of the channel are the ones to receive the benefit first. One of the common complaints of social irrigation systems is that the tail ends often are neglected. But in the case of B.K.ayacut practically no owner left the ayacut till the bhaon was closed. This too was secured through the characteristic property relation. As all the major landowners have their landholdings distributed in parcels in manners that make them interested in both head and tail of the ayacut, they did not lose their interest till the end. Some of the smaller ones might have received their shares rather early by having their landholdings at the head or the middle parts alone. But all those who could influence the distribution would remain interested till the end. The decision to close too came quite naturally when everyone was satisfied. In spite of highly uneven distribution of land, that location of parcels guarantee that access to irrigation water is satisfactory for all the landowners.

It may now be checked that the system may function in the same manner without much difficulty in other years when the rainfall pattern is different. The cropping and agricultural practices differ according to rainfall pattern and may be even between individuals. But property ownership pattern for every individual ensures that all of them avail the chance of sowing plots in the ayacut at one time which is the suitable sowing period from the point of rainfall pattern. Similarity in crop practice in ayacut is therefore the outcome of rational choice of individuals under the given pattern of property relations, no matter what is the rainfall pattern for a year. If the water available from ahar is not sufficient, the water-application pattern may vary. But whatever be the pattern in question, no individual landholder (at least among the major ones) can appropriate proportionately more than the others. In fact, it is technologically impossible to develop such a scheme for unequal distribution within the characteristic landholding location pattern. Individual decisions may differ no doubt, but only as individual judgements about the scientific matters, the suitable period of sowing, the optimum method of water-application etc. But an objective attitude may be maintained in such scientific discussions since no person hopes to benefit more from a particular decision. And even in spite of the objective attitude if a wrong decision is reached, everyone suffers, discouraging any question about individual integrity. The experience may have its impact on the scientific knowledge of the cultivators not on interpersonal relations.

The work organisation described for the reference year may be taken as the work organisation in general that results from the characteristic property relations. We may identify some of its distinctive characteristics. The organisation is highly informal and the participation of the landowners is spontaneous. Formal democracy is redundant since any one (or a small group) may reflect more or less exactly, the interests of the others. The role of leaders is nominal if it exists; decision making process is simple being guided by the scientific considerations but not being complicated by any conflicting economic interest. It may also be noted that not only is the equitable[17/] distribution of water effected by similarity in agricultural practices but also is the reverse process too. The distribution pattern that emerges also influence the future decision of the cultivators. Every individual consciously imitates the aggregate pattern, for that alone ensures the best utilisation of (water) resources when available. Thus, in spite of absence of any stricture or supervision, individuals decide to cultivate the same crop, sow and transplant at the same time, prepare the soil in the same manner, undertake weeding or drainage (nigar) operations at the same time for the cultivation of the ayacut. In a sense

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17/ We are aware that many different meanings may be given to the term 'equity' in water allocation /Patil and Kulkarni, 1982/. We are using the term as an internal judgment to mean such allocation patterns about which the great majority of the beneficiaries feel that there has been no discrimination.

therefore, land in the ayacut is owned individually only apparently. Individuals do not and cannot use it independently, the use is subsumed to the aggregative pattern. Like many other phenomena the property relations under the system can be properly understood as of a distinctive type, having some special features.

Although it may appear that we have introduced only the allocation process, a deeper probe will reveal that the case is not so. The organisation of work introduced here was not meant specifically for allocation of water. The procedure of decision making[18] or communication is well-entrenched in the day to day life of the resident community and any problem, including that of water allocation can be processed through it. Let us describe a few more tasks undertaken. We have already noted how the talks in the tea shop deviated into such topics as suggestions for improvement of the irrigation structure. Once again the interests here are universal; the discussions centre around the availability of resources to the community. The community does not materialise economically merely in facilitating equitable distribution of water or simultaneous operation, but actually contributes labour and finance directly to certain community programmes. The desilting of the B.K. ayacut is such a work. We observed during

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18/ We are mentioning here only about the procedure. Decisions are facilitated by the characteristic property relations.

the reference year that the decision to undertake the work on a certain date was reached easily after some discussion about the programmes of different members of the community, so as to find a date when the majority of the members would be in the village and therefore, the manpower available for work would be the highest. On the date of the goam (community labour) the able-bodied members of the landowner families, whoever was there in the village, assembled for the work. In addition, many of them had mobilised all such persons who might be asked to work. This included, in particular, the tenants and agricultural labourers attached (not to be confused with the legal sense) to all these families. There were persons even from such families of Khas Maniawan tola who do not have any direct interest in the B.K.ayacut.

We made an effort to determine the contributions per family or per household. But it was a fruitless effort. The work was not so much as to require so many persons. Therefore, people were taking it in a rather, leisurely manner. Some of them would fall out after some time and come back later. Some others came late as if to inquire, and lent their hands for some time. Many of them just flocked around the place doing this or that. The whole work might have been done by 15 or 20 people in a day. But about 60 to 80 people performed it in this manner by noon. If one abstained, it was because he had some unavoidable work. But such families were all too eager to show their support either by token

attendance or by financial contribution, worth a day's labour roughly, towards the common panchayat fund. Young members of those Bhumihar families who do not have any land in B.K.ayacut, also came with their friends and flocked around the place, sometimes lending their hands for the work. It is absurd to measure the phenomenon in terms of labour time or such things. If one appraises the whole work with the yardsticks specific to the capitalist system one would end characterising it, on the one hand as a tremendous wastage of manpower in which labour productivity is very low,[19/] and on the other hand a very efficient process from the point of cost incurred. The communal labour performed under a distinct set of production relations belongs to a different system; concepts and measurements specific to a different system cannot be applied meaningfully to describe the situations in this case.

19/ Following Kula /1976/ it may be noted here that this statement is meaningless in the absence of an alternative scope of employment of labour. In fact this makes a qualitative difference between contribution of labour and that of finance by the community towards collective works. Finance has alternative uses and rarely any effort to raise funds for innovations has been successful. The proposal to improve the Ibrahimpur bandh is a long standing one. There is no dispute about that everyone would receive almost three times in return of the total contributions made. But reluctance to deposit has repeatedly foiled such efforts. Interestingly, in 1983 the community on its own initiative has damaged the structure of the old chahka at Ibrahimpur hoping that this would increase their initiative for reconstruction.

The communal existence of individuals in the ayacut community materialises in various ways - in uniform agricultural practices, in unanimity of decisions, and in participation in the communal labour (goam), in addition to social aspects like caste connections or residential proximity. There is no qualitative difference between the various types of works above although under a capitalist system the first one (agricultural operations) done individually would appear purely as an individual process, the second one as a case of good democratic decision and the third one alone as the concrete case of co-operative work. One may even make an effort trying to isolate the last features, suggesting that voluntary labour for community labour may be secured by ensuring equitable distribution among the individual members of the community. While this is true the reverse is also true. Participation in community process alone guarantees the equitable distribution. Any one who deviates from the agricultural practices followed by the majority, be it in early or late transplantation, insufficient or excessive land preparation, isolated use of fertilisers or improved seeds, be it because of unfortunate circumstances or innovativeness, or because of many other pecuniary interests, fails to synchronise with the demands of irrigation. Anyone who resides in a different tola, often fails to receive information about the irrigation operations. This must have been the reason why land transactions in the post independence period have concentrated the ownership of the ayacut in a single tola. Even if one is

a resident of Khas Maniawan tola but is ostracised or is not in very good terms with the other members of the tola, he may fail to receive such information. There is one big absentee landlord in Khas Maniawan tola who suffers in this manner, and appears to have little interest in agriculture. Although included in the top ten in B.K.ayacut, his parcels are mostly located at the tail end and the effective location of the total holding is much at the tail end (see map-5). It may not be fair to suggest that because of this type of location he has lost his interest in agriculture, for generally the whole of the ayacut is irrigated thoroughly. Also the residents of Khas Maniawan tola who own land irrigated by Badh ke Pyne, have their holdings located only at the tail end of the ayacut. They too are not participants of the other ayacut community in the village and do not enjoy equitable share in irrigation from the other distributary.

We need not go into a detailed discussion of the behaviour of the absentee landlord family or about the non-agricultural interests of the landowner families in general. Suffice it to indicate here that the model suggests all these are permissible as long as those do not come into conflict with

the collective activities.20/ Indeed, this seems to be the reason why the concept of agricultural household has emerged as distinct from the families. Such units provide for some members of the household to engage in other activities including professional works at distant towns, while one or two of the members stay back at the villages looking after all the agricultural works. Among the landowner families at

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20/ We are not suggesting that such phenomena do not occur. The characteristic exposition of the model in this chapter must be understood clearly. Since we are interested to understand how the system functions, such discussions as what happens when the conflicts arise remain out of the purview of this chapter. We can only say that the system ceases to function properly or totally under such circumstances. In the next chapter this has been taken up. What is included in this chapter is a distinctive characteristic of our model of functioning of systems. Intrinsically we admit that such disturbances are common place and in reality a system does not persist on a precarious balance between its elements which is shattered by a small disturbance. We are trying to show here that there is a rectificatory mechanism inbuilt in the model of functioning which help to overcome many conflicting situations. A number of disturbing phenomena have been introduced in the premise of the model with the sole purpose of bringing out the rectificatory mechanism.What happens when such mechanisms fail is discussed in the next chapter.

B.K.ayacut, the single absentee landowner was the lone exception to this type of family structure. Otherwise all such families having members working outside the village are combined into single ownership units (households) managed by one of the brothers or relatives.

The division of interests in landed property between B.K.ayacut and the rest does not raise much complications. In comparison to unirrigated land, the ayacut provides a better alternative with higher labour productivity. In comparison to irrigated land in other ayacuts, B.K. ayacut is a more promising alternative for the residents of Khas Maniawan tola for its advantageous location and easily available information. Thus, as long as there is no acute chance of crop failure in B.K.ayacut, the landowners do not fail to adhere to the required community pattern ensuring successful harvest from this ayacut. Complications may arise in such cases when there exists a chance of failure of crops in B.K.ayacut e.g. due to drought or sudden breach of the ahar embankments creating consequent dearth of water in the ahar which feeds the distributary. In the reference year no such thing had happened though there was a scarcity of water.

After the transplantation was done in the reference year, the ahar remained empty for nearly a month as there was no heavy rainfall. However, short duration showers occurred from

time to time preventing the plants from being scorched. Therefore, it was not a drought in the true sense of the term, and though the produce per acre was low no complete failure of crops in the B.K.ayacut occurred[21]. And then in the third week of August the ahar received its long-awaited supply. As has already been noted, the capacity of the ahar is such that it ensures the availability of water for about three weeks from that time. If there is no rain for more than three weeks and the stored water evaporates out, shortage may result once more. But during the reference year there occurred regular rains after August and no scarcity of water was felt thereafter.

The cultivation of the ahar bed (khazana) alone raises some complexity. Although the khazana is primarily used for storage of water it is also used for harvesting some amount of crop. The khazana was sown early in the season - the idea being, if the plants grow enough in length not to be completely submerged in water after the ahar has been filled in, those would survive and would bring some output.[22] The

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21/ If a true drought had set in, the plants in the B.K.ayacut would have been scorched by this time. The cultivators would have turned their attention then on reaping some inferior cereals, cultivation of those parts which may be supplied with some water and in particular, the cultivation of the khazana which collects and retains water for the maximum number of days in comparison to other lands.

22/ The productivity is not very high for better cultivation methods like transplanting or periodic drainage of water are not carried out at the khazana.

decision, when to fill up the ahar therefore, is a complicated one. The complications are further increased by the fact that the diversion structure at Ibrahimpur bandh has to be erected during dry days and it may be a long wait even after that for the ahar to be filled in. Since all the big and medium landowners and some of the smaller landowners of B.K.ayacut have some part of their landholdings located in the khazana, all of them are interested to reap some output from the cultivation of khazana. In the reference year the construction of Ibrahimpur bandh was deferred with the expectation of a high amount of output from the khazana too. The bandh was erected in the last week of July. The seedlings in the khazana were already a month old and would have survived after the ahar was filled up. The produce from the khazana was thus guaranteed by the choice of the time for erection of Ibrahimpur bandh. But the bandh did not come to any use for about a month and the ahar remained dry. The ayacuts suffered because of the mild drought and the reduction of output was not compensated by the amount reaped from the khazana.

However, the failure affected all the community members and there was no ill-feeling between members. The delay did not benefit some particular persons. In the tea shop the subject was long debated to arrive at a better (technologically) set of practices. It may be added here that this experience

led to the erection of Ibrahimpur bandh next year at a very early date.[23] If water would have flown through Karua nala immediately afterwards, the khazana cultivation would have been completely ruined. Fortunately, there was a fifteen days wait before the ahar received the required supply. By that time the plants had grown sufficiently not to be submerged. In the same year (1981) when the district was hit by severe drought, the village, Maniawan reaped a bumper harvest from both the irrigated ayacuts and the khazana. The success led to the repetation of the same process in 1982. Probably it would continue until the vagaries of nature show, by an intricate combination of incidences, that the late erection of embankment is capable of providing more returns.[24]

(ii) Distribution between different ayacut owner communities :

The decision about the time for the erection of Ibrahimpur bandh was taken by the same group of people of Khas Maniawan tola and in the same manner as the decisions regarding the opening and closing of the outlet to Bala ke Karha. Therefore we need to study only the additional features arising

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23/ This itself supports that we are not romanticising the situation. Certainly the decision-makers in the reference year were ready to appreciate an objective point of view and admitted easily a suggestion advanced through experience.

24/ Diachronic information.

due to difference between the two types of works. Ibrahimpur bandh serves in filling up of the ahar at Maniawan and the beneficiaries of this work include the landowners of other ayacuts which are fed by the same ahar. Naturally, one may look forward for their participation. Being aided by an established decision making procedure a group may take up a decision which presume participation of others. There is nothing peculiar in it. What is unique is how such decisions are made by the B.K. ayacut community which actually succeed in mobilising others.

In contrast to the B.K. ayacut works, where the decisions have to be communicated to people residing in close neighbourhood, the task of erection of Ibrahimpur bandh has to be communicated to people residing in a much wider region. The date, a Sunday for convenience, was decided quite in advance. Unlike in the case of B.K. ayacut works, where works were organised the very next day after making the decision, here preparations were made for about three days. In addition to personal communications, a drum-beater was engaged for a day to go over to the residential localities of the potential participants anouncing the date of the community labour (goam) for the work. The wage of the beater, a nominal sum of a day's wage, was paid out of the Panchayat fund.

Participation was very low in the goam of the reference year. For certain reasons, discussed in the later section, the members of the Badh ke Pyne ayacut community had abstained.

There were some volunteers from the beneficiary villages of Lochna pyne. But the majority of the participants were from Khas Maniawan tola and Janesharnagar. In total there were only about 150 persons to attend. The climate was far different from the relaxed climate observed in the goam for desilting of B.K.karha. The amount of work involved necessitated intensive work by each participant till the afternoon.

The large scale abstinence that year occurred due to a very specific reason. We may deviate somewhat from the reference year to indicate what happens in normal circumstances. In the very next year for example, the boycott was lifted and participation for the aforementioned goam was of the order of 500 persons. The availability of so much extra manpower for the same amount of work permitted the same relaxed manner as observed in case of the goam for desilting of the B.K.ayacut.

The Bala ke Karha ayacut community does not operate the outlets of either Badh ke Pyne or Lochna Pyne. In its discussions at the tea shop, operations specific to the other distributaries of Maniawan ahar do not form a subject. However, in matters pertaining to the works of Maniawan ahar, the B.K. ayacut community enjoys the leadership position. But once again there is not even any pretension of formal democracy. Although the beneficiaries include cultivators of many other ayacuts and although their participation is presumed by the leading community, there is no formal or even extensive

discussion with them before such decisions are taken as about the date of the goam. Yet it is not possible to subscribe to the view that the leading community behaves more as autocratic since we have already seen that the others can summarily abstain from such works. The leaders do not have any legal power to force them to work[25]. In such circumstances the success of the leadership would rest on its ability to protect the interests of the follower communities and thereby ensure their voluntary participation. This include ensuring such distribution which would be considered fair by these communities and would not eliminate the trust they laid on the leading community. As long as the B.K.ayacut community shows fair amount of consideration for their interests, they too may not feel like insisting for a different type of decision making. After all, the geographic location of B.K. ayacut and Khas Maniawan tola facilitate the constant observation of the collective structures from the most advantageous position. For any other community located at a distance the same process would need much extra effort.

The collective structure like Karua Nala, Ibrahimpur bandh, the protective structures in the ahar, the outlets from the ahar, all of these are easily accessible to the

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25/ As we will suggest in chapter V, there is probably an ideological sanction. But by now the effectiveness of the traditional ideology in all such spheres has largely waned out.

B.K.ayacut community. They are the most well-informed ones and it is certainly the easiest for them to take the decision about collective works. Theoretically it is possible for them to appropriate more water depriving the other sharers of Maniawan ahar. But this is less expected firstly, because of technical reasons and secondly because of manpower necessities. Owing to the slope of the country the ayacuts located further off from the ahar are at lower levels than the nearer ones. It is possible therefore to draw water from lower and lower levels of the ahar, still retaining sufficient height for irrigation, as one proceeds from nearer to further off ayacuts. For this reason the outlet of Bala ke Karha is located above the levels of the outlets to the other two distributaries and it is not possible to empty the ahar through Bala ke Karha; the two other distributaries can never be completely deprived for technical reasons. The second reason is that of manpower requirements. We have already seen that in spite of sufficient advance notice and acknowledgement of a crisis, the leading community failed to mobilise more than 150 persons for goam in 1980 when the other ayacut communities abstained. It was barely sufficient for the work. Had there arisen during those days, a sudden emergency like the collapse of a protective structure, it is very very doubtful whether the situation could have been faced successfully. For, at such short notices evan a half of that number of people would not be available while the work to be performed against the rushing stream of water required much greater effort than the erection

of a bandh during the dry days. Such calamities are by no means rare in ahar-pyne irrigation. Works like the erection of Ibrahimpur bandh are, in a sense, rehearsals for the real challenges which arise to the community once in a while at such short notice. The ability to mobilise manpower in large excess in easy circumstances alone guarantee the preparedness for rallying against acutely critical situations. The leading communities therefore, are generally eager to show integrity and consideration. For if they fail to do so, the measures may boomerang affecting themselves.

Probably this explains why these members of the B.K. ayacut community who own some land in Badh ke Pyne ayacut hesitate to adopt certain drastic measures even if those may be advantageous for the cultivation of their plots. For example, one of the landowners has his plot located at the tail of the ayacut which gets waterlogged from the flow of water in Badh ke Pyne before it drains out in Karua Nala. The plot can easily be saved by erecting an embankment around it, but that would create the waterlogging problem for others at the centre of the same ayacut. The landowner in question does not have any interest in the central or head parts of the Badh ke Pyne ayacut. But even then he has refrained from adopting any drastic measure, though his men sometimes erect the embankment which are then cleared by the affected ones after some quarrels. In other situations the dispute would have been settled over physical clashes, but

here no such matter has ever occurred. It may be noted that many a member of Khas Maniawan tola, including some of the closest men of the same landowner, had shown disapproval of the occasional resistance put up by the landowner in question. The landowner himself did not belittle the consequences as that the affected ayacut owner community may retort by refusing to cooperate in collective works.

It is now possible to outline how the higher level organisations of work are formed. Essentially, those are aggregates of different beneficiary ayacut owner communities, which are autonomous as far as matters internal to the ayacuts are concerned. The combinatorial principle uniting all these ayacut communities is not formally democratic. The one ayacut community located at the head of the system, provides the leadership. But the participation of the ayacut communities being voluntary, the leading community is bound to evolve allocation patterns agreeable to them. This permits the combined organisation to reap the full benefit of advantageous location of one of its members without any obvious loss for each of the individual ayacut organisations. The leading community reaches its decisions in the same procedure which is followed in its internal works. However, the decisions are communicated to the potential participants in a formal and well-thought-out manner. It is not difficult to notice that the size of the combinatorial organisation need not be rigid. In works from which large parts of the whole system

is to benefit, combined organisations including many different beneficiary ayacut communities may be organised under the leadership of the community located at the head of the benefited system. In fact how far to ask for help is a matter of decision for the leading community. If it is sure that the required resources can be mobilised within a certain limit, the beneficiaries of the work located far off may be excused from making any contribution.

The necessity of large scale mobilisation does not arise frequently. During the reference year there was no such necessity. But it may be interesting to narrate such incidences in the not-so-remote past. In the late forties there was an attempt made by the beneficiaries of one of the branches of Karua Nala to divert much of the water to their side. They tried to erect a permanent bandh on Karua Nala (Goh bandh), just before the spot where Karua Nala entered village Maniawan, which would obstruct the flow towards Maniawan and divert it to the branch going towards Golakpur. Because of the proximity, the residents of Khas Maniawan tola were the first to notice it. Immediately they rushed to the spot and violent clashes began. As messangers reached from the leading tola to others, reinforcements began to arrive on the spot. It was a matter of interest not merely to the beneficiaries of Maniawan ahar but also to many others receiving their supplies further downstream from Karua Nala. Reinforcements arrived in course of time from even such distant villages like Kako. On the

other side too the manpower went on increasing in this manner. The clash lasted for about eight hours until the police arrived to assume control over the situation. Both criminal and civil cases were initiated in which the main accused as well as the major litigants belonged to the two villages at the heads of the two sections. The litigations continued for 18 long years, reaching from the lower to the higher courts, in which too the villagers from villages like Kako, far down in the system extended their help including financial support for the contestants of Khas Maniawan tola.

Let us return to the synchronic study of our concern. Apart from organising the work of erection of Ibrahimpur bandh, the only other task of broad community interest that was to be undertaken in the same year was the employment of a watchman for the ahar. Once the ahar is full it is necessary to keep a constant watch against weakening or collapse of any part of it. There exist such dangers as that Ibrahimpur bandh made of loose clay is washed away by the tremendous force of water flowing through Karua Nala, in which case the protective devices must be immediately activated to prevent the complete draining out of water from Maniawan ahar back into Karua Nala. During the daytime the residents of Khas Maniawan tola may keep the vigilance without any special effort. But a watchman is needed for the nights. After Ibrahimpur bandh was erected, a nightwatchman was employed for the rest of the season. Interestingly, the man employed

was a poor Gwala, resident of tola Jolah Bigha. It was the Gwala who approached for the job at the tea shop. He was paid in jajmani payments from the landowners belonging to all different tolas of village Maniawan. Probably this is another case when the B.K.ayacut community is the formal employer, but in its work it follows a modus operandi which helps others to lay trust in them. There are many poor families in Khas Maniawan tola, but none had asked for the job, probably being well-aware of the modus operandi.

3.2 Distribution of Product

Ownership of land, irrigation water and other means of production describe only one part of the production relations. The totality of production relations include some more elements, the distribution of product being one. Uptil now we were concerned only with the landowners[26]. But there are other sections who are related with the agricultural production process through distribution of product. Though they may not own land or such land as are benefited by the irrigation system, many of them may still be interested in the success of the irrigation system because of certain features of the

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26/ Not to be confused with landlords. It may be noted that all throughout the previous section it has been treated as a mere technical definition describing just those who own land. They may be sizeable owners or very small ones, even such people whose primary occupation are agricultural labour, but who still have some cultivable land. The 'landowners' in ours are often described as 'peasants' or 'cultivators'. We have avoided such terms to avoid ambiguity.

distribution system. We will introduce here these features and discuss their implications.

The product of agricultura is distributed in many different ways. Of these, the distribution within the landowner households may be kept out of our purview. No redistribution occurs among the landowner households themselves; though they may act as a community in several agricultural operations, in the distribution of product they behave truly as individual units. Therefore only such distributionswhich involve parties separated by hierarchic division, are of interest to us. But even here, for the purpose of the present characterisation, we may disregard the distribution between the landowners and the authority. In the past when there was a zamindar over these landowners to claim substantial share of the produce, the question of distribution of product between the two parties had raised many problems to which we shall turn our attention in the next chapter. But after the abolition of zamindari system the landowners in question are ryots of the State paying only a nominal revenue which rarely raises any problem.

The sharing of product with the tenants and agricultural labourers however, constitute an important dimension since many of the landowners employ tenants and agricultural labourers for cultivation of holding even in B.K.ayacut. That all such tenants and labourers are residents of either Khas Maniawan tola or Janeshwarnagar has been noted earlier. The tenants

are invariably sharecroppers; no single tenant works at fixed rate. The rates do not concern us; it is sufficient to note that the amount received in share increases proportionately with the increase in output from sharecropped land. Thus, in spite of the fact that the sharecropper does not own the piece of land, the characteristic system of distribution of product, the system of sharing, may endow him with an interest for the success of irrigation and cultivation of the plot. In fact his interest in the irrigation system need not be less than that of the landowner.

The stress on proportionate sharing of produce among all different systems available for employment of workers, is noticeable also in the case of employment of agricultural labourers. Many different systems of engaging agricultural labour exist in the village. One of these is a system which may be termed as 'attached labour' system. Under this system the labourers are not constantly supervised. The landowners may cultivate the plots owned by them either by himself or engaging occasionally, casual labourers. But the bigger landholders find it difficult and for at least some of the plots they engage either sharecroppers or attached labourers, keeping overall supervision in their hands. Some of the big landowners have even four or five lower caste families providing them attached labourers.

About the characteristics of the system - the attached labourers sometimes work elsewhere but whenever there is some work in the patrons' fields, they are found to work there[27]. The wage rates for the kharif season include, among other things, a small patch of rice-producing land. Except for responding to the requirements in the fields owned by their patrons, they are free to engage themselves in cultivation of the plot and appropriate the whole of its output. Certainly, this part in the mode of payment has significant contribution in ensuring the participation of the labourer in the works in patrons' fields throughout the season. But this is not the only element of wages. Even during the kharif season whenever the labourers work in the patrons' field, they are paid wages at daily rates. The rates of payments differ from type to type of operations. But mostly those are kind wages and paid at piece rates[28]. For example, in sowing and

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27/ We have made only a statement of fact. Whether the master forces them to do so or they prefer to do so cannot be decided but for a subjective evaluation of the situation by the investigator. Part of the answer however, follows from the production relations, as we shall see shortly.

28/ The various implications of this complicated wage practice has not been discussed because those do not concern us much in the study of the irrigation system. Some of the interesting features may be noted easily. The daily rate, in addition to a fixed and one-time payment in land prevent a landowner from using the services of the labourers excessively. Even if they are called, the labourers have little to complain for they are paid wages. The piece-rated payment eliminate loss of the landowner while permitting the labourers to use a part of the time during the working days for cultivation of

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transplantation, the rates are fixed in weights of foodgrains per acre of land sown or transplanted. The exception is the wages paid for harvesting operation. It is this operation when the product is available for distribution. We note that the wage rate for this operation is not a fixed amount but a fixed share of the produce. Evidently, here too the amount received in share increases with the increase in output. Like the sharecropper, the attached labourer too has an interest in the success of irrigation and cultivation of the plot.

With rare exception, the tenant and labourer families of Khas Maniawan tolas and Janeshwarnagar are attached labourer of this type to one or the other of the landowners of Khas Maniawan tola. The plots at a distance are generally given to the sharecroppers - rarely a plot in the B.K. ayacut has been given to a sharecropper for cultivation. During the rabi season the wages are paid in cash at daily rates.[29] But often the same labourers, who have worked during the kharif season are found to be working for the same patron

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the patch of land given to him. The kind rate prevents decrease in real wages. Since the productivity of ayacuts have not changed substantially over years, the labourers probably find the continuation of the same rate in kind as insufficient but not objectionable. Product sharing during harvesting keeps the labourers careful about the quality of work performed by them. Apart from the patch of land, the seasonal payments also include rights of gleaning in the patrons' fields.

29/ Also for some occasional kharif operation like weeding. This is not a very difficult or regular work here as in the delta regions.

during the rabi season too. Probably because the two parties favour each other, such an arrangement has been in existence[30]. On the whole, the relation between the agricultural labourer and landowner is a type of patron-client relationship[31] distinct from free labourer system typical of capitalism. The same relationship also transcends itself through other operations e.g. during the rabi seasons, preventing complete development of free wage labour relations even in such potential cases.

It follows therefore, that through the distribution of the product in a distinctive manner the majority of the tenant and labourer households too have an interest in the success of irrigated [illegible] cultivation. We have already noted that such

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30/ It is equally true that rabi cultivation practices adversely affect the relations of personal subservience and other characteristics of the mode of production under inquiry. We shall see in a short-while a concerte example of such interaction.

31/ The characterisation as wage labour is inaccurate. Although they are described as such, they lack most of the characteristics of wage labour system, typical of capitalism. It is not merely the production relations and the employer-employee relations which differ, the whole system differs from that of capitalist system as consequences of these differences. One notes that supervision of works by the employers are not always necessary. Nor does the system admit direct relationship between intensity of labour and interests of the employers. The characteristics of production organisation are different. The relations can be described aptly, only at a substantive level, only as a system specific to a distinct mode of production. The use of terms like 'attached' labourers are unhappy compromise with the reality. The categories and concepts internal to a system can be described properly only with a language which is a part of the same system.

workers had also participated during the reference year in goams for the desilting of B.K.ayacut and certainly for erection of Ibrahimpur bandh. But it must be pointed out that whether the explanation given by us is the right explanation, - cannot be judged from this. One can certainly say that they were persuaded to do so by their employers. On inquiry, many of the villagers expressed the view as that goams were the jobs of landowners. Some of them had included the tenants (sharecroppers), but none mentioned that the agricultural labourers had any responsibility. At the same time there was no second opinion about that they too participate. There were various explanations given by the villagers. Some called attention to their participation as substitutes. Some others said that the labourers were just hanging around. But it is doubtful whether this is a good explanation since in goams, as we have indicated, participants act generally in a leisurely manner.

We are rather of the opinion that because of the distribution system they too have an interest in the success of irrigation works. But the work organisations are often so rich in manpower availability that their services are not called for. The organisations may then be described as having a core group of members, consisting mainly of the landowners. It is understood that the irrigation works are in the main, the responsibilities of this core group. But around the core group there are also peripheral group$who watch, hang around

and at times lend their hand in such works; whose intensive participation are generally not necessary but become very important in adverse situations. As we will see in the next section, it is not merely the tenants and agricultural labourers, but some other members having little interest in agriculture, are enlisted as members of this peripheral group and act as reserves for contingencies.

3.3 Relations at Workplace

In the year 1977 quite a large number of backward caste members had been elected in the Legislative Assembly in the Election that followed the withdrawal of the Emergency. The Chief Minister of the State was a member of a backward caste. In this climate a proposal was made for the reservation of certain shares in government services for the backward castes. The issue was a hotly debated one and during the following years the caste relations, particularly between the backward and forward castes, deteriorated sharply all over the state. The tension had its repercussion in Maniawan village too. The village has a large contingent of Gwala and Koiri families as the second most numerous community following the Bhumihars. While the Bhumihars belong to forward caste, the Gwalas and Koiris are two of the three most numerous backward castes in the state. During the goam for the erection of Ibrahimpur bandh in 1979, in which Bhumihars of Khas Maniawan tola and Gwalas and Koiris of other tolas of Maniawan village were

working side by side with many others, some young Bhumihar boys made some derogatory remarks about the backward castes in general[32]. Pandemonium broke out and although the elders tried to appease, the younger members from both the sides turned deaf ears. Finally, the backward caste members left the spot and threatened to boycott any such collaborative work with the forward castes. It is in this background that the call of goam in 1980 received little response and the attendance was registered at about 150 because of almost complete boycott by the backward castes.

But both the factions soon learnt the cost of such difference. It might have been a mere coincidence or might have been partly due to the tension, Ibrahimpur bandh was erected late in the year and Maniawan ahar remained empty for a long time affecting the cultivation of all the ayacuts receiving supplies from the ahar. As the calamity struck, with each passing day grim looks hovered over arrogance in all the tolas. No formal peace proposal was ever made - not even many discussions were heard. As if everyone was eager to obliterate every trace of the nightmare, by the end of the kharif season in 1980 there was rarely any reference made anywhere about the incidence. During the next year the goam was convened by Khas Maniawan tola by sending the drum

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32/ The local incidence alone is sufficient for the purpose of introducing the premise. But the political background is of interest since it shows external influences dealt with in later chapters.

beater in the usual manner. On the day large number of volunteers poured in from among the backward caste families too. The number of participants reached as high as about 500. Everyone was cautious not to make any silly comment and hurt others' feelings.

Such is the general climate of goams, be it of a smaller group like for desilting of an ayacut, or for a larger group like that of erection of Ibrahimpur bandh. An atmosphere of cordiality prevails. The mobilisation of manpower much in excess of requirement eliminates the necessity of keen supervision. There is too much talk, too many suggestions - none of which are made as orders. One group would take their turn in the work and then fall out to chat. Most of the time the people would flock around talking things and lending their hands to this or that. The tenants and some of the labourers too turn up for the work. But because of the excess manpower availability the demand on their services is not intense. They too work in the leisurely manner, often falling out without being scrutinised by their respective masters. In short, everyone enjoys the assembly. And therefore almost every able bodied member is only too eager to join the goam. It does not necessitate either the slave owners' lashes or the employers' structure for mobilisation of such a large force. Goam is performed under a production relation which itself is attractive for the participants. Any male member of the landowner families who has perchance,

come to visit the village during the time would prefer to attend the goam. Even those who have little landed interest and therefore have no direct benefit, would not like to miss the goam because of the attraction the assembly has.

If anything, goam is comparable to participation in festivals. It provides the same type of enjoyment, has the same leisurely manner and comparable cordiality among groups. Like the festivals, goam too does not exclude the possibility of participation of any one of the groups present in the community[33/] - even the non-agricultural members are welcome and are attracted. And there is an understanding that the atmosphere must not be vitiated by any means, by any irresponsible action or derogatory remarks. Besides, the participants may think of many other ways to enhance the spontaneous responses. A decade back the landowners of Khas Maniawan tola distributed some items of tiffin (nasta) to the participants of goam.

Goam is the concerete expression of the community's vitality and cohesiveness. In turn it also reinforces community consciousness. Like the caste tension, many other contradiction may be resolved by the requirement of goam.[34/]

33/ But it is an all-male affair.

34/ There may be cumulative effect in the long term, bringing down the whole system. We will discuss it later. For synchronic study we need to notice only the [illegible] reinforcing the system the reinforcing mechanism that is a part of the functioning of the system.

Goam brings the interested people in the village together. On the location, among the small groups the topics of common interest are discussed with bubbling enthusiasm. In course of time, those may be materialised in common actions. The enthusiasm it generates must be partly transcended in all spheres of community lives. A successful goam may increase the enthusiasm of the community towards community irrigation works including improvement works. Goam does not only take place under a specific production relation, but also helps reproduction of those production relations.

3.4 The Irrigation Community

The accompanying chart (figure-6) shows how the work groups of different sizes are formed. From the point of one leading community (e.g. B.K.ayacut) the different work organisations are only different extents of mobilisation of reserves depending on the nature and requirements of the works. In their internal structures, each of these organisations contain a core and a periphery. Depending on the nature of the work more and more of the reserve, the peripheral members, are drawn into the actual works. The core and the periphery cannot be strictly demarcated. In fact neither of these is homogeneous, several layers may be conceived within either the core or the periphery. The picture however, explains the characteristic that differentiates this type of organisation from some others like modern co-operatives,

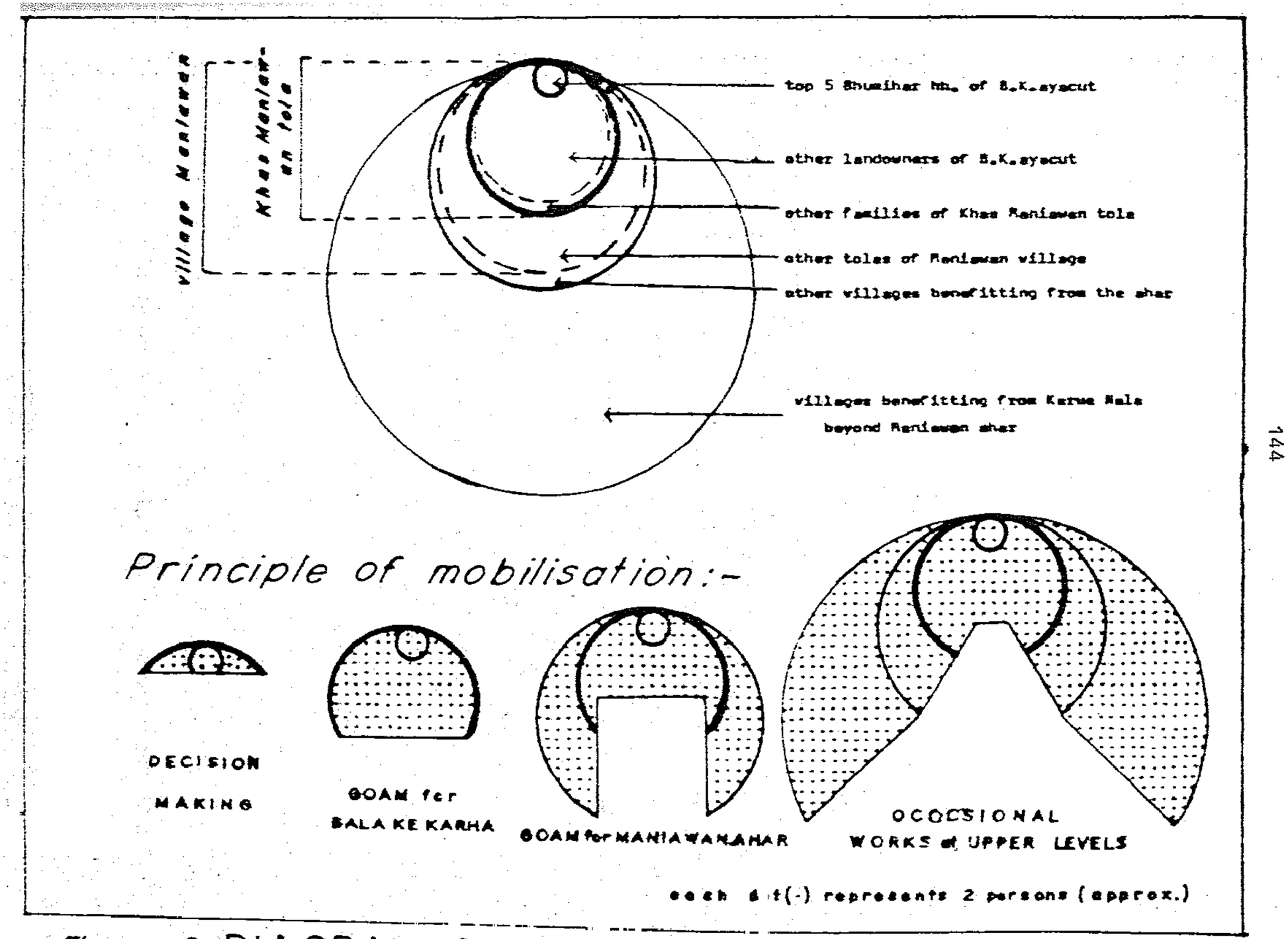

Figure-6: DIAGRAM SHOWING THE FORMATION OF WORK GROUP

where every member has the same status and is expected to participate in the same manner.

Since the core too consists of different layers, it may be described in various manners. It is possible to describe it as consisting of the landowners of an ayacut, or with some extension, as the members of the hamlet associated with the same ayacut. All these just show the various levels of participation. A group of people may belong to a core in the organisation for one particular work but may be in the periphery for another work organisation. Every group or every individual does not attain core membership in one or the other of the irrigation works. In fact there are some who never belong to the core and are always only peripheral member. There are no two works in the organisation of which the status of two groups are reversed. The core and the periphery is distinguished by certain privileges to property - be it ownership of cultivable land or locational proximity to the irrigation structures.

Such are the general characteristics of work groups - be it for lower level or upper level works of cooperation. We may discuss the economic and social basis of the formation of these work groups in general. Every work group has an economic and social counterpart in the life process, a corresponding community. In fact the formation of the work group of cooperation are only expressions of the existence of such

communities. Insofar as the name 'community' describes a particular group of people identifiable for certain qualities, there are many such identifiable communities in the village. The internal structure of these communities may vary widely. The communities corresponding to irrigation works, the irrigation communities, however, have a characteristic structure with a core and a periphery. In contrast with an association of beneficiaries, where every member has equal status, the traditional irrigation community has a nuclear structure with fringe members of social and economic life of the community also working as reserves for irrigation organisation.

The work groups for co-operation are only expressions of the communities. The community here is not merely a neighbourhood group or a caste group; it is a deep rooted social reality, extending to almost all faculties of life. Close neighbourhood, affiliation to particular castes, subsumption of individual behaviours to requirements of the community etc. are many different criteria which have to be fulfilled for being a member of the community. Therefore, it is much more than a mere community of neighbours as such. At the same time, by admitting many alternate criteria, the same community readily admits others who may not fulfill a particular one.

The core members fulfill most of the membership criteria while those at the fringes are marginally within the irrigation community, being only irregular participants in all the life

processes of the community including the irrigation works. Individuals may be included in the fringes because of various reasons. One may fulfill some of the basic requirements like in landholding but still default from community functions as was the case of the absentee landowner of Khas Maniawan tola. In the other extreme, one may not fulfill many of the fundamental requirements of membership, yet may be inducted within the community through good interpersonal relations. We have already noted the festival type of atmosphere in goam or material incentive like distribution of tiffins which bring in many participants who otherwise, have little interest.

A community consists of a group of people, but it is just not any group of people. Whether such a collection is able to express itself as a social reality, as something additional from the simple aggregate of members[35], determine

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35/ The following passage due to Marx /1867: 308-97 describes finely such additional achievement, though for the restricted case of social process, namely production:

> "Just as the offensive power of a squadron of cavalry, or the defensive power of a regiment of infantry, is essentially different from the sum of the offensive or defensive powers of the individual cavalry or infantry soldiers taken separately, so the sum total of the mechanical forces exerted by isolated workmen differs from the social force that is developed, when many hands take part simultaneously in one and the same undivided operation, such as raising a heavy weight, turning a winch or removing an obstacle. In such cases the effect of the combined labour could either not be produced at all by isolated individual labour,

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whether it is only a notional or a real community. As we have seen, only certain types of production and social relations give rise to a real community. The particular types of production relations (if we consider the social relations are determined in the long run by these) describe particular types of communities. But even these do not tell us about the effectiveness of the community, about the extent of realisation of its potential. At different moments its effectiveness differ depending on the actual conditions of production and social relations in that moment. The community activities, be it ceremonial or related to irrigation, sometimes reach vigorous heights, sometimes are achieved with difficulty. But all throughout these ebbs and flows the community remains the same as ever. Just as the identity of a living being does not change during sickness and recouperation, so does the identity of a community remain unaltered all throuh-out its process of existence. It is defined by the objects it includes, the people connected by particular production relations - and change when and only when these objects are changed.

> or it could only be produced by a great expenditure of time, or on a very dwarfed scale. Not only have we here an increase in the productive power of individual, by means of co-operation, but the creation of a new power, namely, the collective power of master".
>
> It may also be noted that the idea of an additional social entity is also included in it. A cavalry or an infantry is an entity essentially different from the individuals who constitute those.

But it must be understood that its existence does not specify its effectiveness. Sometimes it may be very active, at other times the same community may be almost inert.

It follows that we may define the community of our interest as a group of people connected by the particular type of production relations we have enumerated earlier. The people are connected by particular parcellised landholding pattern guaranteeing equitable distribution of water. (For the broader community we have to consider also the locational advantages of one over the other). The distribution of product too have some particular characteristics creating interest in irrigation. The relations between the members are cordial. This is sufficient to describe the community of our concern for we have already shown that such a set of objects is able to achieve something additional over those possible by the members individually. The people connected by the specific production relations was sufficient in our description, to introduce a decision making rule, discussion and communication procedure and resource mobilisation principle. We have shown that all the tasks pertaining to irrigation, regular or occasional, could be attempted through these additional processes which set in. In addition, we have shown that there is a rectificatory mechanism which constantly works to increase the vitality of the organic community. This is sufficient for description of the irrigation community. It must be noted however, that such a characterisation does not tell about the

actual condition of the community at any moment, whether it is doing all the work efficiently or with great difficulty.

We have concerned ourselves almost wholly with the irrigated ayacut and kharif paddy cultivation in dhanhar lands. A question may be asked as to how far is such a procedure justified. Considerable part of arable land is not irrigated from the ahar. Rabi crops are very important as has been noted in the previous chapter. We have also noted that the distinctive features of the labour system is restricted within the limits of the kharif season. How do we justify our holistic characterisation when it is almost in total disregard of all other crops and cropping seasons?

Close observation however will reveal that we have not actually disregarded all these points. Those have been treated with due importance but only as phenomena casting negative influence. We began by indicating that most of the landowners have all the different varieties of land and some of them, interests even in non-agricultural activities. But it was pointed out that the distribution of property and other interests are such that each individual must be able to respond properly to the requirements of irrigation works and cultivation of the ayacut. For example, the households start firstly transplantation of other plots, yet almost everyone return to the transplantation of the ayacut at the same time. It is not difficult to understand what may happen to someone having

too much of other interests and failing to transplant the ayacut simultaneously with others. Indeed, the case of the absentee landowner, who is absent from the village because of several other interests, points to the consequences one suffer. The members of the community can reap full benefit only if all other interests of them are subsumed to the ayacut cultivation. In other words the community is constituted around the task of irrigation and kharif paddy cultivation and can accommodate only such other activities which do not compete with the primacy of the basic activity. In fact, the functioning of the system discourages such conflicting activities (belonging to some different mode of production).[36]

The same interaction may describe the actual position of the labourers. It is through the kharif operations as 'attached' labourers -- among other points -- that they are members of the community and unless this interest overrides their interest in working as free labourers elsewhere and in other seasons the distinct relations need not exist. Further, if the gains from kharif labour are considerably higher than those from other works the production and social relations characteristic of the kharif season must influence the relations during other works. The relations between an

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36/ The reverse is also true. We are concerned here, with only one aspect, namely, the stability (reproduction) of the mode of production. But the case of conflict resulting in ultimate subordination and dissolution is also inherent in the same model.

employer and an employee cannot become impersonal in a season and revert to cordiality again in the next. It is difficult to test such hypotheses within the limits of the synchronic study. But some evidence may be produced if we use information over a time. The modes and rates of payments for labour during kharif paddy cultivation has not changed[37] in the memorable past. Wage rates for hired labour in rabi cultivation however, has increased in the recent period. We inquired whether demand for increase of wages during the rabi season has led to discontent and deterioration of relations. No serious incidence centering this question came to our notice. From the similarity with the caste tension mentioned above one may imagine that events occurred in the following sequence. Labourers had asked for an increase in a rabi season and the landowners were not prepared to grant it. Discontent simmered and the next kharif cultivation suffered. In consequence both the parties suffered and were eager to restore the old relations. Followed an increase in the wages and the labourers too hushed away what had happened. A specific incidence may be noted. The son of the absentee landowner in the B.K.ayacut has returned to stay in the village in 1982. Unaccoustomed to the local ways he had forced his labourers to work under close vigillance and misbehaved with some of them for what he considered as neglect

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37/ Since most of these are kind payments, as noted already, real wages probably have not decreased.

of duty. The labourers refused to work under him though they were ready to serve if the 'old man' would come. It is interesting that the landowners of the tola with no exception consider that the labourers are justified to act as that. Of late, intercaste tension, atrocities on harijans and agricultural labour movements supported by revolutionary communists have reached unparalleled dimension over a wide area surrounding the locality we are interested in. Significantly, Maniawan is almost free from either of these. Points of tension always occur, because of the external influences, be it the statewide caste conflicts or the agricultural developments leading to improved cultivation of bhit land. But Maniawan has been more or less successful to readjust and reproduce the old situation.

At this stage we may deviate from synchronic characterisation and look at the functions of the system as of reproduction. The community does not merely reproduce its productive forces by desilting ayacuts, erecting embankments every year etc. it also reproduces the same production relations compatible with these works. It is able to reproduce not merely the compatible social relations, like those between castes or between employers and employees, but also production relations of a more fundamental level. It is amazing to find how the different elements of production relations are reproduced from year to year. Even if there are strong pressures from the externalities the relations

default only for a short duration. But soon the mistakes are identified through the deterioration of the productive forces and the community takes up a conscious process to reproduce the old relations. It is simply amazing to learn that in spite of thorough juridical support in favour of free transaction of private property the complicated relations in the matter of parcellised holding, plot locations, distribution between khazana and ayacuts etc. remain, to this date, effective and with great accuracy. There appeared some discrepancy after the abolition of the zamindari system. But the compatible pattern has already been restored without coercion or legal disputes. Be it statewide caste tension or Federal legislation, leave alone phenomena of smaller significance - the community may not lack vitality to repulse those and resurrect the old productive forces and production relations[38].

The reproduction process may be carried out largely within the community. In all the previous discussion we have never referred to government officials or departments except for a reference to a legal suit several years back. This is because the role of the government in the matter of ahar-pyne irrigation in Maniawan is very marginal. There are several works of importance from the point of view of the government. But none of these has any considerable significance

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38/ There may be cumulative long term effect to which we will return in a next chapter.

in the reproduction of the community. The Irrigation department is engaged in the construction of a medium scale irrigation project (Uderasthan scheme) in this part of the country. It has brought some changes in the supply of water in Karua Nala, but there has not occurred any impact on the internal organisation of irrigation of Maniawan. Once in a while the Public Works department undertakes repair of embankments of Karua Nala or Lochna Pyne. The works only eliminate the necessity of goam for those works. On the other hand, the government as an external agency often brings in undesirable phenomena which are repulsed by the community. It may be recalled that a patch of land in B.K.ayacut which was actually a watercourse (bhokla) was shown as a plot privately owned. Yet the ownership right was not realised and the plot remained as a bhokla for common use. Judicial awards in disputes between communities sharing water from Karua Nala have similarly been disregarded as we will discuss in the next chapter. The Minor Irrigation Department encourages purchase of pumpsets. But those have not been used to replace irrigation from ahar wherever that is possible. Fertilisers have been used but only for the cultivation of cash crops in gila bhit. One may hear a lot of discussion in the tea shop about how to obtain government help for the renovation of Ibrahimpur chahka. Individuals were trying to identify who among their acquintances may be instrumental in getting the assistance sanctioned. But this does not affect

the community being, rather everyone here tries to identify how their personal contacts may be used for the benefit of the whole community.

The irrigation community arises on the basis of a set of internal conditions, from a particular type of productive forces and production relations and functions more or less autonomously appropriating and rejecting external phenomena (including those given by the government) as per its own necessities of reproduction. The structure of the irrigation community is such that it can reproduce itself, can reproduce the internal causes of its existence and hence its functions too. This does not mean that those are not affected by the external conditions. Rather irrigation communities are susceptible to many different types of external phenomena. But often such changes are only temporary. The passage of change, if guided only by the internal forces, follow cyclical courses reproducing the original conditions in the next instance. But because of the persistence of external disturbances it is possible that rejections of unwarranted changes are not always complete, that the autonomous communities are not always restored to their original positions in exactitude. There exists the possibility of a permanent change through the cumulative effect of several cyclical changes. To this we will settle our attention in the following chapter. For the present chapter our concern was with the forces aiding its endurance.

Chapter - IV

FORMAL HISTORY OF THE AHAR-PYNE SYSTEM

In the foregoing chapter we were concerned with the internal dynamics of the irrigation system. In the present chapter we shall discuss mainly the impact of the externalities. It will be helpful to start with a brief recapitulation of the theories of such impact.

How do the external conditions effect changes? What is the mechanism through which they work? Certainly every set of policies pursued by the external agency does not meet with the desired results. Even in the earlier chapter we have seen that some of these are modified, absorbed and some others are rejected. "External causes are the condition of change and internal causes are the basis of change, ... external causes become operative through internal causes." /Mao, 1937 : 897. The right status which should be assigned to the externalities is very well described by these two lines. Every action initiated by the external elements has to be judged for its impact from the abilities of the internal structure to absorb, modify or reject it.

Secondly, there are changes of various nature. Some of the impacts which alter the fundamental characteristics of the system have lasting effect and therefore are of epochal significance. Some others may have only momentary significance and if the fundamental characteristics of the system are still intact, it works out gradually to reproduce the old compatible form. We have seen this happening in the earlier chapter.

However, the moments in turn cast their influences on the fundamental characteristics and the dialectical relationship between the two must not be forgotten. The system may be reproduced and the momentary changes negated to a large extent, but the whole process may effect increasingly quantitative changes in the fundamental characteristics bringing about a final qualitative change of epochal significance. Here, the momentary changes internal to the system act as conditions of change of fundamental characteristics, though the latter still remains the basis of fundamental change. It follows, therefore, that not merely the external policies directly, but the indirect effects of those causing momentary changes in the internal system, should be considered as causes of fundamental change. The details of these causes should be studied while making the necessary distinction between the different types of change -- of quantitative and qualitative nature, of epochal and momentary significance.

A fundamental change is brought about by a change in the base, in a change effected in both productive forces and corresponding production relations. The externalities may effect changes directly influencing the productive forces and production relations. They also may bring about changes in elements[1/] of superstructure which may be rectified by the

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1/ In connection with productive forces and production relations we have already discussed how the breaking down of the higher level of concepts to simpler and elementary concepts lead to concrete categories.

contd...

system in the long run but may also affect the fundamental characteristics, thus amounting to an indirect effect of the externalities on the fundamental characteristics. The details of the latter category of changes, if they are omitted, provides a discrete picture[2/] but prevent the understanding, in a concrete step by step manner, how changes of epochal significance occur. Since our interest here is to depict the concrete interaction process, such details cannot be avoided. However, care has been taken in each case to extend the analyses to find out what contributions those momentary changes had in effecting changes in the fundamental structure.

We shall restrict our discussion to the modern period since this is the only period for which some material information regarding the irrigation system is available. As the major part of our discussion will centre around the influence of the colonial State it is essential to avoid some pitfalls. Though the State makes the most concerted effort for domination it is neither the only agent of change nor is it able to effect a one-way change. Care has to be

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The same comment applies for superstructure too. It is mainly due to Gramsci's works that we know, in some details, how to break down the concept of superstructure in its elements. The concrete presentation here is aided by the Gramscian schema. The interpretations of Gramscian terms used here have been included in the glossary. A look at those may aid in reading of this chapter.

2/ Nevertheless, this may be useful for a different purpose and we have used this method in the next chapter. But for that we had to sacrifice concrete evolutionary descriptions.

taken to consider many other (Western) private agencies who too had contributions in the change. Further, however awesome the State may appear, the dialectical relation between the colonial State and the indigeneous social structure should be given due importance. In other words, it has to be taken into account that the indigeneous society too had affected the dominant State form and transformed it.

As a general model for the irrigation systems during this period we have borrowed the essential features of the one introduced in the previous chapter. The historical phenomena describe the additional premise and their implications are deduced from impacts on the internal structures treating the external phenomena as the conditions of change. The implications on irrigation system as found provides for an additional test of the model, a test also for the general validity of the model. We have compared the implications with recorded information whenever such information is available.

Since all the numerous historical phenomena have some impact, directly or indirectly, even if we consider only the major ones we have to consider many of them. The chapter therefore, is weighed heavily by introduction of such phenomena. Often we have started with such phenomena, which, at the first sight, appear as of very general level and very remote from the irrigation system. It may be noted that the study demands that we consider the historical phenomena by their historical weights not by their impacts on the irrigation system,

though due care must also be given to include any seemingly less important phenomena if it has considerable impact on irrigation system. None of the major historical phenomena of this period should remain out of our concern. Rather, the method damands that we indicate at least the concrete impact of each of these major phenomena.

For the greater part of this chapter therefore, we have been dealing with introduction of different historical phenomena. The discussions are often long, since history has rarely been written with its focus to understand what happens at the local level production systems. We could not help but engage in long arguments trying to reason out such effects. And sometimes, at the end, a major historical phenomenon has appeared only as marginally significant from our interest. If information about irrigation system occupy only a small part of this chapter, the reason is as above.

4.1 The Eve of Colonial Rule

In order to describe the impact of the externalities on internal conditions it is essential to know what was concrete condition of the internal structure. But we know very little about the actual conditions of irrigation in the pre-British period nor are we in a position to get, through research, substantial information for that period. Therefore we will proceed with certain assumptions. The fact that the ahar-pyne method of irrigation was not introduced by the British certainly permits

us to claim that the system was in existence before their advent. We cannot make any claim about the extent of use of the system or about the mode of management. Yet the earlier studies may help us to form some meaningful assumptions in these areas.

The Mughal bureaucracy was a highly urbanized institution. The lower orders of the hierarchy, who were actually looking after the affairs at the village level were mostly non-Muslims and could function more or less autonomously. Even during Akbar's regime, the territories directly administered by the government were restricted to the crown land. In later years, during the disintegration of the Mughal empire, the extent of crown land had become more and more reduced and the influence of the Mughal bureaucracy receded increasingly to superior levels of administration /Misra, 1970 : 640/. The control of the government on the judiciary too was marginal. What the Mughals did was to enforce the Quranic law on all people in the administration of criminal justice while leaving the non-Muslim litigants in all other matters to have their disputes settled either according to a local custom, a caste rule or Brahminic decree /Misra, 1970 : 645/.

In brief, during the Mughal rule, particularly during its last phase, almost all types of administrative and judicial matters were settled at the local levels. Of course, it does not mean that there were no authorities at the local levels above

the village communities. Here too, we know for sure that a whole class of intermediaries, including the persons later identified as 'zamindars', were in existence. What is implied is that, at the best it was these intermediaries who carried out the administrative and judicial works at the local level but never the Mughal State. It will not be incorrect to say that on the eve of British colonial ascendency the indigeneous civil society was practically everything, and the State[3/] had only marginal role in the superstructure.

The very fact that irrigation works existed (hence were reproduced) all throughout this period leads us to claim that the existing civil society was not incompatible with the productive forces and production relations of irrigation. We do not claim that all the units had the same perfection, that there was no deterioration during this period. It is sufficient for our purpose to suggest that there were some units which could function in satisfactory manner and which constitutes the object of our concern. We do not know whether the intermediaries themselves took active interest or facilitated the reproduction of the irrigation communities autonomously simply by being resigned from any interference in their internal matters. Even if the latter was the case, communities similar to the one we have discussed in the earlier chapter would not fail to respond to the contingencies for survival. In either

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3/ See glossary for interpretations.

case, it is likely that the communities endowed with productive forces comparable to the ahar-pyne system[4/] were able to produce and reproduce the production relations essentially in the same manner as discussed in the previous chapter.

It may be noted that such an assumption may also be expressed as that the local communities were the real owners of land. We do not need any such strong assumption at that there was no private possession. We have already indicated in the earlier chapter that the rules in parcellisation and location of landholdings, the land use and cropping pattern etc. -- all that is needed to characterise the system, may also be expressed as that real ownership of land rests with the community. The assumption is that though land was in private possession, its use was subsumed to the needs of the community. Probably such a thing was in effect for long periods in spite of private possession because of a mechanism to re-establish the locational pattern, e.g. redistribution from time to time.

Implicit also in the assumption is that the local communities and the local people were the real owners. What the juridical ownership structure was, does not concern us. Our claim is, for all practical purposes, that land was owned and

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4/ It may be noted, though we will not consider it here for further discussions, that not merely the ahar-pyne system but all productive works admitting the same production relations may be considered within this description.

operated by the local people. To put it in another manner, the system would have been the same if the landowners of our previous chapter fulfilled other conditions but were ryots of the zamindars instead of the State. This however, is an established fact that the zamindars or any other overlords, did not take direct interest in cultivation except for the small portion owned for private use (zirat).

The state was much too removed from the people and probably weak because of this reason. Whatever be the reason of its weakness, it had not taken much of an effort for the British to defeat the rulers and capture the State power. The real strength of the opponent lay in the indigeneous production and civil systems and no struggle was fought as yet on that ground. The battle of Plassey or the Grant of Diwani might have profound significance for the British in India. To the indigeneous society it was a change of rulers of a State which had practically no significance in local matters. Nor was there any significant impact from agents of change other than the State. During this period, it may be remembered, there were very few Europeans in India, and even fewer had ever come into contact with villages in remote parts of South Bihar. The capture of the State power was only a beginning. It took many more years, development of many more activities, before the Western impact was felt at the basic level to a considerable extent.

4.2 Initial Stage of Colonial Rule (up to 1833)

The East India Company had entered as a trading company and only in course of time discovered the universal truth, that political control provides the best weapon in pursuance of any social interest including mercantile ones. This had led it to indulge in martial acts and become ultimately a territorial power. But all throughout the period and even afterwards its commercial interests remained primary. Even after the conquest at Plassey the Company did not readily accept the State power but waited until it was realised that by controlling the State power they could promote trading interests further. Even after they became the ruler of Bengal, Bihar and Orissa through a juridical act, that is the grant of Diwani, by the Mughal emperor, the primary interest remained unchanged. But the new situation demanded that the trading company proliferate its activities. It did so, and through these actions discovered new vistas of advancing their mission. For example, before the time of the Diwani, the Company or its officials had no interest in the land revenue system existing in India. But after the grant of Diwani they were forced to indulge in it and soon discovered that there lay a very promising alternative for the furtherance of income of the Company. The handling of revenue and such other acts were the first civil affairs handled by the Company. The capture of State power opened up the possibility of mediation in civil law to secure the interest of the dominant Company. It also took the Company officials unprepared for the task.

The anatomy of the civil reforms undertaken by the colonial State, particularly in the initial periods cannot be sought in the political economy of the locality about which they were totally ignorant. The roots of the civil reforms lay in the political economy of Europe at that period. Ideas which developed on the material basis in the context of a completely different mode of production were translated into civil laws as revenue policy for India. The local mode of production failed miserably to function under such alien policies, and deteriorated. The result was famines and death and loss of revenue. The failure led to sharpening of ideological debate. Much has been written about the long intellectual debate among the Europeans that led to the proclamation of Permanent Settlement. In contrast, very little has been said about the internal resistance, the silent rejection that was offered by the indigeneous mode of production and which ultimately made its way through to influencing the ideas.

For, in course of time, as the British officials began being more familiar with the Indian revenue systems, their ideas began to reflect more and more the suitability of the indigeneous civil system. To begin with, the descriptions of indigeneous civil system were not very correct and there were tendencies to describe the Indian agrarian systems in the images of contemporary Europe /Guha, 1982/. But compared to the initial ones, the later contributions were much more accurate. Along with this, in the matter of policy making,

the control from London office went on lessening. The local officers, more thoroughly acquainted with the local systems, became more and more important in policy making. Through a feed back mechanism the ideas of the latter set of reformers were influenced by the indigenaous system. It is enough to remind that the final acceptance of Permanent Settlament scheme came from the mukarrari experiments conducted by Thomas Law, an administrator with long experience in India, to demonstrate that the particular idea was compatible with the indigenaous mode of production and ensured best returns. It is also significant that Bihar, rather than Bengal, turned out to be the ground justifying the Permanent Settlement. Bengal was more severely affected by the agrarian policies of Warren Hastings which had wrecked the indigeneous mode of production and civil institutions to a much larger extent. In Bihar on the other hand, "with all the numerous transfers of small-holdings which took place there under the farming system, the basic structure of landed property remained unchanged." /Guha, 1982 : 174/. It may also be added that the mukarrari experiments which led to the final acceptance of the policy was carried out particularly in Gaya where the indigeneous irrigation works had survived so long that till the end of the nineteenth century the district remained immune to both flood and famine /Sengupta, 1980 : 164/.

In essance, the Permanent Settlement was the re-establishment of the old civil system that had existed before the transfer of power. The farming system that was introduced at

the very beginning of British rule, though did not directly replace the existing civil systems, had severely damaged it in an indirect manner. It is most likely that in such small autonomous units the local regulations and laws were determined by customs and practices, highly personalised; the authorities adhered to unwritten norms instead of written codes. Frequent change of the persons in authority under the farming system naturally destroyed the existing civil laws and regulations, adversely affecting the indigeneous production system and bringing in famines. The Permanent Settlement eliminated this deterrent effect. The local civil system was granted a new lease of life under the guidance of the local zamindars. Much has been said about the establishment of land market. But it was as yet only a superficial phenomenon as will be obvious the moment one looks into the internal conditions. Under the Permanent Settlement, "... since minor shares and cultivators possessed no separate records of right and since the chief shares (e.g. zamindar) alone had the exclusive right to pay the public dues for all others in the village, transfer of property outside the community became a rarity; for it fell ultimately to the lambardar or chief proprietor to allow or reject a transfer." [Misra, 1970 : 647] In all probabilities the transfer of land was confined to the transactions in estates, no land market within the autonomous units or within the villages were established by the Settlement. True, the Settlement had an embryo of it. The division of

rights between the zamindars and the tenants, which was not specified, left a tacit sanction for resumption of land by zamindars from minor share holders or tenants, or settlements with other tenants. But as yet, this was rarely realised. The practice was only sanctioned not made obligatory by the imperial government. Therefore, it needs some specific reason on the part of the zamindars, for such practice becoming widespread. No such reason can be advanced which may support that even during the initial yearsof colonial rule, the zamindars were to benefit more by trampling the local communities. The transition of the zamindars, which ultimately made them behave so, is of interest.

If the Permanent Settlement was a 'bold innovation', it was to the European administrators unaware of such a State-craft. In India it was certainly not an innovation but a civil system existing probably for centuries. The Settlement Policy did only re-establish the autonomous units (save for the police power), the civil society that existed during the eve of British conquest. How can it be termed 'bold'? The architects of Permanent Settlement did not use the State Power to radically alter the civil society in the subjugated country. Whether that was good or bad is a different question[5/]. But it was certainly neither a radical nor a revolutionary step forward.

5/ It may be noted that the same policy would facilitate the reproduction of indigenous mode of production and would ensure steady reproduction thereby. Of this ground it may be claimed as good policy. A radical break would be elimination of any mode of production which does not help in the transition

A comparison with Ryotwari Settlements will bring out clearly the resignatory nature of the State under the Permanent Settlement. In South India, the Company had become a territorial power over a small area in the same year, 1765, the year of granting Diwani. In the subsequent years the territories under its control increased. The question of revenue policy came up from the very beginning, in the same manner as in Bengal-Bihar-Orissa. Here too there were some experiments done during the initial period. One of these was the experimental settlement undertaken by Captain Alexandder Read which later became known as the Ryotwari system. The main feature that distinguished this system from the zamindari system was that the government did away with the intermediaries and made settlements directly with the actual cultivators. In sharp contrast with the Zamindari settlement, under the Ryotwari settlement the State refused to remain marginal to the village societies but set before itself the task of assuming a prominent role in matters erstwhile determined internally. In one system, the ingenuity was directed towards fitting oneself to an already tailored suit, in the other, towards tailoring a suit to its own specifications. The Ryotwari settlement intrinsically accepted the challange of a radical civil reform. It was not achieved immediately. A new set up as elaborate as to replace the old civil society in all its ramifications and territorial extent would not come up instantaneously. Nor did the future developments retained for

all the time, such a non-compromising attitude. But the directions were set. From the very beginning we find proliferation of the activities of the State in Ryotwari areas.

In the very initial stage itself Read had to introduce Survey works identifying the internal details, (though only of land) within the villages. Along with the duty of collection of revenue the charge of looking after irrigation works fell on the English collectors. The ryotwari system instantly influenced the irrigation organisation and carried the imbue of a whole irrigation department within the government which proliferated in course of time. In contrast, in the zamindari areas the State was able to withdraw from management of irrigation systems and in course of time the indigeneous works ceased to be referred to.

During the early stages of ryotwari settlement the European and their subordinate Indian revenue officials had to look after the irrigation works. The government had to spend large sums of money under this head, a contingency that did not arise in the zamindari areas. Soon it was found that the revenue officials were not sufficiently knowledgable to undertake these tasks. Thereafter a post was created for an engineer, under the title of Superintendent of Tank Repairs. At first there was only one Superintendent for the whole of Southern territories. But soon, in 1809, a second was added and by 1819 a whole department headed by civil engineers was

created /Ramachandran, 1980 : 76/. This does not imply that the alien system of management achieved any great success. But it certainly indicates the distinct course of development that had arisen under the two settlements, one of which preserved the indigeneous civil institution and the other which intended to replace it. By around the thirties the irrigation department in the South could produce engineers like Sir Arthur Cotton, who were fairly acquainted with the technology of these irrigation works and could take up extension works. In South Bihar, during the same time it became very difficult to find even a reference to these works in the official reports. Practically Buchanan's Accounts[6] /1810-1813/ are the last where these works are mentioned. The next official report is available only by the end of the nineteenth century. The slip has been so severe that the similarity between the South Indian works and those of Bihar were not noticed in the later period, ultimately resulting today in the state of ignorance when the Irrigation Team appointed by the Planning Commission for review of minor irrigation works in the country can describe, "..in Bihar there are not many irrigation tanks." /India, 1966: 87. The South Indian works have now been known as 'tanks'. (see Appendices II & III)

6/ Buchanan was equally impressed by these works both in South India and in South Bihar.

In spite of the high acclaims the indigeneous productive force (not system as a whole) received from the engineers like Cotton[7] in South India; the reproduction process was not facilitated under the alien civil system. In course of time attention was drawn towards perpetuation of production organisation. Madras government enacted the Kudimaramath Act (Madras Compulsory Labour Act, 1858) empowering the government officials to demand 'communal' labour for the maintenance of

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7/ "There are multitude of old native works in various parts of India, ... These are noble works, and show both boldness and engineering talent. They have stood for hundreds of years. Many of the weirs are built in the sandy beds of rivers without any rock or sound stratum to found them on, and it was from them we learnt how to secure a foundation in loose sand of unmeasured depth. In fact, what we learnt from them made the difference between financial success and failure, for the Madras river irrigation executed by our engineers have been from the first the greatest financial successes of any engineering works in the world, solely because we learnt from them how to make secure and cheap foundations in loose sand, and the Ganges canal was a financial failure for 25 years solely from a fear to attempt to build a weir in such a situation. ...

"And so with the tanks, the natives have constructed tens of thousands of tanks in almost every kind of soil, with earthen bunds, without the puddle banks which English engineers have fancied necessary, and which only increase the risk of failure.

"With this lesson about foundations, we built bridges, weirs, acqueducts, and every kind of hydraulic work.....

"When I first arrived in India, the contempt with which the natives justly spoke of us on account of this neglect of material improvements was very striking; they used to say we were a kind of civilised savages, wonderfully expert about fighting, but so inferior to their great men, that we would not even keep in repair the works that they had constructed, much less even imitate them in extending the system. All this was perfectly true, till lately." /Cotton, 1874 : 23-27/

irrigation works. This imposterity was bound to fail and the deterioration of the works remained unchecked. Parallel to this, the irrigation works in South Bihar remained unheard of in the outside world but survived considerably to keep the district of Gaya immune to famine even till the end of the nineteenth century, a period when the whole country was ravaged by great famines.

Initially, the Permanent Settlement did not affect the oligarchic and mercantile interests of the Company. The new source of income, the returns from revenue, were sufficient to support the internal trade and gave a boost to the functions of the Company. The internal trade did not penetrate the agriculture and village structures particularly in remote areas like Gaya. The Company was interested in monopolising Indian exports but not in turning India into a market. The control over the State was used for furtherance of monopoly interests in trading. Indian merchants were forbidden to buy from the local producers, but local production was not discouraged directly. It might have been true that local production did not escape every wrath - but it was mostly the artisans who were affected. In the area we are concerned with, in agriculture and irrigation the impact was marginal.

Leave alone the question of conversion of the countryside into a market, even personal contacts with the Europeans were rare. The western influence on ideas and outlook remained

negligible. Under the India Act of 1784, Europeans were not expected to live in the interior except within ten miles of a Presidency town. In this aspect too the urbanized character of bureaucracy during the Mughal period continued unabated. The handful of measures which the British undertook being true to the mercantile character of the Company -- the civil practices which probably were different from the indigeneous ones, were establishment of land market for estates, insistence on cash payments and the Shylockian insistence on payment of dues. Such measures were the only ones which influenced the indigeneous civil practices and in turn affected the indigeneous mode of production even during the early days of Permanent Settlement. Transactions of estates or sale of parts went on occurring though at a reduced rate when compared to the farming system. The zamindars were vulnerable to the moneylenders and many of the estates passed to them. This must have introduced quite a number of new elements in the position of authority in local civil society. Their greed, lack of knowledge about local practices and customs (including those of irrigation) might have endangered the local civil institutions but only to a limited extent. For, the colonial State policy of laissez faire was, indeed, based on the ethics of 'survival of the fittest'. And fit were those who could facilitate the reproduction of the existing mode of production by not vitiating too much from the compatible civil practices. In Bihar, the old zamindars mostly survived after 1793 /Chaudhury, 1975:134-57.

Probably the relations between the local authorities and the village societies became strained in a number of places.

The State, with its mercantile interest, advanced the deteriorating relations when it justified the collection of dues by any means. All legislations made during this period had one primary objective, the security of public revenue. Several Regulations, including the notorious haftam (Regulation 7 of 1799) and pancham (Regulation 5 of 1812) Regulations encouraged the zamindars -- the revenue payees to the British and the civil authorities for the people -- to resort to any means for realization of demands. No doubt there were ruthless local authorities even during the earlier periods. But the problem never would have reached wide prevalence or staggering height without encouragement by superiors. Yet, on the whole the indigeneous mode of production survived to a great extent in the absence of an alternative mode of production challenging to replace it. But the challenge was soon to come.

4.3 From Charter Act to Tenancy Act

We will have to face the severe constraint of non-availability of data for this period -- the official records could ignore the indigeneous irrigation system in Bihar for reasons discussed earlier. Even the material that is available is not very reliable. Persons capable of keeping records in "scientific" format were educated in a different system and inculcated with

a formalist outlook. In addition, they could easily let loose their imaginations when the matter was not of any practical importance.[8/] What we can do at the best is to suggest, from the analyses of general policies during that period -- what might have happened and then furnish some information which may support the analyses.

The plunder of India that followed the battle of Plassey, among other things, helped capital formation on an unprecedented scale in England and paved the way for the Industrial Revolution. In the next fifty years the English industries made spectacular progress and began to look at the vast colony as a market for finished goods and supplier of raw materials with tremendous potential. By the second decade of the nineteenth century commodity exports to India, particularly textiles, reached considerable volume. The indigeneous production of textiles began to be discouraged. As a source of raw materials, India started producing tea, coffee, jute, sugarcane, poppy as well as coal and other minerals. For this, the expansion of roads, which had begun on a nominal scale for military reasons, and railways were taken up. By around the second decade, following the Industrial Revolution, the stage was set for a confrontation of two different modes of production also at the basic (economic) level. The already acquired control over the

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8/ For example, the two most important sources, Navin Chandra Sen's memoirs (in Bengali) or Grierson's Report on Gaya (1893) written at a slightly later period, both suffer from these difficulties.

State could now be utilised in favour of one mode of production. But the State can mediate only through the civil society. If only the civil society could be transformed to serve the interest of the dominant! A transformation became imminent, not simply on the statute books; but a concrete one.

The struggle began, first with consolidation at home, to establish the interest of the whole class of English bourgeoisie above the oligarchic interest of the Company. The arena was the homeland of the conflicting parties, the result was the abolition of monopoly rights of East India Company by the Charter Act of 1833. It was a transfer of power -- the oligarchic rule established after 1765 was now transformed into a rule by the whole class of bourgeoisie. The new rulers could not remain contented with the marginal role assigned to the imperial State under Permanent Settlement. It should pave the way for more profound change, for a passive revolution.9/

The philosophy of the ryotwari settlement was based on a principle of 'no compromise'. Aberrations must have been there, but on the whole the colonial State had set out from the beginning to destroy the indigeneous civil society and construct a new one. Over all the years, the ruling classes went on consolidating their strength. In the Permanent Settlement areas the philosophy was 'live and let live'. The colonial rulers established their domination and for that

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9/ See Glossary.

purpose, had captured the State power. But they did not show any readiness to provide intellectual and moral leadership over the dominated except occasionally in the enactment of oppressive Regulations. It was a classic case of alliance between two classes -- but between two classes with very different civil practices. The dominant factions of the ruling class could not have made their way through in all matters, and contradictions were inevitable. This does not mean political conflicts alone -- the possibility of which was limited, for the zamindars were divested of their martial powers. But there was a contradiction of more general nature. Nourished in a completely different set up, the outlook of either the zamindars or the officials under them, was not suitable to meet the norms required for the functioning of a different mode of production. As long as the respective domains of the two classes-in-alliance remained separated more or less between urban centres and countryside, the contradictions did not come into the open. The difficulties surfaced after the Industrial Revolution, when the questions of extraction of raw materials and expansion of markets cropped up, when it became imperative to introduce the new mode of production in the Indian countryside. If the State is to be made a vehicle of this policy, as a first step civil society in the countryside should be overhauled. It should serve the hegemonic interest of only the dominant faction in the ruling classes. It cannot be permited any more to reflect the interest of the indigeneous mode, even though through the

zamindars. No wonder that the shift in policy led to the separation of powers from the zamindars simultaneously with the incubation of an intellectual class familiar with the civil system under capitalist mode of production, to carry out the civil service.

The course of developments was parallel to what Gramsci noted in Italian history. "The separation of powers ..... is a product of the struggle between civil society and political society in a specific historical period. This period is characterised by a certain unstable equilibrium between the classes, ... in which the Church (one party) is taken as representing the totality of civil society (whereas in fact it is only an element of diminishing importance in it), and the State as representing every attempt to crystalise permanently a particular stage of development, a particular situation" /Gramsci, 1978 : 245/. The zamindars were divested of the police powers as early as in 1792 -- for obvious reasons. But further separation of power occurred only after the shift from mercantile interest. The Charter Act of 1833, by abolishing the monopoly privileges of the East India Company, for the first time permitted Europeans to buy land and settle in the interior, thus opening up the scope for plantations and mines. Inevitably, the Act accompanied a Law Commission to evolve a new civil justice acceptable to all the inhabitants of India, indigeneous and Europeans alike. In 1836 the Indian Legislature British-born subjects residing in the Company's (now vested

with administrative responsibilities alone) territories in India were made subject to the jurisdiction of the higher civil courts of the Company and in 1837 it was made lawful for them to acquire and hold, in perpetuity or for any term of years, property in land /Misra, 1970 : 513/.

We need not go into the details. Apart from the police functions, the zamindars were divested in course of time, of their executive, legislative and judicial functions. The new departments were put under Europeans and later opened their doors to the new intellectuals -- created through Macaulay's formula -- more familiar with the European civil system than the Indian traditional ones. The colonial rulers were set to establish the intellectual and moral leadership of capitalism.

In the years following the Charter Act of 1833, plantations, mines and with those, overheads like railways and roads penetrated into the countryside. In some areas the old mode of production was replaced by these. But this was only the direct effect and restricted to rather small areas in the vast country. Indirect effects however, were felt extensively. On the one hand, the expansion of overheads, the demand for marketable surplus in food and such other factors along with the abolition of monopoly practices (of the Company) gave a fillip to commercial activities in the countryside. On the

other hand the ruin of the artisans, the loss of productivity[10] in agriculture along with the growth of population and limited scope of land reclamation led to increased pressure on land. For the first time the Zamindars, traders and different types of intermediaries found themselves faced with alternatives in the use of land. Tenants[11] could be evicted for there were others

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10/ This was an important reason. One may refer to the Voelcker Commission Report. Prior to the Royal Commission on Agriculture this was the only other Commission on agriculture set up by the colonial Government. Dr.J.A.Voelcker, consulting chemist to the Royal Agricultural Society of England, was deputed in 1889 to make inquiries on Indian agriculture and suggest improvement measures on scientific lines. He had spent about two years in India, particularly in eastern U.P. In the voluminous Report rich with technical details, Voelcker repeatedly asserted that Indian agricultural methods were immensely superior to those of the European continent. As improvement measures Voelcker repeatedly returned to the elimination of causes of deterioration all created by the colonialists e.g. through the creation of ecological crises, export of items earlier used to increase soil fertility etc.

As to the quality of the data, I feel it is more important to warn against the sceptics. There is a tendency widely prevalent, to underplay such information as eclectic and discard it on the plea of 'balanced attitude'. All such critics should be reminded of the fact that like Dr.Voelcker or Sir Arthur Cotton, experts, who had reported on various aspects of Indian production systems during the last century, had only laudatory remarks. For the source of such characterisations as "backwardness" one has to refer, in contrast, to the politicians who not only never needed to substantiate their theory but even had the audacity to shelve such reports like those of Cotton or Voelcker, no matter that they were the greater authorities on scientific subjects than the advocates of colonialism. If one is seriously in search of 'a balanced attitude' one should not see only one side of the thing but both; one should not guard oneself only against 'overenthusiastic patriotism' but also from 'colonial heritage in though process'.

11/ Tenants of zamindars, equivalent to landowners in our previous chapter.

ready to work at inferior terms. Alternatively, the land could be used for profitable cash crop cultivation even under tenancy. What was once only formal ownership for the zamindars now began to be treated as real. The legal ownership granted to zamindars under the Permanent Settlement tended to be real and endangered the indigeneous property relations calling forth restrictions in the form of Tenancy Acts.

The altered superstructure came to lend excellent support to the transition of property relations. The English system of jurisprudence favoured the superior title holder in its very ethics. Old civil laws as well as the religious laws restricting moneylending and often land transactions were already repelled. The procedure of the new judiciary demanded proofs impossible to avail in the traditional setting. The judgments did not only favour the superior title holders but also those among them who would not stick to the old ways and exhibit adaptability to the new civil system. The new code, based on the private property relations, introduced systems like the attachment of property in court awards and the executive officials lent their support in the enforcement of such codes. The village society or any other institution willing to adhere to the old civil system, now felt helpless. The zamindars (or other agents) being aided by the class bias of civil procedure, were encouraged to increase their share of income. Probably they insisted first on a change in distribution of

product by demanding higher rent etc. The tenants might have agreed to the demands knowing fully well the consequences of refusal. Those who refused were the only ones actually evicted. Otherwise, the manifest change was steady rise in the rent roll of the proprietors.

It did not take even a decade for the tenants to rebel against the traditional local authorities. The class struggles led to the enactment of the first Tenancy Act in 1859 which defined the ownership rights the proprietors would enjoy on landed property along with restrictions on distribution of product. The Tenancy Act was a feeble attempt of formalisation of the indigeneous property and distribution relations between the authorities and the members of village communities.

However, not much weight should be paid to the Tenancy Act of 1859 except for its statutory significance. Theoretically, the tenants could avail justice as per the Act. But since they did not possess any record of right and were dependent on the zamindars for confirmation of their status as tenants, the Tenancy Act was of no avail. It was only after the records were created, or the attempt was made in the early twentieth century, following the Bengal Tenancy Act, 1885, that there was substantial change in their condition. The same step which Read had adopted as the initial step in his Ryotwari settlement was undertaken in the Permanently Settled areas after more than a hundred years. What happened in the matter of irrigation works after the preparation of records of rights was essentially

similar to the course of events in Ryotwari areas a full century earlier. We shall discuss it in the next section. Meanwhile, let us study more clearly, what might have happened during this period.

The ahar-pyne irrigated tract too experienced the same deterioration in zamindar-peasant relations during the nineteenth century as did the other parts of Permanently Settled areas. Complaints about high rents were frequent. Indeed, the zamindars had shown readiness to insist on cash or kind forms of rent at different periods deciding from whatever was more profitable under the existing market conditions /Chaudhuri, 1977/. The wide prevalence of a distinct system of rent collection called bhaoli system had provided wide scope for rack-renting. Under this system the rents payable to zamindars were variable in amount and were decided each year by appraisal of the standing crops sometimes late in the kharif season. The system was associated with the irrigation system as we shall discuss in the next section. Suffice it to indicate here that such a system provided excellant scope for arbitrary appraisal and increasing extraction, and became the major reason of tension between the zamindars and tenants in South Bihar.

But the question is, how far did it affect the irrigation system. If the model presented in the previous chapter describes correctly the then-existing systems, then the effect of such increased rents need not be very severe. It would

amount to a change in amount in the revenue payment under the distribution of product leaving the fundamental property relations intact. The increased rent payable to the zamindars does not alter the premises that explain the existence of irrigation communities. There is no reason therefore, to suggest that irrigation works suffered even during this period. It implies that the community members were forced to tighten their belts. It is probably true that in at least some places they found it impossible to make the two ends meet and rebelled against the unscrupulous zamindars and their amlas refusing to pay the rent. Probably the tenants were evicted in some of these rare cases of rebellion. Only in these rarest of the rare cases were there any chance of alteration of the property relations and rejection of the community. But there is no reason to suggest that such changes were general. The zamindars could not have any reason to evict tenants on a large scale when their goals could have been achieved by increasing the rent. Nor was it easy to settle the lands with new cultivators, without which the resumption of land does not help increasing the zamindars' income.

To the civil servants in the zamindari areas, who could be oblivious of the irrigation system presuming that it was a task undertaken by the zamindars, the situation appeared as that the zamindars of Bihar, on the one hand were ignorant, idlers and incompetent to conduct their business /Das, 1983:267 and on the other hand were capable to maintain the irrigation

works with admirable competence. It must also be noted that direct replacement of the indigeneous system of production too was very limited in the ahar-pyne country. The reason lay rather in the 'remoteness' of the areas. In the difficult flood prone country criss-crossed with several rivers, roads and railways did not grow much. So much so that there was not a single metalled road till the end of the last century in the whole of the Jehanabad subdivision except for a few kilometres in Jehanabad town itself. Rail connections did exist, but were rare and slow. Pack bullocks were the major mode of transport of goods over a large part even till the first two decades of the twentieth century. In consequence cash crops did not extend much to the district. Poppy (opium) was the only important one -- but its cultivation as well as the cultivation of other cash crops was suitable to the bhit land. The ahar-pyne irrigated land and paddy cultivation were not affected very much.

All the available evidence supports such a conclusion. The district of Gaya remained immune to famines till the end of this century. The Report of the Irrigation Commission, 1901-3 or the Notes on Gaya prepared by Grierson in 1893 mention that the indigeneous irrigation systems were not in any alarming state of deterioration (for which they had of course, thanked the zamindars). It may also be noted that by the end of the century the land prices in Bihar were several times higher than that of Bengal proper /Das, 1983 : 307.

It would not have been possible, in circumstances when cultivation of other cash crops had not made much of an impression - if the indigenous irrigation systems were not in proper shape ensuring high productivity of land and enabling the tenants to relinquish substantial amount as surplus.

By the close of the century the misuse of bhaoli system had become a matter of grave concern /Chaudhuri, 1977:324/. Yet, significantly, the argument made in favour of the continuation of the bhaoli system was that <u>otherwise</u> the irrigation system would suffer. In the debate regarding the fate of the system many a participant cited the case of good management of irrigation works by the zamindars, explaining that the motivation of the zamindars came out of the bhaoli system of rent. The Irrigation Commission, 1901-3 had proposed the making of certain legislations with respect to the private irrigation works. But the reasons given were altogether different problems. One of the reasons was the question of upkeep of the irrigation works. But it came to be posed not as a problem at the bottom level but at a higher level. The subdivision of the estates and sharing of the same work by several zamindars had led to an organisational difficulty for the higher level works and created problem of maintenance. Many big pyne systems shrank in sizes. The subject of the legislation was how to assemble in each unit pyne system all the co-sharer zamindars for such works. The question of co-operation of tenants was not as yet a problem. The other reason for legislation had followed from

an experience in the recent past that because of faulty headwork, the Sakri river had changed its course turning a pyne into its main course and consequently causing severe flood to the whole area around. The legislations were proposed to avoid recurrence of such mishaps. Evidently, this too concern the works at higher levels not at village levels.

We may examine the more important first reason at some length. If the colonial State had established a real land market that was, as we have already discussed, mostly restricted to the transfer of estates. It created a problem at the upper level of irrigation works. While introducing the Bihar and Orissa Private Irrigation Works Bill, 1922 in the Legislative Council on the 10th August, 1922, years after the Irrigation Commission, it was still felt that the chief cause of deterioration was something different from problems at local levels.

> "It is admitted on all sides that the irrigation works of the Gaya district and other districts have fallen into a very bad state of disrepair. The chief cause of this is that during the past 40 or 50 years there has been a great deal of subdivision of the landlords' interests. There has been a breaking up of large estates and irrigation works which formerly belonged to one estate and were maintained in a state of efficiency by an individual landlord now passed through several estates of which the landlords are unable to agree together amongst themselves and co-operate. There are also causes in which estates are now in the hands of numerous co-sharers. Amongst the co-sharers there may be one or more who are perfectly prepared to undertake the work of repair and to spend money on maintaining irrigation works but they do not see why they should shoulder the whole burden for they are at present unable to obtain contributions from the co-sharers who refuse to join with them."

Evidently, the author had only the pynes, the supply channels in mind. What might have been the consequences of such disrepair? If the pynes deteriorated, the supply in the ahars would reduce. Once in a while one would even come across some such ahars which were completely out of supply. But the ahars collected water from more than one source and often from the run-off water in their own catchment areas. It is most unlikely, nor was there any report, of ahars running out of use steadily during this period. There were little complaint either of lack of proper maintenance of ahars or complications in maintenance at the village level[12]. It is reasonable therefore to suggest that fundamental organisations (the ayacut communities, the village communities) could still be reproduced, though the difficulties must have been increasing. The two major difficulties which cropped up during this period were:

(a) the gradual change of production relations, though not yet of a fundamental nature but at the level of distribution of product. The landlords were draining out increasing amounts as their rent. In consequence the class contradictions were sharpening.

12/ As we will see in the next section, such complaints had just started pouring in. The Chief Secretary, while introducing the Bill in 1922 had not taken notice of those. He was reflecting indeed, an awareness of the state of affairs till a few years back, of the period preceding the records of rights preparation under the Tenancy Act.

(b) a change of scale in the irrigation works. As the supply lines began to deteriorate the different parts of a system known earlier as a single unit (involving branches and ahars) effectively began to become separate units collecting water from their respective and independent catchment areas. The small and separate systems did not die out but had certainly suffered from some shortages earlier guaranteed under an elaborate supply system.

4.4. The Tenancy Act (1885) and its Effects

Historically, the passage of the Tenancy Acts was not paved so much by the peasantry of Bihar as by their counterparts in Bengal proper. Landlord-tenant relations had deteriorated also in Bihar, but not to the extent of widdspread and violent class struggle as was in Bengal proper. In Bihar, therefore, the Tenancy Act came more as a pre-emptory measure attempted from the top. In consequence, it initiated a set of action within the agrarian society. We propose to study the Tenancy Act not as an outcome of agrarian tensions in Bihar but for its effects on an already tense situation. Certainly, the Act itself was a response to the rising tension and we have touched upon this point in the foregoing section. But the major feature of it, at least in Bihar, turned out to be the responses received from the agrarian community, the effects of the Act.

The main objects of the Tenancy Acts were (i) to give the settled ryot the same security in his holding as he enjoyed under the old 'customary law', (ii) to ensure to the landlord a fair share of the increased value of the produce of the soil, and (iii) to lay down rules by which all disputed questions between landlord and tenant can be reduced to simple issues decided upon equitable principles. /quoted in Das, 1983 : 237. In other words the first two objects of the Act were to demarcate the rights over property (in land) and division of product between the landlords and tenants with an avowed intention to honour the 'customary law'. The third objective was to work out the procedural matters and administrative arrangements permitting the tenants to obtain the facilities of the reconstituted civil system. In spirit therefore, the Tenancy Act upheld the same regard for customary and traditional principles as was in the case of Permanent Settlement. At the same time, it also proposed to develop certain procedures, in accordance with the bourgeois legal and juridical system, to enforce the customary principles. But in reality, the Act did not turn up to be a hybrid of this extent. The makers of the Tenancy Act fortunately, had little knowledge of the customary principles[13/], and included only such provisions which were understandable within the limits of their shallow perception. The Act had touched only

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13/ e.g. in terms of parcellisation, plot location etc.

such areas as the division of property or produce between the overlords and the irrigators -- an area rather insignificant from the point of irrigation as we have discussed already. But the effect of the Act did not remain restricted to this area for a different set of agents. The apprehensive zamindars, in their efforts to scuttle the different provisions of the Act often resorted to such actions which disrupted the functions of the communities. As we have noted, the colonial civil system had already extended several provisions to the zamindars which permitted their interference in the internal matters of the communities, but which were not yet used by the zamindars. Only now the zamindars proceeded to realise those already sanctioned rights, encroaching upon the internal affairs of the local communities. The Tenancy Act had acted merely as a catalyst, to initiate the whole set of transformation. As such, we need not bother about its detailed provisions.

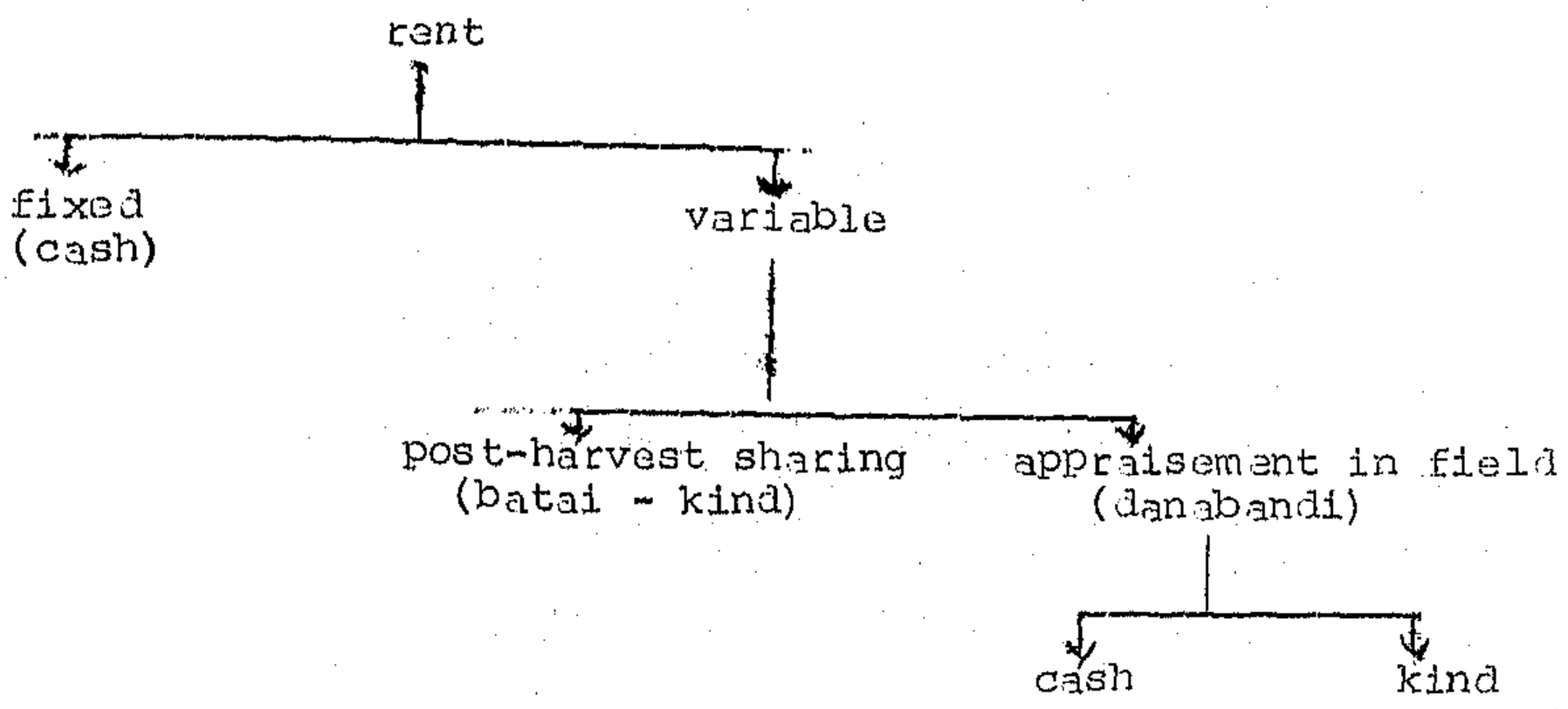
Quite naturally, the year of enactment is of little interest to us. The Act could not be brought into effect without the records of rights. Accordingly, the Survey and Settlement works for the preparation of records of rights signal the beginning of the effect of the Tenancy Act, 1885[14]. Such works began in Bihar in 1892 and were completed in 1919.

14/ Bengal Tenancy Act, 1885; later, after the separation of Bihar from Bengal Presidency, Bihar Tenancy Act with minor modifications.

The works in the major part of the ahar-pyne irrigated tract was undertaken from the beginning of the present century. The determination of rent everywhere raised serious dispute from the beginning. As it has already been indicated, serious tension between the landlords and tenants had already developed in Bihar on this question as landlords had been increasing their demands over all the years. It only burst upon the imperial civil system the moment the civil officials offered to mediate. Earlier, terms would have been determined by the annual haggle between the landlord and the tenant. The Settlement operations gave a qualitative twist to the whole contradiction by linking it up with the imperial civil system. What was once a matter internal to the landlord and tenant now began to be decided by the ability of the contesting parties to bribe the mediator amla /Das, 1983 : 427. In every district large number of civil suits were filed particularly on the question of commutation of rents. The mediation of the State trying to be decisive tilted the balance on one of the sides only to the effect of promoting increased resistance from the other side. The landlords resorted to assertion of their privileges sanctioned under the new civil system. The tenants offered resistance by getting organised.

The bhaoli rent, which by itself provided excellent scope for misuse, was naturally the system that gave rise to the major disputes. Quite a lot has been said about the connection between this system and the maintenance of irrigation works.

Therefore the question deserves some special attention. The systems of rent prevalent in South Bihar, particularly in Gaya district were of different types:



Fixed rent usually was in cash. But share of produce was not necessarily paid in kind as is generally believed. The peculiar system of appraisement of crops before cutting, practically confined in its incidences in the South Bihar districts, was in character produce rent but could also have been paid in cash. One of the major disputes in the incidences of danabandi rent was that in addition to arbitrary and exaggerated appraisement of the standing crops the landlords were also choosing the prices according to their convenience to impute values on the appraised rent. The Guide and Glossary to the Survey and Settlement Operations in the Patna and Bhagalpur divisions /Bihar, 1907; also Sahay, 1946 : 443/ had clearly noted that in the South Bihar districts the term 'bhaoli' was used for 'danabandi' rents and that the landlords'

share was paid in money according to the appraisement. In North Bihar the appraisement system was rare and the term bhaoli was synonymous to batai or even produce rent in general. Leave alone the researchers, even the Survey and Settlement operations appear to have overlooked such distinctions. For example, the Final Report of Survey and Settlements for Gaya district clearly posed bhaoli system as against nagdi (cash) /Tenner, 1919 : 907. It is difficult to decide anything from this mass of entangled information. But that would have been quite important, for the whole controversy rested on the finer distinctions between the rent systems.

The variable rent system, it may be argued, takes into account the condition of irrigation facilities available in any particular year[15]. The connection was thought to be important to keep landlords interested in the irrigation works. As the assumption was that the zamindars construct, maintain and allocate the shares in irrigation, the particular system of rent was thought to be essential for the upkeep of these works. Ever since the time of Buchanan, but particularly after

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15/ The following is a tentative explanation why the two different systems of variable rent were in effect. Under the batai system, the risk existing throughout the season was shared by the landlord as well. Under the appraisement system, the risk existing till the time of appraisement - appraisement used to be done at late stages in the season when the irrigation needs were over - were shared by the landlord; any failure after irrigation needs were over would be borne only by the tenant.

the Tenancy Act came into force and the question consequently, became one of practical importance -- there were different opinions about the essentiality of the system of rent for the maintenance of irrigation. Some had thought it essential, no matter that the variable rent system gave ample scope of rack-renting. Other stressed rack-renting as the more potent reason for failure and were in favour of abolition of the particular form of rent arguing that it was not essential /for an account of the details see Chaudhuri, 1977/. Since the arguments connected the system of rent to the internal characters of the irrigation system we have to check the validity of the arguments from the evidence available after attempts for a change.

Of course, the facts are buried in the terminological confusion between kind rent, produce rent and bhaoli rent. Apparently the three were treated by the officials as synonymous for most of the time, which might not have been the reality. Barring this limitation, the progress of the events were as follows. During the Survey and Settlement Operations in the South Bihar districts the commutation officials were instructed to allow commutation of kind rent into cash rent provided under the Tenancy Act, only in such cases where those were not likely to affect the irrigation works. The actual practice depended on the judgment (hence not necessarily impartial) of the field officials. About the actual procedure, the Collector of Gaya, J.C.Hardman later summarised: request for commutations

were sanctioned by the officials (i) where the irrigation systems were simple such as irrigation from ahars, (ii) where the irrigation system was concerned with only one village and (iii) where there was a manifest breakdown of the bhauli (bhaoli) system /Hardman, 1938/. The commutation orders could have been challenged at the Courts and some alterations were made there too. Commutations by mutual agreement between the landlord and the tenant were allowed and not uncommon either. On the whole, commutations had occurred on a large scale. As per the effects of commutations on irrigation works the evaluations made by different officials during the later period too differed widely. Thus Hardman had noted in 1938:

"I have visited a large number of nagdi villages and the condition of the irrigation works in these villages is generally deplorable. It is obvious that nothing has been spent on gilandazi since commutation took place. In consequence in these villages large areas of land are now found to be fallow and often a large number of the holdings have been sold.

"In bhauli villages generally the conditions are very much better, though there are instances of failure to maintain the irrigation system....."

Hardman was explicit in that in Gaya district commutations were allowed generally where the irrigation was from tanks and ahars -- about 27 per cent of net cropped area according to him -- and in most parts of this area no maintenance work

has been undertaken later. But Williams, who was conducting the Rent Settlement Operations in some subdivisions including some of Gaya district almost at the same time (1937-41) had a different evaluation :

> "Some officers reported that in many villages the landlords, after commutation, had neglected to maintain the old irrigation works ..... (but) the reports indicated that it would be a mistake to lay down, in general form, that commutation everywhere leads to neglect of the village irrigation works."
> /Williams, 1941 : 407

In support of his contention Williams had also indicated that there were many zamindars who had remained careful about the upkeep of irrigation works even after commutation.

Both the reports were based on field surveys. Yet Williams's one seems more reliable for his was based on much detailed information than a hectic impressionistic tour by a Collector. Williams did not contradict the view suggesting the interrelations, he did only add a note of caution against excessive generalizations: "It would be a mistake to lay down in general form that commutation everywhere leads to neglect of the village irrigation works." Probably this settles the debate and one has to agree with Williams /1941 : 417 that --

> "Unless the landlords deliberately wish to ruin the tenants, the neglect or maintenance of irrigation works does not necessarily depend on the grant or rejection of an application for section 40 (of the Bihar Tenancy Act providing for commutation)".

The course of events following the Survey and Settlement Operations may be explained in the light of this observation. The landlords had several reasons to wish deliberately to ruin the tenants. Some of them, being apprehensive of once-for-ever fixation of rents, must have exaggerated their claims to the settlement authorities. When the tenants disputed, they must have used all the means available to them, to bring the tenants to their terms. The deliberate attempt of ruining may come from another course of events. The rents were probably excessive in many areas because of the increasing demands made by the zamindars all throughout the previous years. Even if they had not made any further increase during the preparation of records, the tenants might have appealed to the Settlement officials being hopeful of justice. Even in this case the zamindars would certainly try to force the tenants to accept their terms. It must be noted that preparation of records or decisions in case of appeals does not close the matter. Even after a mediation, a disgruntled party can still continue to harass the other. The helpless tenants might have been ready to digest their grievance, but it is most unlikely that zamindars readily accepted such mediations which did not favour them. In all such cases they continued to harass the tenants deliberately.

The different methods of harassment could have been anything from refusal to pay rent-receipts to physical violence. Many of the zamindars preferred to move to civil

courts because the modus operandi there, as we have pointed out, were tilted in favour of them. The irrigation works provided one of the best avenues for such deliberate ruining. With their regard for the customary rights, the founders of the imperial revenue system had imposed certain restrictions on the resumption of land by the zamindars[16]. But no such protective provision existed for irrigation rights of the tenants[17]. Rather, the assumption that they actually constructed, maintained their positions in the matter of title over these works, much above what was actual. In the ahar-pyne tract, the zamindars had this additional and excellent avenue for deliberately ruining the tenants. Here is an example :

> "In Narayanpur Murhari, ... the landlord during attestation (under the Survey and Settlement operations), to force the raiyats to agree to his claims for cash-rent, let the water from his (sic!) pain (pyne) run to waste after the produce-rent lands had been irrigated and prevented the raiyats from irrigating their cash-rented

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16/ The zamindars were not permitted to increase their possession for private use (zirat) above what was held by them before the grant of Diwani. They could resume land from the tenants in e.g. rent-decree sale, but such land were to be regarded as in 'cultivating possession' (bakasht) not private possession of the zamindars. It required immediate settlement with other tenants. I have discussed some of these complications elsewhere /Sengupta, 1982/. Though it is doubtful that these complicated provisions were fully honoured during the later years, during the 'twenties and early 'thirties those were important considerations in official dealings.

17/ Except that commuted rent could have been revised if the 'customary' irrigation facilities ceased to be available. It required long procedure.

lands although by custom they had the right to do so."
/Tanner, 1919 : 129/

Probably such cases were quite common. Irrigation from ahars too became a difficult proposition due to deliberate obstruction made by the zamindars. This was inevitable because of rising class contradiction. Although it occurred concurrently with commutation of rent, it is not an outcome of that. Rather, both commutation of rent and misutilisation of irrigation system were among the different effects of open class antagonism between the zamindars and the tenants.

No detailed description is available about what actually had happened during these hectic years. We can only reason about the course of events. The zamindars, though not all of them, asserted themselves over the allocation process. But they certainly lacked the resources to undertake the maintenance work earlier done by the tenants. Some of them might have come to senses and came to compromise with the tenants before severe deterioration could occur. Some others remained adamant. The affected tenants were lacking interest in the works. They certainly did not refrain from trying to recover their control over allocation process. But as long as it remained in the hands of these zamindars, they had little interest in taking care of those. Remembering that these earthen structures deteriorate at a very fast rate and sometimes cannot be traced if maintenance works are neglected for a couple of years, it seems possible that many different units fell into

sad state of disrepair, sometimes beyond recovery, during these years of tussel between the zamindars and tenants, immediately following the Survey and Settlement period. The late 'twenties therefore, may be the period when, for the first time, large scale deterioration of the irrigation works evan at the lowest level were noticed in South Bihar. It immediately set an alarm in official circles and form the beginning of the 'twenties the government officials became concerned with the maintenance of these works.

Then the Great Depression struck. It had probably shifted the focus from irrigation works as a convenient methol for harassment of tenants. As large number of tenants were unable to pay rents, they could have been evicted in rent decree -- there was little necessity for any indirect method of harassment. The class struggles culminated apparently against the zamindars, but effectively against the alien superstructure. We shall discuss the impact of these later. Let us for the time being, engage in reasoning out what might have happened to the communities.

It is probable that until the Great Depression, the internal relations of the irrigation communities were not greatly disturbed. The productive forces were not available because of the obstruction put up by the zamindars. But eviction of tenants were not yet very common. One doubts whether such rules as parcellisation and location patterns were disturbed greatly in absence of widespread eviction. If

the subject of labour were available once more, such units could have recouped even from this stress. The large-scale eviction of tenants during the later period gave a mortal blow even to the internal relations. Arbitrary settlement of plots resumed by the zamindars extinguished the last hope for the already deprived units and forced some others who were not yet choked of their water supplies, to join the list of defunct units. Some of these units were never again able to revive. But it must also be noted that there still remained several units in functional stage, some with the internal production relations only marginally disturbed and some others ready to recoup should the supply of water be resumed.

Unfortunately, historical information for this period as detailed as enabling us to judge the correctness of our analyses, is not available. Statistical information for this period too, is of little help (Appendix-II). However, some of these details are not essential for understanding further course of development. So far we have described only one side, the deterioration of these works. Much of the future history has been determined by the reaction to such deterioration, by remedial steps taken by the concerned parties.

During the period that followed the deterioration of irrigation structures as a consequence of the Tenancy Act, we notice two different tendencies. On the one hand, being disturbed by the alarming rate of decay of the productive forces the government proceeded to take several measures for

the protection of those. The oblivious attitude was gone -- Acts and amendments, reports and directives regarding indigeneous irrigation in Bihar, suddenly began to pile up. On the other hand, the same threat guided the peasantry to take recourse to violent class struggles and seek a solution at a more fundamental level by challenging the unsuitable superstructure and State system. It is not the former tendency, the one obviously related to irrigation, which alone should concern us in this study. The latter tendency too is of concern, and that is not merely because of the contribution of irrigation system in its development. It is important because ultimately the consequences of this tendency came to determine the future of the irrigation system. However distant the anti-imperialist struggle may appear at first sight, the fundamental changes it brought about became decisive in all aspects of the society, including the irrigation system.

4.5 Transformation of the Civil System

Even during the close of the last century the government had not felt any reason to be concerned about the indigeneous irrigation works in South Bihar. After severe famines ravaged almost all other parts of India, the colonial government took up irrigation works as a protective measure and set up an Irrigation Commission, in 1901. The Commission observed that the ahar-pyne irrigation under the zamindari system, unlike its counterparts in South India, was not in a bad state of

affairs, so much so that the major district, Gaya, served by this type of irrigation remained practically immune to famines throughout the nineteenth century. There was no necessity for much of protective works. However, there had occurred some deterioration which the Commission identified as due to the partition of estates. This was the only point apart from another technical reason[18] which prompted the Commission to recommend the enactment of an Irrigation Act.

But there was no great alarm. The government moved in a very casual manner. By around 1911 an Irrigation Works Bill was prepared. But it was not proposed since it was felt that the Survey of Gaya, which had started in the same year, would produce valuable additional information to help drafting of the Bill on a sound basis. Survey and Settlement operations in Gaya district were over in 1919. Subsequently, in 1921, a Bill was proposed in the Legislative Assembly. The high officials were still not aware of any serious contingency. In fact after about 15 years, when the problem had become very serious, it was pointed out that the Chief Secretary McPherson, while proposing the Irrigation Works Bill in 1922, was not even aware of the major reasons of deterioration of irrigation works:

18/ The other reason behind the recommendation had arisen from a recent experience when a river had changed its course and had passed through a pyne causing severe flood. The Commission recommended that headworks should be checked to avoid such catastrophe.

"There is no mention, however, in the speech (introducing the Irrigation Bill) of a still more important cause for the decline of the irrigation system, namely commutation." /Hardman, 1938/

Of course, the landlords were fully aware of the crises that had developed lately and they fought tooth and nail against the Bill. There was an organised opposition led by Raja Bahadur Amawan of Gaya district. The original provisions were drastically changed by the Select Committee and further diluted in the debate in the Legislative Council. A reluctant government and a determined opposition produced the first ever Irrigation Act in Bihar (Bihar and Oriss Private Irrigation Works Act, 1922) in such a diluted form that it remained practically ineffective.

The Irrigation Act was drafted with the same wrong notion at the back of mind, that the zamindars construct, maintain and allocate water from irrigation works. As a remedial measure therefore, the civil servants were asked to play the same role should the zamindars fail. The Act empowered the District Collectors to step in from a wrong premise; the dilutions warned them to be extra-cautious before they make a single step forward. The later amendments helped in improvement of the second part; the basic lacuna remained as ever. During the introduction of an amendment in 1939 it was pointed out that the only two chapters of the Act (Ch. II and VII) which were applied once in a while, were concerned with improvement

and repair works of occasional nature and supplemental provisions like appointment of irrigation committees, recording of parabandi etc. The major provisions relating to regular maintenance (Ch. III and IV) or extension (Ch. V and VI) did not come to any use. The Collectors were permitted to take up works where financial liabilities were very little and that too after a lengthy legal procedure to ascert that the landlords would not take those up by themselves. The Collector of Gaya noted later [Hardman, 1938] that, "Several experienced officials have held the opinion that the Act actually hindered the repair of the Irrigation Works, because prior to the Act, landlords could be persuaded to undertake repairs, but after the passing of the Act they were provided with strong legal excuses for resisting such repairs." To a lesser degree supplemental provisions like appointment of irrigation committees were attempted. But no record nor any attempt of evaluation came to our notice.

A much greater concern for the upkeep of these works is noted in the late 'thirties. After the formation of the Congress Ministry, an Amendment (B. & O. Pvt. Irrig. Works Act, 1922, Bihar Amendment Bill, 1939) was proposed. Among other provisions it gave <u>suo motto</u> powers to the Collectors, evolved emergency procedures for repair and made provisions for recovery of cost from the others if only one of the co-sharers undertook a repair job. A revolving fund was created for this purpose and was placed at the discretion of the

Collector. The Ministry also initiated a Rent Reduction settlement in certain parts of South Bihar not only on the ground of fall in prices during the Great Depression but also to account for the breakdown or neglect of irrigation arrangements.

The Collectors now had powers and some fund, though insufficient. Yet the impact was marginal for there were very few officials empowered to act while the amount of work involved was gigantic. In particular, some of these works were such that immediate actions were needed e.g. in case of sudden breach of an embankment. The government officials who were nowhere near the spot were of no help[19]. The net effect must have been that the old organisations carried on the works wherever possible. The empowered officials appeared occasionally and chose something to do which was then done by hired labour. The villagers had no knowledge what the officials were going to do -- nor did they expect anything to come regularly. The officials thought it was due to an efficient zamindar if the works were done even without them. Thus, no clear division of work emerged between the village communities and the government officials. The works done by the government officials remained superfluous and arbitrary. And in proportion to the recovery of village irrigation organisations and consequent improvement in the situation the inquisitiveness of the officials about the indigeneous irrigation works gradually died down.

19/ [illegible]

During the same time, however, the irrigation communities experienced a gradual recovery. They probably were not destroyed, but had only suffered partially when the zamindars deliberately wanted to weaken them. By around the 'forties the Kisan movement was storming through the countryside and the zamindars were virtually reduced to spectators of matters internal to villages. Attempts to recover these works resulted in various experiments and some of these self-help efforts were impressive for the smaller level officials. Quite a lot of such reports are found during the 'thirties and 'forties,[20] /Chaudhuri, 1977 : 333-57. Some of them even recommended the adoption of this or that model. But nothing was done.

Another Regulation was passed in 1940 and following independence a second Amendment was made in 1950. Every amendment proposed to increase the role of the officials vis-a-vis the zamindars. Ultimately, after the Zamindari Abolition the government stepped fully into the shoes of the zamindars and admitted all types of responsibilities earlier considered vested in them. But in reality, instead of any active participation the government has increasingly receded into a formal authoritative position. The ownership

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20/ In the 'fifties, the Kisan Sabha undertook even some construction works, e.g. under the auspieces of Kisan Sabha pynes were dug out at villages Narma, Sukiyawan, Golakpur and Oli of Ghosi Police Station. Gaya district, reported Janashakti, the organ of the Communist Party of India, Patna, August 22, 1953, p.2.

of the existing waterworks is now vested with the government. But no specific policy has been taken about such lands. No further Act has been passed and no systematic division of responsibilities between the government and the irrigators have emerged. Different departments, the Public Works DePartment, the Irrigation Department and the Agriculture and Land Revenue Department, all carry out some type of work but strictly occasionally. Thus for example, the Irrigation Department replaced the old palm-tree trunk bhaons at a number of places by hume pipes and the P.W.D. department in some years appears on the spot to repair the embankments of pynes like Lochna pyne. But regular maintenance and operation works are not admitted to by any of these departments. The 'negligence' has been so much that ahar-pyne irrigation has found its place in the departmental statistics under the head 'other sources' of irrigation which deserve little attention (see Appendix - II). The State of ignorance that was characteristic of the nineteenth century, has returned once again, after a fifty years lapse. In effect, the village communities have practically received back their autonomy. In places like Maniawan the system can now be reproduced within the means of the villagers. Leave alone other aspects, even the tough task of reproducing compatible land allocation patterns is achieved as we have seen in the case of Maniawan. After the abolition of zamindari when the parts owned by the zamindar were distributed among his tenants, a very different Pattern had emerged. In course of time the existing (compatible) land distribution pattern has emerged which was achieved without any coercion.

But of course, it does not mean that the government policy of absolute non-intervention has always produced good results[21]. In the villages where the internal organisations failed to recover by themselves, the deterioration was not checked. Thus, in the S.D.pyne system, when one of the branches did not receive water for a few consecutive years, partly due to bad maintenance and partly due to the shortage of supply, some political activists led some landless villagers to occupy the silted land which was once an irrigation channel. The land vested with the government after the abolition of zamindari is to be settled with landless peasants. But this incidence was certainly not in the spirit of the same legislation. There is an additional avenue by which the government policy is still weakening the village communities. In absence of a well-defined policy and availability of government assistance on certain occasions, there is an expectation of external assistance and a partial loss of initiative of the beneficiaries. It may be remembered that the villagers of Maniawan expect that government help may be available for renovation of Ibrahimpur chahka or Goh bandh. They are trying partly to collect the required resources from among themselves and partly to make the government interested by lobbying. That this is a loss of both initiative and effort need not be discussed.

21/ In accordance with the renunciation by the government, information about the system has once again become rare after the independence. Therefore, we are left with no choice but to fill up the gap with fragments of information collected from here and there.

If the course of development of government administration is characterised by increasing degrees of resignation, on the judicial side it has been the lack of effectiveness which has helped the recoupment of irrigation organisations. Before the period of the Tenancy Act, the judiciary could admit civil suits on irrigation rights only up to the level of disputes between the zamindars. It was the Tenancy Act which, for the first time, created the possibility of judicial mediation in cases of disputes between the zamindars and tenants on the question of irrigation. However, it was not an easy process; it is much simpler to define the rights of the landlords and the tenants in case of immovable properties like land. But how does one define the rights over water-resources, particularly when the supply available varies from year to year due to natural causes? That a record of rights was necessary also for irrigation -- if the government wanted to mediate -- was quite clear. The problem was how to do it?[22/]

The officials however, did not face much difficulty in obtaining a suitable format for the simple reason that how to define those rights was common knowledge in that area. Most of the old zamindar families maintained such records. Tekari Raj, the biggest zamindar family of Gaya district had

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22/ Certainly movable properties exist even under capitalism. But the problem does not arise, for the distribution is made on contract, e.g. in modern canals, for which no regular rights exist. Incidentally, in the first half of this century in Japan, some private companies introduced contract system of allocation in traditional water supply systems. But that failed. /Tamaki, 1977 : 21/

a celebrated record, known as Lal Bahi, showing the rights of the beneficiary villages in all the major pynes in his zamindari. The simple system that was followed was not to specify the rights over water resources directly, but on the diversion structures. The administrators too have followed the same method in the record of rights preparation. They have not said whether they were indebted to the traditional methods for the same idea. But it is interesting to note that the whole format of records-of-rights followed by the British was full of categories specific to the indigeneous system and anomalous under the European civil law.

At the initial stage, some of the officials had suggested that the records of rights should be made as elaborate as for land, showing the rights of individual tenants /e.g. India, 1903 : 163/. If the principles of Tenancy Act were to be followed then this must have been done, for under the Tenancy Act the individuals (tenants) were the units. But it was never done and in all the records prepared during the survey and settlement groups of tenants, either the whole villages or parts of these, were shown as units, much in accordance with the existing indigeneous system and traditional records of rights treating communities as units. No wonder the judicial procedures, developed on the basis of individual ownership, would find such records unsuitable.

Gaya, the most important district from the point of indigeneous irrigation happened to be the last district taken

up for Survey and Settlement Operations. Naturally the system of records of rights preparation reached its point of culmination in this district. In Gaya Settlement Operations two types of records were prepared; (1) the village record or fard abpashi and (2) the general pyne record. The first one dealt with information regarding irrigation within each village while the second one gave the details of a system which benefited many villages.

Fard abpashi was far short of a detailed record of rights of individual tenants. Nor was it a document truthful everywhere in describing the existing indigeneous system. It is a peculiar mixture of the two systems. For example -

(a) Columns implicitely honouring indigeneous system:-

col. 7 : Harvest and area irrigated (approx.) - This column did not show the holding by holding (or plot by plot) details of area irrigated. All it required was that a single hamlet or an identifiable distinct part, if it was an exclusive beneficiary, should be noted. In other words if there existed a corporate right within the village that should be shown.

col. 8 : Method of distribution of water - It was practically a record of the technological arrangements. As a question of social arrangement, it required only the information

whether any permission from the landlord was necessary. Implicitly, the tenants were regarded as only corporate antities and autonomous in function, for there was no inquiry about how they reached their decisions.

(b) Columns requiring individual details (the mechanical nature of answers needs to be noted) :-

col. 6 : Name of persons who should repair it - There was no specific instruction for the survey personnel. But this column was returned almost invariably showing it as zamindars' responsibility. The corporate body of the tenants as responsible was not found in any one of the handful of fard abpashis that were checked.

col. 9 : Arrangements, if any, which exists for deciding disputes between tenants - Here too the returns were invariably as that the landlords or their employees intervene.

The idea of corporate existence of tenants was so very implicit in fard abpashi that it was though sufficient to give copies to only one tenant in each of the beneficiary units. The jeth raiyats were chosen for this purpose, who certainly

had no representative status under the State legislation. No wonder that such records would be of little help in civil matters and one has not come across any incidence where fard abpashi was referred to.

The general pyne record was slightly better, for, in this the corporate treatment of villages was made explicit. In it the details of diversionary arrangements (e.g. para-bandi regulations between villages, rights of particular villages to erect bandhs etc.) are noted along with the 'customary' arrangement for repair works. Here too a common tendency to reduce corporate bodies to individuals (e.g. the amlas of zamindars or the jeth raiyats instead of the whole groups) is noticed. Yet, on the whole it successfully described the division of rights between villages benefiting from a single system and later, it was sometimes referred to in legal suits between villagers on the question of irrigation rights. But then, the civil courts have often been reluctant or incapable of appreciating the corporate entries[23].

Before we enter into the later developments let us note another interesting aspect of the preparation of General Pyne Records. As it was a record of villages benefited by a single

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23/ In Japan the Western legal system was adopted during the Meiji period but with suitable modifications. The customary corporate rights became an intrinsic part of the modern legal system. /Tamaki, 1977 ; 21/

system, it necessitated defining of a unit system. Definitions were never worked out. The units were identified as single units probably according to local practices. But one should not fail to note the amount of subjective choice involved in such decisions. Whether it should be recorded as two systems -- as Chhariyari pyne and Karua nala, or as a single system, as Supi desiyain pyne, depended on the choice of the Settlement officials. Whether Lochna pyne should be considered as a branch (sakh) of Supi desiyain pyne or a separate pyne is a matter of subjective decision. All these varieties of identification had been in vogue. The ultimate identification of the individual units was much too arbitrary and therefore, the official scale of these irrigation works do not indicate any internal property of the irrigation system[24/]. It may be noted that the indigeneous system of categorisation was careful enough to distinguish between branches ending in one village (karha, bhokla) and those passing through many villages (sakh, darsakh) or small and big diversion structures (gandi and bandh), which have social and technical implications respectively. But there was no system describing how to identify a single unit of work and how to distinguish one work from another. It might have been done for administrative convenience or such other reasons. We will return to it later.

24/ Our discussions about the concept of scale in the methodology chapter may be recollected. This explains why we have not considered the Supi desiyain system as a suitable single unit for study.

Let us have a look at the functioning of the judiciary in the years following the records of rights preparation. It must be noted that it was such records which brought subjects like erection of bandhs etc. (diversion structures in general) under the purview of the modern court. Thereafter a number of civil cases on such issues are heard of. We will refer to a few cases in the central part of the Supi desiyain pyne to show what type of role the modern judiciary has played in cases of conflict.

By around the 'twenties, following changes in the catchment area of Jamuna river, the supply of water to Supi desiyain pyne and consequently to the Supi ahar, was reduced. Naturally, the beneficiaries of Kanauli bandh needed more time to fill up their captive ahar and appeared very reluctant to remove the bandh and let water flow further downwards through Karua nala. The affected villagers down the system approached, after some time, to remove the bandh by force. Bloody clashes ensued resulting not merely in criminal cases but also in civil suits in which the villagers of Golakpur contested the right of the villagers of Kanauli to erect such a bandh.

After prolonged litigation a verdict was given. It was very interesting. The court admitted the records of rights as proof but objected to its treatment of a natural watercourse as private property. The entry was declared null and void and the principle upheld was that no one has any right to obstruct flow in natural watercourses, which would imply that most of

the indigeneous irrigation practices were illegal. However, the award was not executed, thanks to the reluctance of officials. The villagers of Kanauli were now demoralised, for their opponents, the villagers of Golakpur, could now summon the officials to execute the decision. The defeated party approached for a compromise. The villagers of Golakpur too, aware of the seriousness of consequences the villagers of Kanauli would face otherwise, agreed to let them divert water for two days a month. Thus, a new parabandi regulation emerged but it was forced to remain out of the jurisdiction of the modern judiciary. Indeed, the verdict forced much of the existing arrangements to be shy of the judiciary for all those may be held illegal by reference to the same award.

So when a second conflict ensued a few years later down this part at Goh bandh, the contestants had to invent a legally admissible description. After the Kanauli bandh case was decided, shortage of water began being felt at the next bandh (Goh bandh) site. The villagers of Golakpur now were determined to divert the whole of the flow to the channel benefiting them. It resulted in a violent clash and a prolonged litigation which lasted for over twenty years reaching from the lower to the High Court. As the case would be immediately dismissed if the villagers of Golakpur admitted that their bandh was on the natural watercourse, they claimed that the channel going to Maniawan was the sakh (and therefore could be cut off without violating the law) and the one going to

Golakpur was the main nala (the natural watercourse). Thus the subject of dispute became which is the true course of Karua nala. In 1960, Patna High Court gave its decision in favour of Maniawan. Once again there was a mutual agreement, out of the jurisdictions of the civil court -- between the two villages permitting Golakpur to erect such a bandh in each alternate week[25]. Thus by now it has been made amply clear to all the concerned parties that the norms followed by the judiciary and those required by the irrigators are very different. If at present, there is any move by any party that is not for mediation by the court but for harassing the opponent and weakening him to come to terms advanced by the contesting party.

On the whole, it may be said that the civil system immediately related to the indigeneous irrigation works, has undergone a full rotation with the effect of restoration of autonomy to the local units. The detailed history of the transformation is important for a different reason. The experiments conducted, the complexities faced and the outcomes of remedial measures provide an excellant understanding of the exact position and the suitable modus operandi of the authorities in such indigeneous works. Here we shall note a few of the salient features.

25/ The supply of water in Karua nala has improved since then, particularly after the construction of the Uderasthan Project was taken up. Consequently, such disputes between villages are not heard of in this part.

As far as the division of works between the local community and the authority is concerned we find that the authority is certainly not the suitable agency for undertaking regular maintenance, far less the sudden contingencies that arise because of say, breach of an embankment. The failure of the District Collectors, empowered by the Irrigation Act, 1922 and subsequent amendment, to carry out these tasks, establish this point. The character of the productive force here is such that those are better adapted to local management. To do it successfully, the officials either have to depute persons at local level, or change the designs. Many of the zamindars had their gomastas residing in the villages. Only through them the zamindars were, if at all, maintaining the irrigation works. In reality however, such mode of management too boils down to local management.

The authority can certainly help by extending a legal and juridical system, a superstructure in general, conducive to the 'community ownership' of property and autonomous functioning of the communities. As for the direct works, only such works as are not within the means of the communities, may be taken up by the authorities without disrupting the communities. It is most essential to ascertain that works undertaken by them are really beyond the means of the communities. We have also seen that occasional assistance for this or that work otherwise undertaken by them, makes an adverse effect by curtailing the initiative of the community.

The particular area where the role of an authority is extremely important, is matters which concerns many different communities. Individual communities may decide matters internal to them. But when many such communities share supplies from a single channel they often come into conflict over the question of allocation. The existence of an accepted authority can facilitate the allocation process by methods like fixation of shares, apart from the role it has as mediator in actual cases of conflict. Intimate study of the effects of various experiments during this period reveals the suitability of different schemes, methods of recording of shares etc.

This point leads us to an interesting proposition. In the ahar pyne country, where the supply lines are practically intertwined, there is little meaning conveyed by expressing a system like Supi Desiyain pyne as a unit physical system. Karua Nala (or the two parts of it) and the rest may also be described as two different physical units. The problem of identification of a single physical unit is in fact, more difficult since many other channels also supply their surplus water to different points in the S.D.pyne. There is no reason therefore, why the present course and not these other supply channels, should be shown as the integral part of a unit physical system. Nor is there any reason why Lochna pyne should be considered as a separate physical unit instead of a part of S.D.pyne system. In fact, such exercise as identifying sizeable physical units is rather useless for there is no advantage thereof.

From the social point of view, from the question of administration and management however, there is a definite gain. Availability of water from some among the many different supply channels enriching a part, may be regulated. Such parts, the allocation between which are regulated, make a unit system with some meaning. Such a unit, specifying the shares of different parts, are treated by the users as having some amount of certainty of supply which goes a long way to influence the agricultural and irrigation practices of local communities. The supply from other units can, at best, be considered as erratic and uncertain, not useful for such advanced planning. Such an aggregation, based on social consideration, is meaningful and has several significance. Evidently, here is a scale[26] which is intrinsic to the system. It does not attach importance to length or size of command area for making distinction, but to 'distances' in social sense. Such a concept has been quite implicitly honoured in the traditional treatment of the ahar-pyne system. For example, it is not the length (or command area etc.) but the fact whether more than one communities share the supply which is taken into consideration for distinguishing branches (sakh) and distributaries (karha, bhokla etc.). A karha may be longer than a sakh, but there is no necessity to regulate its intake of water. In the records of allocation (parabandi)

26/ For interpretation of the term scale see Barth /1978/. It is not the same as size.

there is no need to treat the karhas or bhoklas. But rights of communities in a sakh or darsakh, however small those are, must be shown.

A unit system, understood in this sense, cannot extend beyond the jurisdiction of one authority having the power to regulate allocation. Of course, no one can be prevented from calling a much wider scope of works as a single unit. What we mean is that a unit described as such does not function properly and in course of time come to be accepted as separate units. It may be recalled that the Irrigation Commission and the government officials later had treated subdivision of estates and consequent division of single pyne system between several zamindars, as one of the major reasons of decay. The remedial measure that came up through the Irrigation Act can also be understood as establishment of a superior authority over many such authorities having smaller parts in their jurisdiction. We guess that Supi Desiyain pyne came to be known as a single unit sometimes in the past when it was under the jurisdiction of a single landlord. Also, at present, when the Uderasthan scheme is completed, the present S.D.pyne or Karua nala may be known as a part of that system.

This brings us to another important role played by the authority, in matters of irrigation. It can facilitate systematic distribution of available total water resources within its domain. The efficiency of use of available water

increases not merely because of better distribution between communities but also because of better utilisation within the communities assured of supplies. It is understandable that the wider is the jurisdiction of the authority the greater is the scope for better utilisation of water resources available in the country. Centralisation therefore, has a definite contribution to improvement of irrigation systems[27/], though only indirectly, without violating the autonomous existence of local communities. A centralised state, even if it does not accept for itself most of the maintenance and allocation works, may bring prosperity to the country by extending irrigation network. The dissolution of a unified authority does not merely shrink the irrigation systems but may even witness adverse agricultural situation and consequent desolation. But some of the autonomous communities may still survive; the authority is not an essential part if the local communities have no need to interact with one another.

27/ Authority, as also an integral part, improves (transforms) productive forces. Change in scale is one such aspect. Let us note another interesting example. If the Ibrahimpur bandh gives up before the force of water while Maniawan ahar has not yet been filled up, the bandh need re-erection even while Karua nala carries water in rushing stream. It can be accomplished only by making an elephant stand before the breach to block the flow of water while erecting the bandh quickly in its shadow. During the pre-independence period, elephants could have been supplied by the zamindars. But this opportunity is now closed.

4.6 Transformation of the Local Social System

The details of the peasant movement in Bihar has been recorded at great length by many others /e.g. Das, 1983/. We need not repeat those. We shall confine our discussions to pointing out the implications of such incidences, which, in the long run, came to determine the future course of development of irrigation system.

By the effect of the Tenancy Act the tenantry, the members of the local communities, were forced to link up with the capitalist system. Gone were those days when most of the problems were solved within the caste panchayats, within the villages or by mutual discussions with the zamindars (or his employees). Gone were the days when only an exception among the villagefolk would meet an official of the imperial government in connection with a work. Such introductions were certainly not altogether absent during the earlier period. But even if we consider the most common of all such encounters, that with the police officials -- not many of the villagefolk had to suffer such unfortunate fate. The Survey and Settlement operations however, made the villagers en bloc acquinted with the imperial civil procedures. Great many of them made further progress in acquintance by being entangled in legal proceedings.

This created a fertile ground for the rise of a new type of intellectuals[28/] in the rural society. They were different

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28/ In Gramscian sense, not as commonly understood. See glossary.

from their counterparts in the traditional society. They were to insinuate the new intellectual functions arising out of the contingency of direct connections with a different civil system. They could not have been the same local intellectuals unfamiliar with the Western civil and social system. Nor could they be the same ones as the intellectuals trained to carry out the civil functions of the imperial government. They were organically linked to the peasantry and appeared through the retaliatory effort of the indigeneous society. Their functions were well-defined -- to pick up the suitable elements from both the systems and develop the best strategies for survival. By being aggressive the imperial civil system also created its antithesis, the indigeneous intellectuals and ideology equipped to retaliate the alien mode of production and superstructure.

The ideology which was being shaped was directed not merely against the colonial system. It was a struggle on two fronts. Particularly during the initial years the new intellectuals had to engage themselves in struggles against the traditional intellectuals, the protagonists of the traditional ideology. Without this they would not have been able to consolidate their strength. Once this was achieved, they could resort to anti-zamindar, anti-imperialist struggle in full earnestness. The internal social reform movements therefore, constitute an integral part, a stepping stone to the ultimate political struggle. The acquintance with the Western

social system was indeed, the phenomenonwhich helped identification of the weaknesses[28] of the indigeneous social system and formulation of social reform programmes thereby. Through the intellectuals, the ideas permeated into the broad mass of the rural population. Within a few years after the Survey and Settlement operations began, waves of social reform movements swept through the countryside. The contact with an alien system did not only make the indigeneous society aware of many of its weaknesses but even initiated reorganisation within itself.

Simultaneous with social reform movements social conflicts between the zamindars' and tenants became the common occurrence of that period. It was not the zamindar class alone, but also the tenants, who had obtained certain additional privileges over the traditional ones under the imperial civil system, and much of which had remained unrealised till necessity arose. The new civil system had not extended sanction to many of the traditional caste practices, amounting to loss of certain privileges to the upper castes. Just as the zamindars proceeded to realise their long-sanctioned rights over properties in order to harass the tenants, the tenants too began to realise their rights under the new civil system once the internal class

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29/ Though we shall introduce such points of weakness here, the integral connection of some of these social features with the mode of production will be clear in the next chapter when we take up the characterisation of structure of the society under study.

struggles broke out. Widespread caste tension between the low-caste tenants and the upper caste zamindars were reported from all over Bihar, including the ahar-pyne tract. This was only a partial struggle, a first step of the tenants in their fight against the landlords. By around the 'thirties they became sufficiently experienced and consolidated in their strength to be able to wage political struggles from within the modern political state and superstructure. For the sake of brevity we need not repeat here the details of the peasant movement[30]. We may proceed from here to discuss the effect of the movement pertaining to the irrigation system.

Out of the whole lot of interesting historical phenomena during this period we have made particular reference to two phenomena -- the rise of a new type of organic intellectuals and the widespread social change in the rural society. Both of these phenomena deserve special mention because they signify internal change within the indigeneous society. That the effect of the political struggle essentially has been reassertion of the indigeneous civil system has already been indicated

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30/ Certain additional features may be noted which gave the ahar-pyne irrigated areas somewhat distinctive position in the peasant movement in the 'thirties. The storm centres of the Kisan Movement in Bihar were the ahar-pyne irrigated tracts. It is quite probable, but cannot be asserted now, that the existing system of mobilisation for common cause had helped the peasants in their fight against the zamindars. We could not find much about the decision making and leadership process, but information was communicated in the established manner, through drum-beaters, as we were told by many old people in this area.

in the foregoing section. But that is only a part of the effect. In consequence of the social struggle, profound change has also occurred within the internal structure of the indigeneous society. The latter is of greater significance because the externalities would have to act now through this changed internal conditions. Basic requirement to the understanding of the subsequent development therefore, is character of this internal change.

We need not list here what were the weaknesses of the indigeneous social system[31]. In fact, the term 'weakness' has little meaning if looked from within the system, since all characteristics and class contradictions constitute essential parts of the system. It is from the point of another system (present or future) that such weaknesses may be identified. Those are the phenomena which, though essential for the object system, make it vulnerable to the other one politically or otherwise. Thus, all the weaknesses which received attention during the social reform movements were indeed, some of the internal contradictions of the indigeneous system which made it vulnerable to the alien system. During the political struggle the opponents favoured one or the other

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31/ The characteristics of the indigeneous social system will be clear in the next chapter. Suffice it for the time being to indicate that the basic premise of the model indicates correspondence between superstructure and consciousness with the base, thus including many important social phenomena as integral part of the system.

aspects of these contradictions and thereby, sharpened the internal contradictions of the indigeneous system. Widespread contact with an alien society therefore, did not only unleash fierce struggle between the two modes of production, it has also led the indigeneous society approach steadily to its maturity[32]. In long strides, the indigeneous society has suddenly traversed long distances in historical course of development heading fast towards a transition. Be it through defiance to upper castes or something else, in every area it is the old social norms which began being challenged. The existence of an organic intellectual[33] class lent relentless support to furtherance of the social contradictions; through them the ideas have developed into powerful ideologies and have penetrated deep into the masses.

32/ Since contradictions are the motive force of development.

33/ I want to stress that the intellectuals who formed the leadership of the Kisan Sabha were representatives of the irrigation societies. Here is a point to note. In spite of the fact that the officials always said that zamindars initiated the goams, the Kisan leaders had never raised a single word against goam. They opposed forced labour (begar) and made it one of the biggest issues, but never failed to notice that goam was not a case of forced labour, a confusion very common among the English-educated intelligentsia. For example, the Survey and Settlement Report noted, "The malik is entirely responsible according to Gaya customs for gilandazi. The goam and other help given by raiyats is regarded as a personal service to the malik, not as a public service to the village." / Tanner, 1919:liv7.

obviously this part of the change has far greater significance than that of partial reassertion of the indigeneous practices in civil system.

The ultimate success of the ideology and the class struggle however, are decided by the mode of production. Ideally, the traditional system in both base and superstructure, may still be regenerated if the system is left to function for itself for a much longer time. But this is merely a theoretical question. In reality, the external impact is regularly being reinforced -- it has a formidable base in the worldwide capitalist system from which it gains its vitality. The regeneration of the indigeneous civil system -- that too partly -- is not the end of the struggle between the two modes of production. Rather, the situation may be described as that the indigeneous mode of production is under a state of siege by the capitalist system. It has still not run out of its vitality and can still repudiate part of the superstructure imposed from outside. But its internal contradictions are being sharpened everyday; the classes internal to the system are taking up the path of open class antagonism. It is becoming increasingly difficult to maintain the indigeneous system. The only factor that favours its continuation is the absence of an alternative, a system of production as good as the ahar-pyne irrigated agriculture -- to replace it. As this is not yet available, the communities are still forced to pull on with the same mode of production,

for reasons of survival. But whenever an opportunity arises they eagerly make a shift. Even if it is not a total substitute of the traditional production system, the decreasing reliability of community irrigation and production system has made them extremely eager to seek insurance against such calamities. The productive activities like cultivation of bhit land, have traditionally served for this purpose. Their interest must have increased in more recent years in these activities. Such interests must also have been shown again and again during difficult days for the communities in all earlier period in history. But there is a qualitative difference with the present period. For the first time, alternative productive forces with high productivity are available helping materialisation of such shift in interest. Advent of capitalism has paved the way for a more profound change in the agrarian economic set up. It is not without significance that the Grow More Food Campaign of the 'forties, immediately after the crisis period, was the first of the many successful (though not to the satisfaction of the protagonists) technological development programme carried out in the country.

We have already discussed that one of the preconditions of success in community irrigation is that the interest of individuals in other activities do not override their interest in the activity requiring community actions. It is understandable that such increasing engagement in other activities in the more recent period is altering the balance against

community activities for more and more of community members. 'Modernisation' of a part of agriculture is not the only avenue; as insurance against frequent calamities in community production they also seek occupations elsewhere outside agriculture, in the wide range of new economic activities introduced by capitalism. In consequence, the community activities suffer and a spiralling effect sets in. The community members do not withdraw, nor do they change the technological conditions of community cultivation. 'Modernisation' of agriculture remains restricted within the individualised activities. But more and more members find it difficult to respond to the needs of community activities. Rate of participation in such activities decrease in consequence, making the members increasingly eager to find out other sources of income. As soon as some of them succeed in doing so, the rate of participation decreases further increasing the eagerness of the others to follow the same path. Although capitalism has not yet been able to provide an equally productive substitute for ahar-pyne irrigation, it is gradually eroding the base from under the system. The system, in spite of its high productivity and economic efficiency, is undergoing a slow process of death. No wonder that there is increasing concern shown in the more recent period -- as we have already noted in the introduction chapter-- for the decay of such an efficient technology.

It may be recollected that the area we have chosen for the study had some additional advantages in keeping the capitalist mode of production at bay. The physical structures can survive for longer duration in spite of some negligence in maintenance works, since the supplying river does not carry much silt. The transport networks are not well-developed discouraging capitalist expansion. It is possible that S.D.pyne system and Maniawan ahar have been able to survive in much better ways than the others. But even this unit faces serious difficulties. Caste conflicts in one year or the other, drastically reduce the attendance in community works. Disputes with agricultural labourers occur during rabi seasons threating to reduce their willingness to act as reserves for community actions. Even within the landowner community, some members have already acquired sufficient additional interest for abstaining from all community activities, leave alone the others who are still showing token interest. For such works as renovation of Ibrahimpur chahka, initiatives from the community are curtailed because of the expectation of help from the government. Added with these social are natural difficulties ; though water is available in plenty due to the incomplete state of Uderasthan project, soil for earthwork of Ibrahimpur bandh, has become scanty. The moribund community is still pulling on because of the necessity of survival. Being aided by the returned autonomy, it still maintains the physical structures and allocates water.

It also shelves away the caste and class conflicts. But its members know what is better. As much as their financial conditions permit, the members try to acquire pumpsets and fertilizer, such means of production which can be operated individually[34], although those are not used to change the technological setting of the ahar-pyne irrigated land. Maniawan is probably one of the most successful units, many other units have already degenerated. In a long and complex process, after more than two centuries of contact with an alien mode of production, the death bell of the indigeneous mode of production is ringing.

4.7 Future Outlook

As long as we are interested in the history of the ahar-pyne system, the foregoing description is sufficient. But the trend described above may be misleading if one attempts a forecast, and therefore is the postscript. It is important to remind that in the method of historical materialism, development does not occur always along a trend, but there are qualitative changes too. The fact that capitalism is gradually replacing the indigeneous mode of production here cannot be simply projected into the future.

34/ It may be noted that in three years, between 1980 and 1983, the number of pumpsets in Khas Maniawan tola has increased from 5 to 17. Shift to cash crops and other rabi crops and increased use of fertilizer characterisss the earlier period.

This piece of additional information may be of interest. Some of the households had purchased pumpsets jointly between them, as teams. Some of these teams have already broken up.

This point is all the more important for, it is not merely the indigeneous mode of production but capitalism too may be described as a moribund system. It is a 'new' system only in the context of ahar-pyne country; in the world scene, in terms of its own base, it is an old system. Like the indigeneous mode of production, capitalism too is endangered by sharp contradiction between classes internal to it, even in South Bihar. While trying to visualize the future, one has to take account of this feature too.

Elsewhere I have described /Sengupta, 1982 : 20-28/ in some details, the course of development of agriculture labour movement in Bihar. Some of the salient features may be repeated here. Till the 'thirties of this century, the Kisan Sabha, the organisation of the peasants in Bihar, had not felt any need to distinguish between the landowning peasants and agricultural labourers. By the late 'thirties, separate agricultural labour organisations began to emerge. This period, as we have characterised, is the period of widespread degeneration of the indigeneous mode of production, the first large-scale extension of capitalism into agriculture which probably accompanied transition of landowner-labourer relation from the traditional type to capitalist ones in addition to numerical increase of wage-labourers. Thus, from the very beginning, capitalism in agriculture witnessed sharp class antagonism between classes internal to it. By around 1946, separate agriculture labour struggles on demands of wage increase or home-

stead tenancy began being waged all over Bihar. Many of these struggles were, significantly, confined to South Bihar, particularly in the present drought prone areas where probably, the traditional irrigation systems had suffered the worst fate. The 'fifties saw the formation of separate agricultural labour organisation by almost all the political parties. Interestingly, many of these organisations were initiated from the districts like Gaya. On the aegies of these organisations, the struggles of agricultural labour have been growing all throughout these years. Currently, the whole of South Bihar is a scene not merely of deterioration of indigeneous mode of production and serious caste conflicts, but also of violent class struggles between the employers and agricultural labourers. We need not enter into detailed characterisation of the internal aspects of capitalist mode of production. Suffice here to indicate that those do not lend unreserved support for the system as a likely candidate for the future.

As a historical possibility, one has to consider the case of an altogether new form of production. We have also noted that the same situation may also be characterised as maturing of indigeneous mode of production. The indigeneous society has traversed in long strides, a whole historical course of development ultimately heading for a qualitative transition. As an alternative, such a new mode growing in the womb of the indigeneous mode of production too cannot be overlooked.

Chapter - V

STRUCTURE OF AHAR-PYNE IRRIGATED SOCIETY : A Deductive Analysis

Although we are concerned with ahar-pyne system, here, in this chapter we will rarely refer to the name. A clarification must therefore, be added at the very outset so as to avoid any possible confusion. Since any particular type of productive force corresponds to a particular type of production relations, the latter just as well as the former may be taken as the distinctive feature of the system. The choice is because of convenience. As the deductions of social features can be made only by proceeding through the fundamental aspect of it, in each step we can proceed only through the production relations. It is just a matter of convenience that we treat the production relations, already identified ones corresponding to the ahar-pyne system, as our starting point. To be more exact, the property relations, the fundamental component of production relations, is the starting point.

What is the corresponding property relation? In the previous chapter we identified it as 'communal property'. But that is only a feature that strikes first when it is compared with the characteristic property relations of the politically dominant[1/] system. The apparent characterisation

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1/ Since it is a common mistake, let us note, individual property does not characterise all phases of capitalism. It also admits collective (social) form, as capital owned by directly associated individuals. A detailed discussion is available due to Bettelheim /1975 : 163-57.

depicting the contrast of the two systems, the indigeneous and the imperial -- was only a convenient presentation for the previous chapter. But one cannot overlook that the system can be described equally well as 'individual ownership', and that will be its proper formal presentation if the purpose is to compare with some of the tribal societies.

For exact identification, one has to turn to substantive description. In chapter III we were engaged in a long exercise to eliminate confounding effects of juridical rights, family structures etc., only to reach such a substantive characterisation. We shall proceed in this chapter from that. Such phenomena which can be comprehended only in a substantive manner, have no exact parallel and therefore, cannot be dealt with anyway except in terms of the local names. In the subsequent treatment in this chapter we have used many such local terms. But there is not even a name for the characteristic property relation. At the best we can identify it as co-existence of individual and communal property ownership (if not the tautological 'ahar-pyne property relations'). We shall be using this term sometimes. But it must be remembered that this is only the best approximation. Within the same category many other property relations may be included apart from that of the ahar-pyne system.

This point will be clearer if we identify the sources of the two component parts and provide a better understanding of the exact nature of individual property and also of communal

property. The technology of cultivation is the source of individual property. Rice cultivation is done in small levelled plots able to retain water because of ridges (al) all around. If an ayacut consisting of many such plots is communally owned, cultivation is sure to suffer. There is some disadvantage for an individual if he has to work today in one plot, a second day in another, thus actually looking after the whole ayacut. It is certainly much easier and efficient if an individual has to remember only the details of a limited area and plan within this area. This is what leads to individual property. The level of development of agricultural technology is such that it is most efficiently conducted under individual property relations. Also, this may be only a particular type of individual property. We are in no position to say that this is not a type specific to rice cultivation, but is the general type which correspond to all the production processes that are efficiently conducted under individual property relations.

We have already discussed at length the characteristics of irrigation technology which necessitates communal ownership. As before, this is only one type of communal property. There are many other activities[2/], from hunting and grazing to socialist agriculture, which require communal ownership. Certainly all these are not the same in every feature. Even with respect to irrigation works, the ahar-pyne system requires community of a particular size while comparable structures in

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2/ See Appendix III in this connection.

other areas may need communities of different sizes. Therefore, a simplistic view about the individual and communal property must be avoided. Here we are concerned with a particular type of property relation which may be characterised as co-existence of individual and communal ownership if only those two are understood as the types which correspond specifically to paddy cultivation technology of South Bihar and ahar-pyne type of irrigation technology.

A further caution must be observed. There is a mechanical view of historical materialism which is quite prevalent, which presupposes that transition from primitive communal ownership to communal ownership under Communism occurs via the development of individual property. Certainly, the property relations of our interest can also be described as one where individual property relations are not fully developed. But the mechanical view as above can unduly inflate it to a historical proposition. Indeed, the foregoing paragraphs may even increase such temptation. A capsular history as that the ancient communal ownership developed into individual ownership following the discovery of rice cultivation; the next stage of this society is capitalism where the individual property will be completely developed only to be replaced by communal ownership again -- may be advanced instantaneously. It is extremely important to avoid such temptation. What, if in reality rice cultivation was discovered much earlier than ahar-pyne irrigation techniques? The primitive communal

ownership would have dissolved largely and individual property would have been established to facilitate the cultivation process. Ahar-pyne technology discovered thereafter, would then have reverted the evolutionary course, establishing communal property again. Alternatively, one would have explained it as a step towards socialism, as that the irrigated societies like these have certain elements of socialism. A whole lot of such false propositions arise if history is seen as teleology. It is imperative therefore, while appreciating the content of this chapter, one is always on guard to avoid such enticement.

If there is a temporal component in this chapter (except when we have specifically mentioned), that is only a hypothetical historical span, sufficiently long period to let all the social phenomena emerge and dissolve. But the actual history of emergence and dissolution remains out of our purview. It is strictly a deductive analysis to reach step by step, in a discovery process, the most developed form of the society corresponding to the particular mode of production. There are many different levels of organisation included in the step, and for the convenience of analysis, we have made a stepwise progress from the simplest ones to reach the more complex structures. But those are steps only for analysis and comprehension, very different from that of historical evolution.

The course of history is determined by many situational constraints; many external phenomena influence the development. It is not even unlikely that faced with two different historical situations, parallel systems develop somewhat differently. The basic assumption of political economy necessitates only that there exist certain fundamental similarities between the two. But there are many mutually exclusive social phenomena in which, two different systems may mature in two different directions. There is no logical reason why the most developed form corresponding to a specific mode of production should be unique in all appearances. As far as the concern is a structural analysis, it is legitimate to explore all the alternative forms. But such a purpose is only an immediate one to us; even the task of structural analysis was undertaken to understand the system under inquiry. For the basic purpose of our study it is sufficient to explore only one of these alternatives, the one that helps in the understanding of the ahar-pyne society of our concern. We have done only that. It should not be taken as the only viable form.

5.1 Social Organization of Ayacut-owner Community

What is the basic tendency present in such a community that corresponds to the particular irrigation cultivation system? We have already noted certain characteristics of such a community when we studied a concrete case intimately

(chapter III). The individuals in that example did not belong to the community merely by owning land in the same ayacut or residing in the same hamlet. Their community existence extended further. Each member also did, at times, the same work, thought more or less in the same manner and had similar interests. The homogeneity was so great that any member of the community sometimes could reflect correctly the interests of the others; those with many additional interests were indeed, laggards and even drop-outs from the community.

This, then is the basic feature of an ayacut community corresponding to ahar-pyne irrigated agriculture. We have also shown during analysis that the homogeneity among its members is the factor that help materialisation of work organisations and reproduction of the ahar-pyne system. From the point of the ahar-pyne irrigated rice cultivation therefore, the ideal condition is one where, in every aspect of life each individual member has the same material interest and behave exactly in the same way as the rest. Every individual in such a society is the exact replication of another, every member has exactly the same set of material possession and follow the same social practices. These describe the production and social relations which fully correspond to the specific productive force.

But this does not happen naturally. There are many features in the human existence which constantly gives rise to deviations. To begin with, it is Nature itself which prevents perfect homogenisation. Members differ in age[3/] and their movements cannot be identical. There are many other activities apart from irrigation and agriculture which are essential and which inevitably, give rise to difference from stereotype. In spite of these, the productive force may still survive, if the ideal conditions are always atleast partly met with. This is possible if there is a whole lot of social process and organisation which works towards this end and attain significant success. Social organisation which corresponds to the particular productive force of our concern, should strive to overcome the "disturbances" in order to attain the ideal conditions. This does not describe the whole social organisation of the society but only a part that corresponds to the particular mode of production. This part will be our concern in this chapter.

3/ We have not included women and children as members of the ayacut owner community. Also, non-agricultural workers in landowner households have remained out of our purview. This is why we have already warned that the present study hopes to understand only one part of the social organisation, that it should not be confused as that of the whole society.

The economic activity of our concern, like all other such activities, touch upon many other spheres. The description of tenants and agricultural labourers have come into the present study, though only partially, in this manner. For the section of population called women, we have only indicated the points where the sphere is influenced by ahar-pyne irrigation. But lack of competence prevents us to proceed further here, even as much detailed study as we have done for tenants and agricultural labourers.

Nature does not only make differences. It has some positive contributions too. Due to nature land and water use patterns cannot be changed significantly. The ahars remain in the same location for centuries, the same lowlands are irrigable, uplands not very useful. The residential locations remain in the same spot near the head of the distributary, yet avoiding wastage of cultivable land. The choice of crops, the agricultural practices, the instruments of agriculture cannot be changed except for such rare innovations which admit communality of action. In the economic activities, an ayacut owner community once established cannot deviate much from the tradition. The stereotype existence therefore, persists also from generation to generation.

Any member can reflect more or less correctly the interests of every other member. Therefore leadership in such a community is a nominal concept. If at all it exists it is merely a symbol of cohesiveness and existence of the community. However, it still appears, but for a different reason. Nature introduces variations in the life of the community. Rainfall pattern changes from year to year; drought and floods may occur occasionally. In order to adapt to such conditions the community need not be ingenious and innovative if it has a sufficiently long tradition, if some of its members still remember how a similar situation was successfully countered in the past. Past knowledge and experience is the only element of productive force which creates a differentiation within the

community. The elders, rich with experience, are the natural choice for leadership of such communities. They are also the 'wise men' -- not by their ingenuity or innovativeness but as custodians of past knowledge and as the ardent exponents of the course of action verified and proved successful on earlier occasions. The leaders of such communities, the elders, therefore are also fanatic guardians of tradition.

Such are the patterns the community requires. But such individuals could not be produced by genetic engineering. There must have existed doubters and believers, conformists and non-conformists, defiant and compliant, selfish and magnanimous, independent, innovative, courageous, optimistic people even in such societies. The people were not born stereotype and tradition bound, nor did the society start with unimaginative, uninnovative, conformist people. It was the material existence pattern and the social process which created such individuals. Firstly, the very occurrence of such deviationists from the stereotype is rare since the property relations and limited world experience of the local communities restrict the emergence of such people. Secondly, the council of elders, as the custodians of traditional patterns keep constant vigilance from close quarters and work to rectify any deviation by any member at a very early stage. And finally, the productive forces impose the ultimate restrictions. If the non-conformists are not brought to terms, individualism increases, the community operations fail, the

irrigation works deteriorate affecting the production and reproduction process of the community. The once prosperous unit community may become extinct confirming the superiority of tradition and conformism to other units.

In all likelihood this indeed, is the actual life process of the ayacut-owner communities. Perfections in stereotype existence of individual members cannot be thoroughly observed. Deviations from the norms always arise. Sometimes the individuals understand their 'mistakes'. If they do not, the elders and the whole community led by them try to check it and are often successful before severe damage is done. On certain occasions the rectificatory attempt may fail ultimately signalling the collapse of the small community through the deterioration of productive forces and failure of the reproduction process. But that is not necessarily the end of the local history. If in some future date some other people decide to utilise the natural resources available in the locality they would establish the settlements anew, subject to such limitations as that the land-use pattern, the cropping pattern, crop practices should be the same as the old one; the individuals included in the community should conform to the same old local practices and traditions which have been verified as useful, the elders would carry out the same task of preaching the virtues of tradition and conformism ..... and so on. In any short period the community may have a history full of conflicts and cohesion, rise and fall,

reluctance and initiative, prosperity and deterioration. But there is practically no change in the long run[4/].

There is a final mechanism why imagination and innovativeness in general, not merely in the field of agriculture -- are eliminated slowly from the system. Like the allocation of water in fixed shares, in many other areas, though complicated reasonings have been used to work out the requirements of community action, the actual work becomes certain simple rules of thumb in field practices. In course of time the reasonings are lost sight of, but the success of the customary practices always remain in evidence. In effect, the logical bend of mind is shut off; customs and tradition achieve the height of omnipotence. The dumb conformist, the extremely fearful, the completely tradition-bound people establish themselves as the most efficient ones in exploitation of the richness of nature through a complicated, often seemingly meaningless, but highly productive mechanism of irrigation and production. In course of time scientific progress is looked at with scepticism, adventurism is considered as defiance. As time passes the stereotype existence of individuals within the small communities, from generation to generation, becomes more and more perfect.

4/ Relaxed later. As we shall see, changes occur but very slowly. For long periods stagnation may prevail.

What happens to the surplus? Like in all other aspects of life, here too the possibility of differentiation among the community members must be guarded against. Productive use of it is practically ruled out except for simple reproduction since no individual can be permitted to change the techniques nor does the community show much tolerance to scientific progress. Conspicuous consumption too is not desirable since that differentiates among the individual members in the community. Such performances like community feasts or rituals participated in by the whole community may be allowed since those do not affect the cohesiveness of members. In fact those may be considered as virtues as those may increase cohesiveness. The other possibility is to let the surplus drain out from the community without endangering the collective being.

The drain may be effected in two ways : (i) in the form of voluntary contributions to religious institutions or as charity and (ii) as compulsory transfers in the form of payments of revenue to some authority including the overlords. It must be noted that such redistribution helps perpetuation of the collective works and once their utility is demonstrated through the passage of time those forms of exploitation may even be considered desirable by the community. However, the rate of surplus extraction must not be so high as to endanger the reproduction of the community.

The requirements of subsistence for the whole community may vary only marginally from year to year. But the agricultural produce varies drastically every year depending on the natural conditions. It is true that part of the fluctuations is taken care of by the storage system for water as well as by the cropping patterns. Yet fluctuations in produce are quite substantial. Since the minimum output -- the average produce during the bad years, is the amount that is steadily available to the community, it can develop only to the extent where simple reproduction is possible within this limit. The whole part of the harvest reaped above this limit due to the blessings of nature, should be drained out of the community. It may be quite high, even as high as a half of the total produce during the best of the years. Rate of revenue, even as high as that may not disagree with the system if alongside it condonation too is made on a very regular basis. The surplus extraction process that is suitable is a high rate of extraction (revenue or any other form) with part or full condonation in almost every year so that the fluctuating part above the necessary product for the community as a whole, and only the fluctuating part, is taken out of the community.

This form of surplus extraction in share of produce may also have a variation, as labour-rent. In a year when the natural conditions are favourable, labour productivity is higher and the same amount of labour time gives higher output which may be drained as produce rent. But in an alternative

method the surplus may be extracted as labour-rent too. For example, in a bad year the community must exert itself to the utmost in rabi seasons too to compensate for the low productivity of kharif while in good years they may be summoned after kharif harvest to serve the overlord, say in an expedition for conquest.

In the foregoing paragraphs we have described the amount of produce steadily available to the community from year to year as the 'necessary product for the community as a whole'. This is because it is essential to make a distinction between an 'ayacut community' and an 'ayacut-owner community'. The productivity of irrigated land may be quite high so as to allow for the subsistence of some more people in addition to the owner households even in the bad years. In other words, the steadily available stream of produce from year to year may be sufficiently high to allow for separation of domestic industry from agriculture or even some other types of division of labour. If the possibility exists, there is a definite reason for the owners to extend such provisions for accommodating others. As the irrigation works like ahar-pyne often require mobilisation of a large number of people at a short notice, scope for securing extra supply of manpower cannot be overlooked. An irrigator community must have sufficient manpower at its disposal to carry out such tasks. Since such catastrophe may arise from the very beginning, a newly established community cannot leave it to natural rate of reproduction to meet the deficit in manpower requirement in course

of time. It must reach the optomum size as quickly as possible, and afterwards, can increase its numerical strength only marginally[5/].

In any unit community therefore, the original settlers try to induct many others until the 'optimum' size is reached. The inclusion pattern however, need to be carefully monitored so that those do not contradict the homogeneity of the owner community. It must be noted that the original settlers as well as the inducted ones have some archaic affiliation : before the recruitment to the unit in question, they must have belonged somewhere else with some affiliation, say, in terms of kinship, race or jati. The original owners cannot afford to sanction land ownership (in ayacut) to such persons whose archaic affiliations were different from their because the owner community looses its homogeneity thereof. With rare exception therefore, the inducted members are settled in such manners that the monopoly of the original owners over ayacut land is not abolished. Since the whole process occurs

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5/ Surplus population from such communities may be released from time to time who may set up new units. But it also implies preference for certain demographic patterns e.g. desirable size and sex composition of families. This leads to regulation of human fertility through the establishment of particular types of sexual and conjugal morality, preference for offsprings in terms of number and sex etc. In turn, it decides the position of women in the society. We are unable to enter deeper into this area because the understanding till at present about the interrelations of different phenomena in this field, is very limited.

with the possibility of division of labour, such inducted people with different archaic affiliations, are likely to be absorbed as artisans and services workers, as 'tenants' and 'agricultural labourers', and for generations, remain the same.

But this may defeat the primary purpose of induction, that is ensuring additional supply of manpower for irrigation works. If the inducted people do not have any interest in the success of irrigation they may not join. To avoid this, the ayacut-owners have to develop many different methods. The 'tenants' and 'agricultural labourers' may be paid in shares of produce varying with success and failure of irrigation. They may assert their ownership over housesites of these people. All these people must necessarily reside near the ayacut-owner community so that they may be mobilised quickly. If they are not permitted to keep contacts with other communities then their dependence on a particular group of landowners and the economic activities the latter group is engaged in, increases. All these have a trivial consequence. Division of labour in the economy develops, but only within the neighbours. Separation of industry and agriculture does not extend beyond the local communities, far less does it affect the whole society. Since economic exchanges beyond the local units is rare, monetisation does not develop. 'Captive' artisans and labourers may be paid in shares of the produce. The requirements of the local people are limited because the

available surplus is used for procuring manpower. In effect, this too restricts the scope of exchange beyond the local communities.

Even the owner community has to practice frugality if they are interested to procure as much manpower as possible. This mode of utlisation of surplus[6/] also helps by eliminating conspicuous consumption and productive investment, which are undesirable for the community. In addition to the surplus utilisation, the help of some other measures may be sought for inducting additional manpower within the community. In order to facilitate the development of division of labour along with extreme frugality the inductors may be pursuaded to refrain from doing many types of productive works (but not irrigation works) even if that means hardship in consumption. In a way, it is forcible development of division of labour, where things like ideology may exert the force. A second additional method that may facilitate the induction process is imposition of certain restrictions about food habits practiced by the inductors. To provide for

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6/ Strictly speaking, the term surplus is not applicable here since the class we are referring to ceases to be producer. The use however, helps in the understanding of the process by providing a comparative picture with the previous situation, when the same class was actually the producers. But it must also be noted that the term has a definite meaning even in the latter case, though that is different from the one used by Marx. Since the landowners are subsistence cultivators here, surplus may be understood as the part of produce over the subsistence need of them.

subsistence of as many people as possible every bit of food item available to the community must be used efficiently. But every individual need not act in the same manner. The inductors may extend the inferior items and the otherwise wastes to the inducted people, or some of them. As a result, commensality rules become very elaborate.

A third method is to allow for paying the 'captive' artisans and tenants not according to services but according to the capabilities of the payer. This results in a direct client (jajman) patron relationship in the matter of payment although the community as a whole inducts the workers. It may be necessary to fix some annual quota to assure, through it, the minimum amount needed barely for subsistence. But the quota levied on different households may vary according to their paying capacities no matter how much services have been rendered. In addition to the minimum, households may pay more if conditions permit. Obviously, such an arrangement should perpetuate through generation if the community hopes to maintain the captive population and the division of labour along with it.

We have already discussed the internal structure of ayacut-owner community. Let us now turn to the ayacut community as a whole. In order to understand the internal structure of the ayacut community we have to know in addition, (i) internal structures of the small communities of 'captive'

artisans and labourers[7/], and (ii) the structure of the aggregate community with the small communities as units.

The internal structures of these smaller communities resemble that of the landowner communities subject to such limitations as occupational differences. However, this is maintained largely because of lack of alternatives; no elaborate system need to be imposed artificially as in the case of landowners, to effect occupational specialisation, frugality, disposition of surplus or homogeneity between members. They too may have such institutions as council of elders, to mediate in affairs internal to the communities. But neither such institutions nor the cohesiveness of members reach as much height as those of the landowners because there is not much of functional utility for such phenomena in the conditions of their existence. To a great extent, the community identities for these occupational groups are mere imitations or imposed from outside but internally defunct. Some of the occupational groups do not have even sufficient numerical strength to be called groups. As members of the ayacut community, the life style of these 'captive' artisans and labourers are also regulated by the landowner community, who should have them at their beck and call. To a great extent this eliminates the necessity of internal regulation within themselves. But while they eliminate the functional necessity,

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7/ Later we shall have reason to add a few more to the list.

it is the same landowners who label them as communities. Landowners must treat them as groups of people required to perform particular set of occupations and should dictate their activities accordingly. Thus, the communities of 'captive' artisans and labourers, unlike that of the landowners, are externally functional. This is also the reason why occupation must be the criterion for determining such community identity.

5.2 Aggregation Principle and Upper Level Communities

The ayacut community is a compact economic, social and residential unit. It includes individuals only as belonging to one or the other occupational communities. Some of these occupational communities may be highly cohesive and functional units, some others may not have much of internal function. The ayacut community however, expresses its relations in terms of communities (occupational) not referring directly to individuals. Such a norm provides excellent scope for formalisation and a whole set of principles guiding relations between the different occupational communities (ideology) may be developed which is applicable over ayacut communities in general. However, occupational affiliations determine many other affiliations as we shall see later. Therefore, the abstraction of personal identity to occupational ones though forms the basis of such an ideology, also corresponds to many other aspects of personal identity.

The occupational communities within the ayacut community are not horizontally linked. It is not merely with respect to the landowners community that there is a hierarchy. An additional ground is ownership of property (class distinction) -- the artisans owning their means of production enjoy a hierarchic superiority over the labourers. The final complexity is added by the rules of commensality, the readiness to accept food[8/]. Since redistribution of food is not reciprocated, non-acceptance endows higher social status. Since many occupational communities can afford to reject inferior food and waste, comparison is permissible between several communities. Thus it gives rise to an elaborate scheme. However, an important point must be noted. The economic condition of a particular occupational community determines his ability to refuse certain types of food. The economic conditions of each occupational community varies within certain limit from locality to locality. It is not unlikely therefore, to find the social status of certain communities as not exactly the same but varying within a limited range, when a number of ayacut communities are compared. The hierarchic arrangement therefore, cannot be formalised in great length and ideology may restrict its scope to specifying of some major hierarchic arrangements (e.g. in terms of ownership of means of production), merely admitting the general nature of comparability between groups.

8/ Probably also from archaic affiliation and health and sanitary considerations.

The function of the ayacut community is two-fold. On the one hand it has to maintain the occupational division, certain restrictions regarding acquisition of property, specific social practices of each occupational groups etc. -- the set of rules which effect the separation of the strata. On the other hand, it has to make provisions so that the whole of the ayacut community also emerges as a single community not merely as the aggregate of separate functions of these different strata. Such a dual character, communal being along with internal separation, is noticed in all aspects of life of the ayacut community. Economically, it is a single unit but every different unit of it has separate occupation. The members must reside as neighbours, but different strata live in different parts of the same hamlet. In festival occasions, everyone is welcome, but rights and responsibilities of every unit differ. In fact, each single phenomenon relating to the ayacut community is defined in terms of specific role of each unit of it. The phenomena therefore, cannot emerge without all the units. Yet, the units remain strictly separable within each phenomenon.

Essentially, the style of work is the same as that of the ayacut-owner community. Both of these regulate their component units to the extreme with the same purpose of perfecting their respective community structures. The difference arises only in that the structures of the communities are different. The lower level community should attain homogeneity between its

units, the individuals. The upper level community should attain heterogeneity between the occupational groups. While one works to eliminate all distinctions between its component units, the other resents any step to override distinctions. The upper level community is distinct in that it should prescribe different set of conducts for each of its component units. But just like the lower level one, this too may attain the best result by demanding that the codes of conduct be observed at every moment, in all aspects of life. Possibility of deviations are thereby, largely controlled. The counterpart of the rectificatory mechanism for the lower level community may then take care of the rest.

The same structure may now be extended to explain the functioning of the ahar communities. When an ahar supplies only to one ayacut, the ayacut community is also the ahar community. We need to discuss only such cases when an ahar may serve more than one ayacuts. With the same motive of securing manpower supply the (original) landowner community should also invite cultivators to settle if the ahar has sufficient capacity to serve some additional ayacuts. There is certain advantages in the management of cultivation and irrigation of ayacuts if the cultivators reside close to its location.9/

9/ Comparable to the advantage received in agricultural operations when plots are looked after by individuals. As a general characteristic productive forces correspond to a specific type of management.

The new set of cultivators therefore, may settle at a different residential location, but develop as another ayacut community with the same internal structure.

There is one point however, which needs additional discussion. In the earlier case we had identified each ayacut community as a compact economic, social and residential unit, independent of each other. But such a description does not apply for the two ayacut communities sharing a single ahar[10/]. They may be largely independent of each other, but there are some functions which necessarily combine them in a single unit, though only occasionally. Such ayacut communities therefore, constitute a third level of community, though a much less compact one because of limited functions. The internal structure of the ahar community is comparable to that of the ayacut community. Here too, each single phenomenon relating to the community is defined in terms of specific role of each separate units. But the exercise of regulations is much too feeble.

The only other significant aspect is the modification that is brought about in the overall stratification scheme. The scheme should now indicate suitable status through the comparison of many more communities. It becomes highly complex,

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10/ Connections though less than even this, exist between ahar-owner communities sharing a single supply line (pyne).

though much of the details may not need working out. However, the question of comparison between the primary occupational communities in the ayacuts cannot be disregarded. All of them are landowners, and if judged by occupations, should be included in the same stratum. But only one of them, who occupies the most advantageous position to conduct the irrigation works, leads in all co-operative works. The leadership role is not reciprocated between these ayacut communities. Consequently, one among the different landowner communities enjoy a higher social status than the rest. The stratification scheme therefore, does not follow only occupational affiliation, but includes more than one stratum for certain occupations, particularly for the cultivators.

Let us now turn our attention to the structure of communities that develop around one ahar. Every piece of terrain cannot be converted into ahars. Thus, ahars can be constructed only at a limited number of spots over the whole countryside. Historically, the country must have been settled around such ahars, resembling more a dotted pattern. A unit settlement included an ahar, its ayacuts, the residential plots and some unirrigated land around. There could have existed large patches of land between two such settlements which were neither used nor inhabited[11/]. With increasing population, even such areas

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11/ Probably were occupied by forest-dwellers etc. But such people who did not constitute a part of ahar-pyne society may be overlooked for our purpose.

were occupied later. But there are several reasons why such people should be dependent on one or the other of the ahar communities, though the dependance may be nominal. They could have appropriated water from the pynes by using lifts etc. But that is possible if only a concerned ahar community does not feel its share of water is being misappropriated. It is also possible that agriculture without sufficient irrigation facilities and the consequent low productivity does not permit sustenance of many 'captive' artisans and labourers in these parts. The landowners therefore, are dependent on the ayacut communities for some of these services. In brief, such settlements possibly become satellites of one or the other ahar communities, though their functional connection may be very very limited. Although such settlements may include quite a sizable section of the population, they are no match for the economically better off, highly organised corporate bodies like ahar- or ayacut-communities. The corporate units are in a position to determine the social system of the country in question.

If the unit of settlement is defined in such a manner that it corresponds to either the ayacut community or ahar community, then such a unit would have not merely a geographic but also a social personality. The boundary of a unit rural settlement or village may be carefully demarcated so as to include an ahar and its ayacuts. Such a village is not merely a geographical unit but has a social significance in addition.

Hereafter we shall use the term 'village' instead of ahar community. The village as per our use, is an ideal category[12]. In reality, the boundaries may be improperly demarcated being unable to describe the whole of a social unit. Also, the satellite settlements too are treated as villages with definite boundaries, but those are merely geographic or administrative units having no such social significance. The unit village, as per our use is also a unit community with wide ranging community functions.

We have already discerned certain characteristics of stratification that is present in general over all such villages. In a society where status hierarchy is so highly cherished, where suitable behaviour have been worked out in great details for different occupational strata and no one is allowed to overlook those for even a moment, marriages between persons of different social status become undesirable to almost all concerned. Marriage between the families having the same status, i.e. endogamy within each stratum, is the only acceptable practice. Since most of the occupational communities have only a handful members within one village, marriages which connect villages, are common. Till now we were only drawing attention to such points which provide for comparison of two units belonging to two different ahar

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12/ That is, the term is used only in its substantive meaning with respect to irrigation. The units are not necessarily the same as the revenue villages.

communities. Except for the formulation of an ideology, we had not cited any reason why the society under study would feel any necessity for such comparison. If each village is an autonomous and independent unit, its members have no occasion to compare their social status within their unit to a different object. Marriages provide for such occasions. Because of this contingency, the village communities do not remain totally independent of one another. Through endogamy, the occupational (and further subdivision within it) identity of people transcends into a countrywide community identity. The different strata become functional units for the overall society.

The overall society is the highest level of community. Marital matters is only one of its functions. The major function is to ensure reproduction by perpetuating the compatible community structure. It is the same purpose as that of the lower level communities. But the society helps in the process by providing additional mechanism to support the activities of the lower level units. If the lower level units are working to maintain a particular type of property relations, the upper level may help in the process by extending regal or even divine sanction to it. If the local units are interested in regulating the life process of individuals and groups, the overall society may provide valuable support through preaching of a suitable ideology or religion.

5.3 Ideology

A suitable ideology for such a society should have not merely a set of universal principles but also another set specifying separate norms for each different stratum. As universally acclaimed virtues, it should recommend thrift and sobriety, donations and charity. But in many other aspects of life like occupations, food practices, matters related to socialization and seggregation, a suitable ideology should recommend different setsas proper for different strata. Of course, the whole set may be included under a universal principle as that following the proper code of conduct is a great virtue for everyone, if only the term 'proper' is defined in a specific manner.

Since the purpose of such an ideology is to regulate the life patterns of all the units, it deals mainly with code of conduct. In Indian language the word 'dharma', translated as 'religion', may also mean 'code of conduct'. There can be little doubt that the ideology also took the form of religion, since obedience to it would increase greatly if divine sanction is also ascribed. In honour of its metaphysical component, 'dharma' must have acquired many other paraphernalia. In reality 'dharma' need not be merely the code of conduct. But the latter certainly was a component of it, which may be an important distinction from many other religions. The suitable religion would not only include code

of conduct for the whole society, but would in addition provide for separate codes of conduct for separate strata.

We have already seen that the stratification scheme that emerges is extremely intricate and describes more than one aspect of personal identities. It may be described in terms of any one of the following categories, but in strict sense, is not the same as any of these:

(i) Occupational (hereditary) group (though there exists several strata within some particular occupations)

(ii) endogamous groups (several in one stratum if the status is not the same over all the villages.)

(iii) races (if archaic affiliations had led to the placement of particular communities in distinct stratum even in a very ancient period, because of the strict practice of endogamy it is not unlikely that certain physiological characteristics of some of the ancient races are still preserved in some of the strata, that even after several centuries of close proximity, two strata still differ in anthropometric details.)

(iv) class (as it follows property ownership too. But it is much more elaborate than class division.)

Indeed, it is difficult to characterise the system but in a substantive manner. For the purpose of identification therefore, we have to settle upon the indigeneous term 'jati' system, as the only one sufficiently comprehensive. A warning must follow this. We have no comment about the origin of caste system in general, nor does our statement imply that such are the characteristics common to all the social systems described by many ideologues which are found existing in many different parts of India as jati system. At the most we want to say that the hypothetical stratification scheme deduced by us resemble rather strongly the jati system as it exists in South Bihar at present.

The religion incorporates individuals only as members of one or the other jatis. It assigns specific position to each jati in a hierarchic scale. The codes of conduct prescribed for each jati are different. But those have been worked out on the basis of four principles : (i) hereditary affiliation, (ii) homogeneity of members within any particular jati, (iii) identifiable distinction between one jati from another and (iv) accountability to communities not to individuals. Only the last point may need some clarification. For example, failure to show right respect to an individual who belong to an upper jati is scrutinised by the whole jati community. In fact, all such areas where individual relations are not mediated through the community but are direct e.g. that between master and servant, remains out of the purview of jati system.

All the community practices and institutions may become part of the religion through their importance in maintaining the codes of conduct. The food practices and rules of commensality, the council of elders guarding the tradition (Panchayat), the characteristic relations with clientele (jajmani system) can command more easily if those are also ordained. Some additional practices and institutions, working to achieve the same goal, may be added. For example, it may introduce and encourage the practice of pilgrimage. Whatever be the overt purpose, it also secures the communities by providing an occasion for the drainage of a lifetime's accumulation.

One of the major institutional innovations may be deputation of professional observers of dharma to the villages. Since the ideology tries to monitor every aspect of life and much of it is formalised only to the extent of principles leaving rooms for adaption to local situations, on-the-spot administration through deputies suits best. They appear somewhat similar to clergy or priest, but have much larger domain under their custodianship. Together with the jati panchayats and the dominant jatis in the village, these men belonging to 'priestly' jati explain the details and zealously guard the thorough observation of the proper codes of conduct by everyone. They may be inducted in the same manner as were the artisans and labourers, and may be paid in jajmani payments. But in contrast to the 'captive' artisans and labourers, they are placed in the topmost echelon in social hierarchy. That is quite natural.

Defined as this, dharma may enswathe the whole of the civil society. If in addition, it is highly developed and highly successful so as to effect almost totally accepted moral and intellectual leadership, it may eliminate the necessity of 'political' in internal matters[13]. This is what is aimed at. An able group of protagonists instead of a lone preacher, may work out and codify a highly coherent set of fundamental principles. A specialised group of intellectuals may thereafter, administer the rules by being on-the-spot. If the principles are laid thoroughly over the ensemble of all that is 'civil' and moral then the administrators practically have the whole of the social life of individuals under their domain. Every member learns and is expected to observe in every moment of his life, the occupational specialities, proper behaviour among the jatis, restrictions regarding certain types of labour and food habits, the permissible ways of recurring expenditure etc. . . This streamlining itself may make moral and intellectual domination almost complete. But if, in spite of that, some deviation arises, there are several institutions to monitor those. Under

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13/ In an alternative structure, the political system may be strong to enswathe the civil matters. The society then develops more as political less religious. The course is determined by actual historical situations, but both forms are certainly the developed form of the same society. In the introduction to this chapter we have mentioned that such possibilities of alternative courses of development exist even under a single mode of production.

the elaborate scrutiny by the professional observers, the jati panchayats, the higher jatis, practically by every neighbour, dharma thrives in the village. And even if by chance a deviation occurs, it is nature who provides the final scrutiny. In the last analysis, dharma includes those codes of conduct which are necessary for the maintenance of production and irrigation. Gross violation of dharma therefore, results in the deterioration of the economy, making even survival difficult. A dharma as this does not merely assure a prosperous living after death, but can promise to its adherents, such a thing even in the material world.

The more well-organised and well-developed is the dharma, the greater is its hold on the masses and the less is the necessity of a political society. Religiousness takes care of almost everything, rarely there is anything political. Even conflicts and class struggles may tend to conform to the description, though not to details. Under the dharma the codes of conduct are followed, but are shrouded in mystery. In course of time the inner logic tends to be forgotten and the rules of thumb come to be considered as omnipotent. Once this happens, the community including the guardians fail to judge the essentialities. But reverence prevents them from discarding many of the aberrations collected also as dharma, in course of time. Then comes a time when the aberrations become the more important features of the practised dharma and need a reform movement for salvaging dharma from a-dharma. Many of these may be class struggles in essence.

5.4 Political Authority

So long we have treated ahar communities, including their satellites, as economically independent. To a great extent they are, but not totally so. Such units have to maintain some connection with others. Although they use locally available resources for the most part, there are some items, like minerals, which are not locally available and force them to come in exchange with other units. They may also share water from a common source with others. We shall consider only the last one.

In case different village communities share common sources of supply some additional complications arise. A village would like to get its requirements of water and in the process may face difficulties from, or create difficulties for, other village communities receiving supplies from the same source. Part of these contradictions may be settled amicably for the irrigation leaders in both the villages may belong to the same jati and may have even some matrimonial linkages. But these are not so strong that every such occasion would be settled amicably. One of the conditions of sharing common water resources therefore is that the irrigator community master sufficient strength as a group not to fare badly in physical clashes. The ayacut-owner jatis should also be militant.

However, the cases of such conflicts may be brought down if there exists a mediator independent of the village communities but having sufficient authority to be honoured by both the conflicting parties. The state power probably had arisen from this task. It is reasonable to suggest that the state came into existence only after the irrigation systems had extended to produce densely populated settlements, only after it became necessary to settle many villages sharing a common source of water and only after water supplies available in a region became scarce leading to competition. But once established, the state developed following its own laws of development and extended its activities in many other fields.

The state power, once it came into existence, could appropriate partly or fully, the surplus which the village communities had to drain out from the village societies. Before the coming of the state power charitable expenditure in religious practices would have been the major means of draining out surplus. The appropriation of the same surplus by the state therefore, may raise a contradiction between the beneficiaries of such charities and the state power. The contradictions may get expressed even as sharp conflicts if the religious elements are organised also as institutions like monastries. However, continued conflicts between these two certainly had brought decay and loss of surplus affecting both the parties and it must have soon been learnt that both are

essential. For, ideology and religion (dharma) preserve the collective spirit at the village level where the state power cannot come to aid, while the state power helps by reducing the conflicts at the intervillage level where ideology is of no help. The prosperity for the whole region came therefore only at such times when the two authorities allied with each other -- the king emerged as the patron of dharma while ideology included in it divine sanction for rule by the king. Once in a while there might have been attempts to combine the two functions in one person.

The state, though it came into being as mediator in conflicts, found that it can expand only if the surplus appropriated by it is increased. Attempts to extract more and more from the village communities might have been made from time to time. But those met with difficulties in reproduction of the communities and affected the availability of surplus. Here too if the state power did not change its way, the strategy backfired and the state itself suffered. In the long run only those states, who made no such attempts, benefited, lending support to a viable rate of surplus extraction.

In their persistence to procure more surplus, the local political authorities therefore turned towards extension of their domains bringing in more and more village communities, either by colonisation or by annexation. On the one hand it

encouraged the settlement of new villages within its jurisdiction, and facilitated the public construction of irrigation works. On the other hand it attacked and dislodged other political authorities in open wars to bring already established village settlements to pay revenue or tributes to the new overlords. As a corollary, the state required a ready army in defence against such attacks by other states which prevented its merger with religion. The military power became an inevitable part of such states. In addition, it also needed the spread of ideology to the newly settled colonies to secure good management of irrigation works. This became an added reason why the state emerged as the protector and propagator of dharma and religious institution preaching the ideology.

Once the state has emerged as a centralised authority over a number of village authorities, it opens up further possibilities of development of the irrigation system. Within the jurisdiction of a particular state the whole of the available water resources may be used more efficiently. The changed social relations open up the possibility of construction of big training works on rivers which may divert water to benefit several villages simultaneously. Earlier, the smaller village community, planning independently, could not have taken up such big tasks even if physical resources and techniques were available. Techniques of erecting large dams develop further, often with encouragement from the state when the social situation permits their use. It is understandable

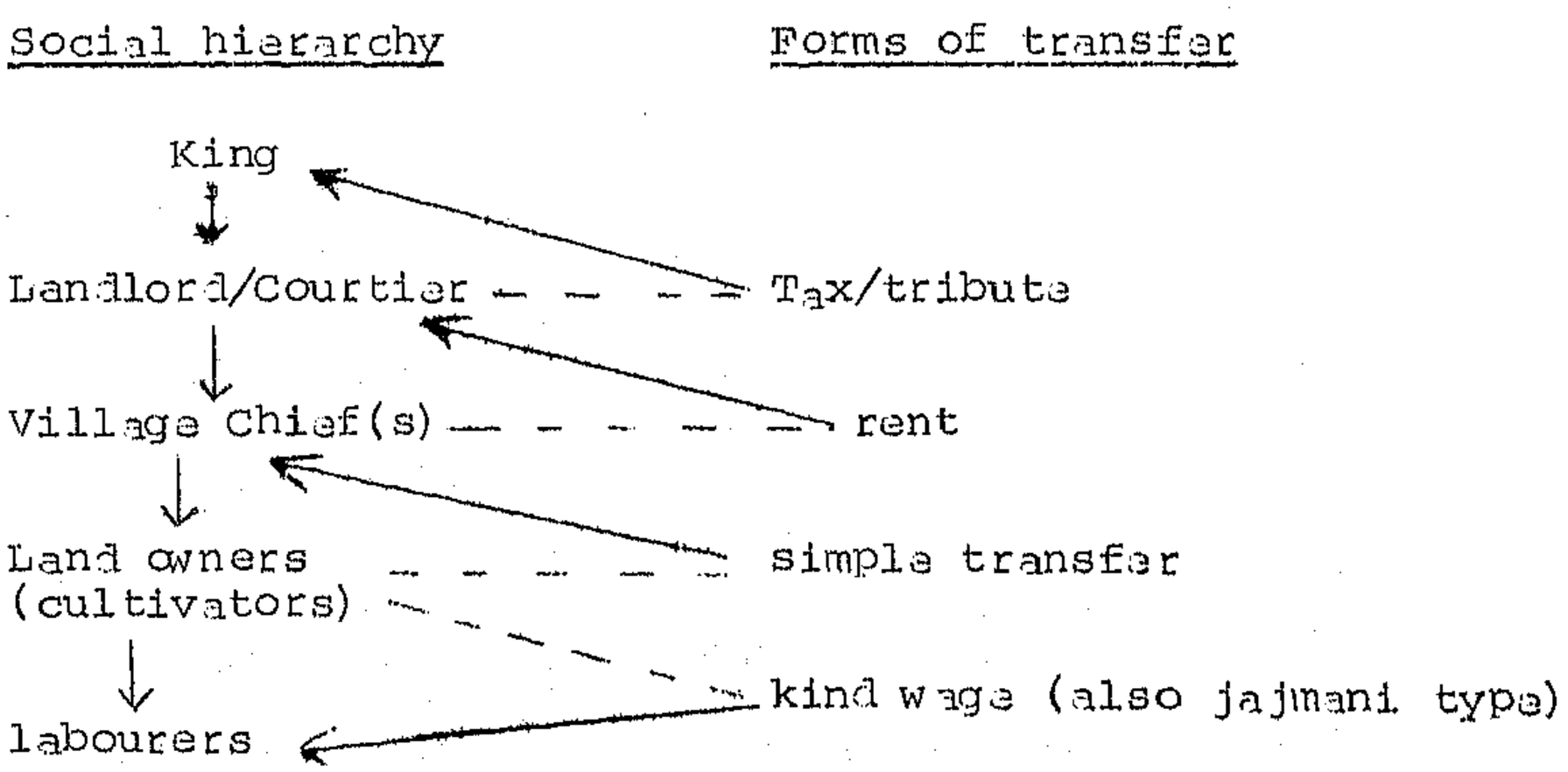
that huge empires provide suitable social condition for planning gigantic civil engineering works benefiting thousands of such villages by diversion of water from major rivers. Centralisation therefore provides improvement of the productive forces and dense settlements. More is the centralisation, more is the development of irrigation supply systems. However, it must not be confused as management by the state power. There is no reason why the state would also take up operational works from the individual village communities, since it could facilitate better management by patronising suitable ideology and religion.

It is important to understand what exactly we mean by centralization in this context. Establishment of a political authority is itself a process of centralization even if its jurisdiction extends over ten or twelve villages. It opens up the possibility of more efficient use of water resources available within this small country e.g. by a common supply line (pyne) and mediating in cases of conflict (or preemting such possibilities by fixing the shares of each village). An empire opens up the possibility of training works over big rivers which may benefit hundreds of villages under its jurisdiction -- the shares of each of these villages may be determined and the imperial authority may mediate in cases of conflict. In this sense the scale of the supply works have a direct relation with the extent of centralization of political authority. Under the very big empires the population

of the country probably had increased manyfolds as an effect of efficient distribution of the available total water resources. Whenever the empires broke down, the conflicts between smaller units over the questions of allocation ensued, ultimately resulting in the contraction of the supply systems and consequent decline in population. But the whole society did not die out, for, even if political systems became altogether absent it could have been possible for the villages to exist as isolated entities with the scale reduced to the size of ahars maintained independently by the village community.

So far we have talked about political authority in general. The specific economic forms in which the surplus is extracted determines the relationship between the authority and the village communities. In order to legitimise its demand, every exploiter of surplus product has to alienate the producer from a part of the objective conditions of labour and assume the title over that part for himself. That part of the property, which then appears as vested in the higher authority, justifies the claim of surplus product by the lord in return for the receipt of that and materialisation of the production process thereof. The exploiter may assert his lordship over the whole country, presenting himself as the divine owner of all the land and water resources. Alternatively, he may prefer to appear as legal owner of the same thing. In order to appropriate the objective conditions of

labour, the village communities have to lease in such land and water resources against payments of surplus to the lord. It may assume many different forms : rent, revenue, taxes. It may even take up the form of tributes. For example, when kings and lords annex the land of some other country the basic purpose of collecting more surplus may be served by reducing the defeated overlords to tribute-payee status. Alternatively, the overlords may grant lease of part of their domain to courtiers or army personnel, who in turn may practice the same system within their domains, creating elaborate sub-infeudation. All these different tiers need some type of property ownership to justify their claims to surplus. Thus the property relations which emerge are highly complex with several tiers. It may contain several layers as shown below along with more than one stratum in most of these layers :



It becomes simply impossible to express in English the substance of the system, the division of property rights

among all these different tiers. Vocabulary in English is restricted to cases experienced in typical pre-capitalist western societies. No wonder that the British administrators were engaged in an inconclusive debate about who was the actual landholder in traditional Indian society[14]. It must also be noted that the nomenclature of the types of transfer as we have made here also suffers from the same weakness. Tax, rent and in particular the kind wage flows only poorly resemble the typical flows understood in the context of Western societies. The system of our concern can be described only in vocabularies internal to it.

The total surplus product realisable from the village communities without endangering the production system can be very high as has already been discussed. This would permit luxurious living for the ruling class. Dharma has no difficulty in sanctioning separate codes of conduct for persons in political authority. In return, the preachers and guardians of dharma receive patronage from the rulers. The rulers practice extravaganza on the one hand and maintain numerous ranks of non-producers on the other hand. This also provides for substantial expenditure in charities, assistance and encouragement to efforts like development of arts, literature, sciences, medicines and martial arts; assistance to religious

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14/ Looked from the top, the system resembles feudalism. Frequent attempts have been made to equate the two.

institutions and expenditure on the productive side like making of irrigation works. The kings and lords could provide for numerous courtiers, assistants, servants, guards etc. all living in close neighbourhood of their masters. It is not desirable for a political authority to reside in a village, for that would hamper his appearance as impartial ruler in the matters relating to intervillage conflicts -- the prime reason behind the formation of the state. The village structure too could not afford to permit rich, extravagent, individualistic lords or even imaginative, ingeneous, adventurer people like the artists, scientists etc. to reside in the villages, last those should jeopardize by their examples, the norms of living already set. The village system required despise for material well-being even for the exploiters (ayacut owners employing labourers) residing inside the village. How could they permit the existence of people with some different life styles to threaten the norms? The seat of the political authority, therefore, remained different from the villages. The kings with their courtiers, servants, assistants, regular army personnel and guards gave their camps the look of towns[15]. The towns became the places of culture, of arts, science and martial researches. But their major function remained political.

15/ Another type of origin, from religious centres or places of pilgrimage, is equally important. The same discussion as administrative towns apply for such towns too.

The economy of the village and the town, however, remains separate except for the transfer of surplus in the form of revenue, rent etc. This is because the village economy remains closed, with the unity of industry and agriculture, and the production in towns is by no means necessary for the survival of village economies. In addition, the entry of such items of individual consumption is not desirable, and is condemned by ideology where simple living is a great virtue. Nor are the members of the village community left with much surplus to acquire such items in exchange; the priority given in the use of any left over surplus is to procure captive artisans and labourers, not items of other use. The isolation is so great that the villages can still survive if the towns are abolished.

But this is not so for the towns. The towns have to depend on the villages for food and resources. Drawing from those resources the towns became expensive centres. As long as they are supported by the villages they develop in many directions. Sometimes those towns became centres of cultural and scientific activities. The townspeople had no such need to practice sobriety, nor were the centres free from differentiation. The townspeople had to collect their necessities through purchases and monetisation extended in towns. Their needs were of a different nature, and paved the way for the development of town-based producers and traders. The townspeople had enough surplus sometimes, and traders and

merchants came from distant regions. The towns all over the country entered into commercial relations among themselves but they still could not touch the village economy. Any such attempt probably resulted in a degeneration of the collective existence in the villages, resulting in decay of the productive system and the consequent drying off of the available surplus for the prosperity of towns. All such attempts backfired bringing in adversity for the towns. The policy to leave the villages alone gave more returns.

5.5 Evolution of Village Society

It is necessary to re-consider the village situation in this context. If two different types of societies exist side by side, although their economic relations may be nominal, other types of influences cannot be disregarded. In particular, dissemination of knowledge (a component of productive force) cannot be excluded. The towns with private property relations could develop monetisation, trade and commerce, industry as well as provide for scientific research, cultural developments etc. The villages could not encourage the development of these from within for various reasons discussed already, nevertheless they could collect this knowledge from towns. Thus it would be wrong to suggest that the development of productive forces were completely blocked in the villages. In a sense the villages were the major beneficiaries. Towns, though they had the property relations suitable for the

development of capitalism, were lacking another necessity - the proletariat. Villages were always inviting people assuring subsistence in return for some services and sometimes community works. There was no particular attraction for the poorer people to go to the towns. The towns permitted for individual prosperity by allowing complete development of private property. But that may be an attraction only for the rich, certainly not for the poors. In all probability, at times the towns must have faced so much difficulty that they had to procure workers mostly as slaves. The developments of large scale production would be extremely constrained under these circumstances. As against this the villagers could secure co-operation rather easily and therefore could accommodate certain large scale production.

The villages were in a position to reap the fullest benefits of this knowledge. They received the knowledge developed at towns and were also in a position to judge whether it could be utilised or not. Scientific and technological information developed under a different production relation were not forced in. Instead, those could have been modified to be usable within the different production relations in the village or discarded. The highly decentralised set up provided excellent scope for experimentation. One or the other of the villages would show the courage for trying something new, and would be the only ones to bear the brunt if the experiment was unsuccessful but would be examplary to all others if success

comes, encouraging general adoption of the system. In this light it is essential to reinterpret the doubtful attitude discussed earlier as a characteristic of the village set up. The innovations are tried once in a while in the thousands of villages. But dissemination would be quick in case of a success. The closedness therefore,would not appear as rigidity but only as an extremely cautious approach to adopting something new. This is certainly desirable when one considers the whole lot of blunders which are created by many modern extension programmes. The extremely decentralised set up provides this unique opportunity for experimentation under a communal ownership system too. The process of dissemination is not unique quality of capitalism. Here too the same process occurs -- the only difference is the adopters units are not individuals but communities.

Probably the villagers invited people trained in towns in education, medicinal sciences and such others to settle in the villages. But they would be admitted only if they did not violate the social relations. In all spheres there might have appeared tendencies of decentralisation of productive forces as against the tendendy of centralization under capitalism. It may be wrong to suggest that there was no development under this type of property relations. Developments occurred, but in a manner very distinct from the typical western course of development under different sets of property relations Against the Western pattern of development of intensive

cultivation, the challenges of extension might have been more important here. Against the confidence in the superiority of large scale production in the West, here the scope of decentralisation might have been given greater importance. The patterns of development might have differed and each thought that their process was the better one. Superiority in military affairs strengthened the belief of one though there is no reason why military victory should show more developed stage in all spheres. The distinct course of development of the subjugated might have appeared as underdevelopment sometimes because of the inabilities to identify the laws of motion of a radically different social system and at other times simply to justify the ego of the politically dominant.

The villages were independent only from economic considerations. We have already seen that for various reasons like services in an expedition, pilgrimage or marital matters they were frequenting other parts of the country. Dissemination of information therefore, could have occurred easily. Nor were the interest of the village communities lacking. The villages reached the threshold of population rather quickly. Even if control of family sizes was practised, overpopulation probably could not be avoided completely. One solution to this was emigration. Probably surplus population from one village or another left constantly in groups to settle new villages. Probably the political authorities

encouraged and helped in such emigrations. The groups well-acquinted with the economic and social systems in the mother villages would try to reproduce the same. But there were challenges of a new type of terrain, of a new country and they were bound to be innovative. The other solution to the problem of overpopulation is intensive production. Efforts to develop intensive agricultural practices therefore, may not be completely absent. Once villages reach threshold of population, they would be torn between two contradictory tendencies : one, to follow the traditional practices blindly, to doubt the new and avoid adventurism, the other, the urge to improve the practices, to increase productivity by newer and newer technology. The two contradictory tendencies would result in effect, not in complete blockade of scientific and technical progress but in an extremely cautious approach to those. Since some villages always reached the threshold, the country as a whole exhibited slow but steady progress in technological and scientific developments. Even the individual adopters do not behave in any different manner. Out of a hundred of cautious people one may dare to experiment. If he fails, he alone suffers. But if the experiment is successful, dissemination of the information accelerate extension process. In this case it was the village communities instead of individuals which became such adopters. But the technology that corresponds to the two types of production and social relations are different.

Until such times are reached when the village social system is about to pass away, until the time when it has ultimately lost all its inner strength and potentialities of further development and hopelessly involved in internal class struggles it goes on developing. It develops both in extent and intensity. It spreads over continents meeting newer and newer challenges of natural conditions, developing new productive forces but admitting collective works and developing new types of societies though with certain essential similarities in the basic structure. It goes on developing in technology though with a difference. It develops the suitable instruments of production, improves the cropping practices, livestock culture etc. introducing all these simultaneously for a whole community[16/] so as to preserve the collective spirit. Civil engineering techniques may make spectacular progress through the use for irrigation structures. Within the villages the knowledge may also be used for residential constructions of modest sizes available to every member of a community. The villages develop science and technology but all the time ensuring its availability to all members of the community. Further, they also tend to utilise the local resources as far as possible in order to preserve the economic self-sufficiencies of each unit. They develop in health and education services but there too

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16/ Not necessarily the whole of the village community. Discussed in the next paragraph.

ensuring that these are available to every member of a community. In short, all throughout the long period of history the villages may develop in many different faculties of life but all the time in distinctly different manner. As against the tendency of concentration under capitalism, here development is characterised by equitable distribution. As against centralisation under the capitalist market economy here the tendency is towards localisation. Specialisation and division of labour develops here too. In its world outlook the society is characterised by communal well-being against individual prosperity. Despite for material acquisition helps in keeping the needs within the limits of availability. The village society has its own concept of development and it constantly develops along that course all throughout its period of existence.

Yet this is but one side. The society is characterised not only by equality but also by extreme diversity. All units have equal privilege only within a jati community. The village community is characterised by wide disparity. The benefit of development accrues not to individuals but to communities. But undoubtedly, it benefits different communities to different extent. Living standards may improve for many individuals simultaneously, but not necessarily for all within the village. Health and education services may not be individually oriented in distribution of their benefits, but sanitary facilities for that part of the hamlet where the

lower jatis reside, may be totally neglected. Content of education would most certainly, be separate for separate jatis. As against communism here the development is characterised by disparity in distribution. In its world outlook, the village society is characterised by communal well being as well as disparity between communities. While fraternity in closed groups characterise the system, separation and subjugation, sometimes accompanied by deep hatred, also characterises the relations between different social groups. Reverence for tradition, strict rules of endogamy, elaborate social hierarchy -- such things are also the characteristics of the system, no matter whether their rationality lies in the maintenance of the production system. The political authority is rather alien; the phenomenon that attains ultimate supremacy is the principle that secures the village system -- the ideology of dharma. It sets different codes of conduct for people pursuing different occupations violating all norms of human equality. In course of time the codes become hereditary. If born to a right parentage one is destined to follow a particular occupation, live in a particular condition, follow specific description of behaviour with each different individual. One is destined from birth to live all throughout his life in meagre means without ever doing the 'degrading' occupations. Another one is destined to remain deprived of all social prestige living his life as untouchable. The dharma also extends its sanction to persons outside the village. Someone may be destined to be

trained in martial sciences, to live in extravaganza and in due course should establish peace and prosperity in one place while engaging in conspiracy and war in another place, all with 'religious' sanction.

5.6 Classes and Class Struggles

The highly complex social system also accompanies several contradictions at several levels. We may note here the major ones :

(i) between individual being and communal being

(ii) between owners of means of production and others, i.e. between propertied and non-propertied

(iii) between the more privileged and less privileged among the propertied class

(iv) between villages sharing the same (water) resources

(v) between village community and authority (ideological, political)

(vi) between religious order and political order.

The elements of class contradiction may not be obvious in the first one. It is a contradiction between two systems and every individual belongs to both the systems. In fact, one may be tempted to explain it as psychological struggle internal to individuals. No doubt it is so. But that is only a part. Every individual shareshis affiliation between

the two, but everyone does not do it in the same proportion. There may exist some individuals with more material interest in individually owned property and some others, just the opposite. Naturally, one group would champion one type of property relations, the other group would oppose it. The contradiction between the two systems gets expressed also as the contradiction between these two classes.

A closer look will reveal that each of these contradictions belong to one particular level of community. The first one corresponds to the lowest level, pertaining to the internal structure of the jati (ayacut owner type) community. The next two, (ii) and (iii) to the stratified community -- the ayacut -- or the village community. The rest correspond to the highest level -- the whole society. It is convenient to discuss the contradictions at each level separately, for it is the corresponding level which changes when one of these contradictions is resolved. That does not mean that other levels remain unaffected. Since all these levels are interrelated, that is impossible. When one particular contradiction is resolved the position of the two contradictory aspects in each of the rest of contradictions change. Thus, by the impact, the rest of the contradictions are either intensified or reduced but never resolved. The process of their resolution may be facilitated by the resolution of another contradictions, and that is the only point we have to remember. Otherwise, the resolution of each of these contradictions can be discussed as pertaining to one particular level of community.

We have already discussed some elements of class struggle at the societal level. Much of the turbulent political history associated with patronage to one or the other religious order, independent religious movements and conflicts between religious ideologies may have stories of class struggles hidden within those. Depending on the local conditions, the struggles might have been waged over big or small territories. Such struggles might have rectified the behaviour of an overlord, might have united landlords and villagers against the misrule of a king. Such struggles might have been popular struggles against a religious order which had deteriorated to the level of being incapable to lend support to the production system. Those might have reestablished 'peace' within the country, made possible once again efficient use of water resources, brought in prosperity. But beyond that those were mere reforms which did not alter the fundamental structure - the basic communities.

The contradiction between villages sharing the same resource is of a slightly different nature. Those are only reduced by the existence of a capable mediator and intensify when the authority fails to extend help, but are not resolved. The only manner in which such a contradiction may be resolved is through the merger of several units to a single unit. It is possible that such changes actually occur, several contiguous villages develop economic interactions to such an extent that they ultimately merge into a single economic and social unit. In other words, the unit, though may be the same village, are different in scales.

In a sense it involves a fundamental type of change. The merger accompanies some alteration in the productive forces, of a nature more fundamental than betterment of supply lines effected through the change of authority. Every independent and autonomous unit should have one reservoir and one leading community. When several villages each one having such arrangements, merge together, it requires corresponding readjustment in the irrigation system. The size of the reservoir suitable to the new community is several times more than the old ones. A leading community however, emerges automatically, being choosen by the location of the new reservoir but others loose their leading status[17]. When, in/absence of a capable authority, several villages get involved in long-drawn conflicts, the possibility of such a transformation arises. Whether this has actually occurred, whether the reservoirs in South Bihar have undergone a change in scale in the historical past, is not known to us. The new reservoirs too could have been known as ahars and the merged social units as villages. Nevertheless, this is an important change. In particular, it brings out the possibility of variations within the description of property relations as both individual and communal. This is the reason why we have noted in the introduction to this chapter that the property relations should be understood as those which

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17/ Note, that this is concentration accompanying increase in scale.

correspond specifically to paddy cultivation technology of South Bihar and ahar-pyne type of irrigation technology. A simplistic view about the individual and communal property must be avoided.

Yet, this indeed is the reason which led us to consider the contradiction between villages as one which belongs to the upper level community. At the most, it affects the scale, but the composition of the village community remains unchanged. Contradictions (ii) and (iii), whose resolution alters the internal composition of the village communities, pertain truly to the fundamental level. The difference between the two types cannot be made with precision. We have made these two different rather, to bring out that property ownership alone cannot be sufficient as a determining criterion for classes in a society as complex as the present one. It may be important to distinguish apart from propertied and propertyless (counterpart of proletariat), rich, middle and poor among the propertied class itself, if one desires to fathom the actual state of affairs. The three groups among the propertied class may not be very different in their economic positions. But judged by the structure of the society, they are, and therefore, they have every chance of emerging as separate classes in the history.

The contradictions (ii) and (iii) are specific to the village society and are present from the very beginning. The very working of the system endlessly reproduce those and

those are present until the system disappears. Those develop as the system develops, becoming transformed with the evolution of bigger scale of works and empires[18] to solidarity and organisation of the deprived classes. The village society develops constantly all throughout its period of existence, but along its own concept of development. In course of its evolution it does not only create increasing complexity in the social structure and numerical increase of the less privileged sections (i.e. concentration), but also increasing differentiation in economic and social conditions between the privileged and the non-privileged. It is doubtful whether class struggles could have been avoided under these circumstances. Indeed, it seems more plausible that class struggles were rather frequent at one or the other level within the village communities. There is a different reason why class struggles may not be so strinkingly manifested. The villages were practically isolated and distinct economies. The country-wide economic set up was only a nominal aggregate of small, independent, holistic economies. Class struggles would emerge within these small units at one level or the other. There is no reason that their development cycles would follow the same period and the thrust would be created simultaneously[19] at

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18/ Described as a parallel to the development of capitalism /see Godelier, 1972 : 787.

19/ For a discussion of the cycles of class struggles and importance of simultaneous thrust see Post /1979/.

many different places making it sufficiently widespread to call attention of the outsider observers. Insofar as the country was also a single unit, the separate villages were also similar through a process of dissemination of knowledge, there were certainly some particular era when the process of transformation was widespread. But those were so only in terms of a long period, a whole era, within which different units reached the climax at different moments. Even such era appeared as more or less peaceful, the traces survive only in the rise[20/] of a new philosophy reflecting upon the new sense of justice and equality.

At certain junctures of history class contradictions had probably developed at a faster rate. Such were the times when a brilliant ruler established an excellent political order, made all possible arrangements for use of water resources, encouraged settlements of new villages to reach its limit, patronised talented scientists and technicians and enjoyed the best type of co-operation from a suitable religious order. It may appear surprising, that those signalled the doomsday, but there is nothing peculiar about it. These were the times when productive forces could develop

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20/ There is no reason why such philosophies should be altogether new or even indigeneous. Poised with a change, people may discover the suitability of even an alien philosophy and a corresponding religion. The era of class struggle may then appear as an era of mass conversion.

at the fastest rate and so were the contradictions enhanced. Being encouraged by all sides, the villages must have reached the threshold population quickly. Areas available for settlement of new villages were soon exhausted. The first one eliminated the necessity of practising frugality, the second phenomenon called for increasing intensity of cultivation. Both conspicuous consumption and productive investment increased in the villages along with rising differentiation and disparity in economic conditions. It is only natural that class struggles would become intense in such situations. Ironic though it may seem, every golden age lasted for a short duration, being followed by intense social and political crises; the noblest of the rulers did not only bring great prosperity but had also hastened the downfall of their descendants; no glorious dynasty lasted in this land for more than a few generations.

But the evaluation of success in history is not done by the continuation of dynasties. The crumbling of political and social order were indeed, revolutions. In the main it was the golden ages when the productive forces developed quickly. It is only natural that those will come into conflict with the then-existing production relations and necessitate a revolution. Under these great emperors and suitable religious orders the system reached its full propensity and quickly matured for transitions. The golden ages, if are remembered for their great scientific and technical achievements, the period next to those might have been that of the humanitarian

philosophers carrying their missions from village to village, to bring a new sense of justice and humanity. In all likelihood, the society has not remained stagnant. It must have undergone several radical changes in the mode of production, all of which are of course, compatible with coexistence of individual and communal property ownership. Within the edifice, village society must have undergone several changes, all of which have certain fundamental similarities. In philosophy, the concepts of justice and equality, morality and righteousness have been revised again and again making those suitable for one or the other type of historical communities. But every such village society practised equality only to a limited extent, inequality was as well a part of all of them. It is doubtful whether the philosophies of village society had ever upheld the principle of equality as universally applicable.

Finally, let us turn to the first contradiction, that between individual being and communal being. We have already introduced several expressions of this contradiction. Within themselves the individuals face the conflict between these two interests. Within the villages, this occurs between the groups divided according to their major interest in one or the other type of property. At the societal level the contradiction is expressed as that between the towns and villages. Its resolution therefore, brings in a new type of society where there is no work that necessitates working as individual, the

village is as much a communal unit as comparable to bees with their behives, and there are no towns, but only one type of settlement. Alternatively, the new society may be one where there is no work to be done communally and the villages are only smaller towns, the villagers are independent of each others as are the townspeople.

Such a transition does not happen as long as the characteristics of productive forces stand in its way. While the specific technology of irrigation can be negotiated only through communal action, the cultivation techniques are efficient only under individualised operation. The precondition of a transition therefore, is the existence of an alternative technology in either of these production processes. The direction of the transition is determined by the character of this alternative; whether it replaces the requirement of communal action altogether or the other one. In other words, the final transition cannot occur until one of the property relations has shown its absolute superiority. It must be noted however that this does not mean that such a development has to occur specifically for allocation of water or cultivation of crops. A development which can do away with the requirements of irrigation or some types of crops and yet provide for reproduction (survival) can effect the transition. At the same time, it is also important to remember that irrigation (or cultivation) may be one, though at present the major, among many activities which require the particular type of

property relation. If a development takes care of this activity, another activity, not so important at present, may take over to reproduce the same production relations. A fundamental change in this contradiction therefore, requires absolute supremacy of one type of production relations in its strictest sense.

This change is certainly the most fundamental one. In all the other contradictions the community as well as the individual were preserved, in spite of changes in forms. In this case, only one of these survives. Nor can such a change occur easily. As we have already indicated, both these types of property relations have immense capacity to absorb scientific and technological progress and convert those to productive forces suitable for the respective production relations. If such is the case, it is very difficult for one to establish itself as undoubtedly superior to the other. Under certain historical situations the adoption process for one may be facilitated creating a seemingly superior picture. During those periods the transition to the privileged form may be steady. But these are rather, historical accidents. If the other form has not yet run out of its potential, it is sure to catch up soon taking the moments of internal crisis of the other as the opportune moments.

Chapter VI

CONCLUSION

"The philosophers have only interpreted the world in various ways; the point is to change it."

/Marx, 1845a/

6.1 Planning in the Framework of Historical Materialism

There are widely different definitions of planning, different frameworks and different methods for working out the process. On the one hand this gives a scope by which a wide range of exercises may be declared as planning. On the other hand, the framework of historical materialism carries a red herring, that of historical inevitabilities - which leads one to doubt the very possibility of planned change. It is therefore, necessary at the very outset, to state clearly what should be meant by planning and what is its position in the framework of historical materialism.

The possibility of planned change arises because the course of development of history does not exclude the role of subjective forces. Developments are not merely spontaneous, but also include conscious action. This raises the scope of planning. At the same time, the consciousness of the subjective forces is also determined by historical conditions and therefore, objectives of conscious action are also part of the historical

development. "Men make their own history, but they do not make it just as they please" /Marx, 1852/. If the objectives are historically feasible, conscious action leads to achievement of success. Otherwise, such actions are doomed to failure and result either in revision of objectives or reaction to the process of development. Conscious action, in this manner, always moves to historical 'inevitabilities'.

This does not mean one has to take a teleologic view. We are not suggesting anything as unscientific as that. The internal contradictions of a system give rise to its movements. Therefore, the future can be described in terms of the present internal contradictions, in terms of their developments and resolution. Mere indication of the absence of a previous contradiction is certainly far less than the characterisation of a whole system. The development or resolution of presently existing contradictions is the only inevitability conveyed by the theory of historical materialism, but that is far off from a teleologic view of the future.

Therefore, it is not possible to exclude several alternative forms of future provided all those alternatives eliminate a certain existing contradiction. This provides the basic framework of planning exercise. Since planning arises out of conscious action and consciousness has a class content, each different class in a society aspires to have different types of future society and may plan to fulfill its own

aspiration. All these different plans are feasible provided those eliminate the existing contradictions within the object society. In other words, the domain of activity of all feasible plans on an object society is the same (determined by the internal conditions of the object society) while the objectives differ in accordance with the class objectives.

The internal structure studied already by us, may now be analysed to identify the domain of planning activities. Even the importance of the type of analyses we have made may be noted. The domain can also be deduced from direct practice, gradually discovering what is feasible by a feed-back system, by learning from experiences. But theoretical deduction may eliminate the necessity of some of the iterative exercises giving a headlong start.

It is necessary to distinguish between conscious action in general and planning in particular. In the literary sense every conscious action is also planned action. But the term 'planning' has been used, and here it is used, in a restricted sense - to mean only economic actions through the State or the government of any form. Therefore, it is also the process by which the ruling classes strive to achieve their economic goal in a conscious effort through the State. Thus Rudra /1975 : 1-27 defined : "Economic planning, in its broadest possible sense, may be taken to mean any scheme of co-ordinated action to be undertaken by a government or some such public authority with a view to bringing about certain desired once for all change or a process of continual change in a given economy."

This brings us to the last point in the definition of planning. The change brought about by planning should not be temporary. Any process of change begins when the elements of the object system are in a state of imbalance. A planned change therefore, is initiated by using one of the elements of a system as control variable and is complete when all other elements reach levels corresponding to that of the control. Thereby the whole system attains a new level and a step in development is achieved. The possibility of an alternative course of attaining equilibrium, through the control variable reverting to its original level - cannot be denied. This too is a change no doubt, but not a sustained one and cannot be termed as a planned change by definition. The basic exercise of planning therefore is to decide one or more elements of the object system as control variables and maintain those, by some external means, at a particular level for a sufficiently long time to pull most of the other elements to its corresponding level. The choice of control, the level chosen, the policies required to sustain the level, the outcome, together constitute a comprehensive planning exercise.

Here we will undertake such a study for the exploration of the method. We have chosen the problem of 'formation of water-users' association in a new area', a problem of current interest, as the case study. A method can be explored best through an application. Only that is the reason for its being a case study; the same method can be used for tackling many

other problems, even for economic developmental actions intended by non-government agencies. In particular, the holistic nature of the strategy deserves attention.

6.2 Thematic Guidelines for Irrigation Planning

Either productive force or production relations can be used as control variable for changing the economic base. Accordingly, two different strategies may be conceived as possible. More correctly, these are two different sets of strategies, for, it is not the totality but only one of the components of either productive forces or production relations is used as control variable. We shall discuss both of these.

Strategy-1 : Productive force as the control element -

In most of the cases it is the physical structure (instrument of production) out of all other components of irrigation system, which is introduced first, is easily sustained and becomes the control element. It is not impossible for some other element like development of skill in irrigation management becoming the control, and find desings developing under planned effort to meet up to their requirements. But as a more common case we shall discuss only the first one. As for the concrete examples of this type we may include practically all such irrigation projects which are (or may be in future) established from technological consideration and only later, efforts are being made to establish irrigation associations. The physical structure, as the control, has already been introduced and

sustained at a particular level. We shall use our knowledge about indigeneous irrigation system to derive the additional measures which are to be taken for promoting an association capable of undertaking the management tasks at lower levels. In a later section we have compared those with some of the concrete experiences in formation of irrigation associations.

(i) Identification of proper unit :

Such matters like the size, jurisdiction or even the membership rules of an association cannot be arbitrarily decided. As a first step towards formation of irrigation associations it is necessary[1/] to identify distinct parts of the physical structure which can be managed independently (or almost so) of the rest. Since the precondition for the existence of an association is the availability of resources at the disposal of and only of the association members, those can correspond only to distinctive parts of the irrigation project.

But besides this matter, the jurisdiction of it, no other specification should be made about the structure of the associations. Even such specifications like "water-users' associations", which implicitly specify the eligibility criterion for membership, are undesirable; faced with a crisis of manpower supply, associations may think of several ways of making even non-irrigators interested in the work. No strict rules should be made about

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1/ But not sufficient. From the productive force only the necessary part can be indicated. The social conditions may not be sufficient. We shall discuss it later, in this subsection itself.

meetings or leadership. We have already seen that under certain circumstances formal democracy or formal leadership become redundant for such associations. In brief therefore, apart from identifying the jurisdiction and trying to promote a corresponding association, no details pertaining to its internal structure should be specified. The units should be allowed to discover their possibilities, autonomously.

(ii) Training:

It has already been indicated that the unit strives to achieve a new level of equilibrium. The process can be facilitated by training, in development of both other elements of productive force and corresponding production and social relations. The training programme can include wide variety of irrigation management and agricultural practices as well as methods to improve interpersonal relations, democratic functioning of organisations, methods of communications. As long as the associations enjoy the rights to accept or reject suggestions, any amount of information may be passed to them. In fact, it may be of great help. Left completely to themselves, the associations may need long time before they discover such complicated systems about parcellised location[2/].

2/ This is only an example. We are not suggesting anywhere that this is the only possible form which correspond to irrigation associations. Rather it indicates the importance of studying alternatives and dissemination of the knowledge among the association members.

It is also worth noting that some aspects of the internal economic structures of these associations

contd...

Knowledge about the alternatives reduces their task to a matter of choice, accelerating the process of establishment of associations.

(iii) Increasing importance of irrigation works in the local economy :

During the initial stage and even later, alongside the irrigation works there also exist many other economic activities which lend support to individualism or different types of communal existence. The members will respond to the requirements of each of these activities according to the relative importance of each activity in the total economic set up of each individual. In order to establish irrigation associations therefore, it is also essential to increase the proportion contributed by it in the local economy. Of course, it is understood that extension of irrigation facilities is being sought for its contribution towards betterment of local economic conditions. What we want to indicate is that the

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can be predicted. For example, those will possibly cultivate the same type of crop all throughout the irrigated ayacuts and in the same manner. Probably, the association as a whole instead of individual members, will behave as units for innovations and adoptions of new technology. But such aspects can only be predicted or suggested to them during the training phase. If the planning strategy includes sanctioning of autonomous status to these associations, then such landholding patterns or crops practices cannot be included as directives. These activities remain out of the domains of State functionaries, hence out of planning process.

considerations lead to certain policy suggestions for the establishment of associations :

(a) While establishing irrigation association in a new area, irrigation facilities must be extended for a few years initially, altering the local economic set up and making it dependent on irrigation works.

(b) Since the economic developments will, in all likelihood, lead also to productive investment, care need to be taken that their effects do not decrease the relative importance of the (communal) irrigation system. This necessitates some suitable measures to discourage the acquisition of individually managable productive forces like pumpsets. At the same time promotional measures introducing better cultivation method, good seed and fertiliser for the communally irrigated agriculture should be made use of. These measures are required particularly during the initial stages. Once the associations are well-established the members themselves find it difficult to use efficiently other types of productive forces.

The above three are the conditions for the establishment of an association. Let us now turn to the concrete steps involved.

(iv) Transfer of responsibilities :

Until such times when the irrigation associations can take up the task, the irrigation system has to be maintained under a different method of management, e.g. directly by the government officials. Let us try to visualise concretely, how the transfer from the old to the new system of management may take place. In fact, it must occur in several steps. Since the associations (communities) are organic rather than mechanical entities, they develop only gradually. Transfer of responsibilities therefore, can be made only in steps, in proportion to the degree of consolidation achieved by the association.

During the construction phase of the irrigation project all the tasks remain in the hands of the irrigation administrators[3/]. This is so even during the initial operational and training phase. To initiate the body of the association all the workers (or cultivators or only irrigators) within the demarcated unit area may be brought together. As an initial function, the same body may be entrusted with the easiest task, that of allocation of water.

From this embryonic structure the association develops gradually. It may fail, by being unable to carry out even the task of allocation. But if it succeeds there, it can also develop to take up many other functions as well as to determine

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3/ There are projects where the associations are established first or exist already and are consulted even during the design and construction stages. But such cases constitute examples of strategy-2, not of this.

its own structure. To manage properly the task of allocation, the same association will have to develop norms and methods of allocation among its members. The norms may not be the same as desired by some of the administrators. But that has to be accommodated since the association (community) decides its internal constitution. Also, in the process of allocation it has to set up a mechanism for conflict resolution within the norms accepted by the community, hence administered internally. Thus, the one task of allocation immediately initiates many other functions.

Through these steps a procedure for the functioning of association -- of meetings and discussions, of decision making, leadership and communications, emerge from within the body. Those may be formal or informal, may resemble the structure as is in our case study, or may be different. What is important for the officials/organisers is to acknowledge readily that the body itself is the proper authority to judge the procedure suitable for it. Knowledge about the various alternative forms may hasten the process, but the association itself must be the final body to judge their suitability. The procedures begin instantly, the moment an assembly is convened. But it crystallises slowly, through experiments and practice, to a well-established modus operandi decided on the basis of resources available and magnitude of tasks before it.

It is to be noted that the moment such a procedure is established the association enters into many other activities apart from allocation. The experiences and evaluations of

irrigation and agriculture earlier were only individuals' concern, The moment a meeting and discussion procedure among these interested individuals is established, the subject of common interest come to receive attention in the forum. Even the construction works of the irrigation project, which have been evaluated individually or in small groups from the point of view of local difficulties, become a topic of common interest of the association. Thus, from the very beginning, associations enter also into maintenance and construction works of the irrigation project though initially, only in rudimentary form. As the decision making and other procedures of the association crystallise, as the impact of the project sinks in and the importance of the irrigation works increases in the local economy, the association becomes more actively involved, or at least willing to do so, in works like maintenance. In steps, thereafter, works may be handed over to the associations.

There is not much to discuss about the actual steps. Sometimes initiatives may be shown by the associations themselves. At other times the officials may be insistent that certain types of tasks should be taken up by the associations themselves from a particular year. Undue hurry as well as delay on the part of the officials produce some adverse effects no doubt, but not of a very serious magnitude. Such minor discrepancies between the optimum and the actual cannot be avoided in any project. We shall therefore leave it and, discuss

some other aspects of the transfer process:

(a) Resumption of work :

Once in a while a work extended to the association may not be done properly. Need will arise in such cases, to resume the same work. There is an important aspect here which deserves attention. An association, as we have seen, passes through ups and downs in the co-operative effort and only through its experience rectifies itself. This leeway must be permitted. Irrigation administrators therefore, should not exhibit any eagerness to undertake a task which has already been done by the association in a previous year. Failure in one season, may be even two, to perform a particular work, must be considered as within the tolerable limit if the physical structure does not suffer irrepairable damage due to that. As long as the members feel that there exists an alternative agency to complement their efforts they need not exert themselves to the utmost to undertake certain tasks.

(b) Types of works to be entrusted to the associations or division of responsibilities between the government and the irrigation associations :

Understandably, from the point of development of irrigation associations there is no limit. The associations, as individual decision making bodies and working units, cannot take up such matters which concern two or more of such units. But all other tasks regular and irregular, may be accepted by them. If their internal resources do not permit, those may be

supplemented by other agencies. But even for such works some amount of resources, in one form or the other, must be available from them.

The point however, calls for discussion for a different reason, for clarification of what exactly it means in the concrete sense. The irrigation associations engage themselves in multifarious activities from the moment they come into existence. Besides irrigation tasks like operations and maintenance, they also come to decide the crop and cultivation practices, property relations and norms for conflict resolution within their geographic jurisdictions. These steps may need some time, but we have already seen that those aspects have significant contribution to the life of the associations. In addition to irrigation, the same association has also to regulate the development of other productive activities from the point of their suitability and not for itself. Thus it loses its specific character as that of irrigation only and encompasses the whole of the social and economic life within its jurisdiction, becoming the local community itself. In the ultimate sense only the intercommunity subjects may come within the jurisdiction of the government, the rest may remain out of its purview.

This type of autonomy however, is rarely allowed. A government reflecting the interest of a dominant class, imposes certain limit. It may not allow the alterations of property

relations, limiting the growth of the associations/communities to a particular level[4]. Another government may be more liberal, but still restrict the communities from having decisive role in determining the dominant ideology and culture. These may be described as subjective conditions imposed by the ruling classes and are decided by the nature of the latter, their willingness to compromise with the object society. These are limitations, but not of the object society itself.

There is an objective condition too, which imposes similar limitation on the attainment of success along the above strategy. The object society inherits some conditions from its historical past. If any of the requirements of the planned association comes into conflict with these historically given conditions, then those may not be met, at least easily. Particular mention may be made about class conflicts and group rivalries existing in the object society. It may be very difficult to bring such groups to cooperate amongst themselves if the work of irrigation demands so. In all such cases the associations may not be formed for a long time, may function only in a limping manner even after those are formed. Theoretically, it is still not

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4/ e.g. equitable distribution effected at the most by engaging "impartial" irrigation workers, often called "common irrigators".

impossible for those to get established ultimately.5/ But that may happen only if there is no other alternative and the members are forced to pull on with the irrigation work year after year, for survival. Only after years of forced cooperation the members may ultimately succeed in wiping out the vestiges of old conflicts. The conditions may not be so adverse in others. But still, the inherited conflicts and other conditions determine the easiness and difficulties in the formation of associations from place to place. This in fact, explains why some of the units may take off quickly, while in some other areas responses to the efforts for the formations of irrigation associations are not very enthusiastic.

Strategy-2 : Production relations as the control element :

The alternative strategy starts with the introduction of a new production relation and consists of developing the alternative productive forces and superstructure supporting the particular relation. As the control variable, the production relations, like the productive force in the earlier case, are

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5/ But a better strategy is to make certain minor alterations in the original design so as those correspond to historically feasible structures of associations. For example, two different distributaries instead of one, reaching water to two groups of irrigators historically in conflicting terms with one another, may make the formation of irrigation associations possible. But this should be considered as belonging to strategy-2, discussed later.

historically determined here. The success of the strategy depends on the historical possibility of attaining the compatible productive force.

It must be noted that this strategy does not appear specifically as 'irrigation planning', but as planning of co-operatives, communes, voluntary organisations etc., which may take care of all the productive forces under their disposal. It is not necessary to go into the details here; those may be worked out through an exercise parallel to the former case. Only one point may be noted specifically. As it was in the former case, here too a particular element of the production relations may be used as control. This then, influences all other components of the system including the other elements of production relations.

6.3 Comparison with Some Existing Experiences

The correctness of the guidelines deduced here can be verified only through practice, including the existing practical experiences. Unfortunately, no official effort has been made for the formation of irrigator association in the aharpyne society. Therefore, we are left with no choice but to make comparison with the cases made in some other parts of the world, where somewhat similar societies exist (Appendix-III). In addition, we have to be careful to consider only the experiences of the plans. Programmes conceived under different situations have been tried, often mechanistically, refusing to

learn from the experiences. Such programmes certainly, cannot help us in verification of our hypothesis. We will consider only such programmes where good feed-back mechanism has been in existence and the policies have been modified in the light of the experiences. Rather, we should consider for the purpose of comparison, only those aspects of the plans which have been verified in practice.

Efforts made by the colonial government in South India and Ceylon to secure community participation in management of tank irrigation, was done in mechanistic manner with little success. The Command Area Development strategy proclaims to encourage irrigator associations. But little has been done. Outside India, there are some cases where considerable care has been taken to develop viable strategies for the formation of irrigation associations. In particular, in Philippines, Indonesia and among the Socialist countries, in China, some rich experience has already been accumulated. Interesting experiments are going on in some other countries like in Malaysia and Sri Lanka. Japan is certainly a very successful case. But the comparable level of developments had occurred in Japan about half-a-century earlier. It may not be regarded by many as a just case for a comparative study. We have considered therefore, the cases of Philippines, Indonesia and China. The comparison has to be very sketchy. Available information is scanty, nor do I have any first hand experience. Yet, it is hoped that even such an exercise will help in establishing the merit of the theme outlined earlier.

In the Philippines locally managed "communal" irrigation has been in existence for centuries. Since the early twentieth century, the government has been responding to the maintenance of the physical structure whenever one community or the other approached it for help. None of these communities however, received such help in perpetuity. Until 1976, the emphasis was solely on construction of better physical systems. Some associations functioned effectively after help was received, some others remained weak. Thus, the existence of the communities though acknowledged, was retained out of the purview of developmental efforts. For various reasons the situation changed after 1976 and the assistance began being combined with efforts for the development of irrigator association. Within a short time a strategy emerged out of experience which included three basic components : (i) Necessity of initial training, (ii) Organic view of the community as capable of undertaking multipurpose activities and (iii) recognition of autonomous status. It was decided that before the construction works were undertaken certain works for the development of skill in community works as well as asserting the viability of the farmers' associations would be carried out. One of the purposes was to recover the cost from the community. But the community immediately exhibited that if it could undertake one task, it could also undertake other tasks, including the construction and improvement of the system. No necessity was felt, to violate the hitherto existing autonomy of the indigeneous irrigation organisations, to interfere in their internal system of ownership, operation and maintenance /Bagadion and Korten, 1979/.

The 'Dharma Tirtha' model of development has approached the question from exactly the other side. Yet, through the feed back system, it has reached similar understanding. For quite some time the Indonesian government was trying to promote water-users' associations under which the necessity of initial training was recognised from the beginning. However, training and demonstrations could range to include all varieties of things in absence of a thorough knowledge of functioning of the irrigation associations. The result was, there appeared many associations installing fancy technologies, adopting modern administrative procedures, mapping out complex organisational flow charts, forming a constitution and by-laws, and outlining democratic voting procedures, but without much success in the actual works of management /Duewel, 1981/. The Dharma Tirtha model of recent origin, developed after several years of discussion of local experiences, does not call for any such imitative and mechanistic detailed model organisation. Its 'Operating Guidelines' and 'General Statutes' lay out broad operating principles and legal framework, implicitly acknowledging the autonomy of the irrigation associations. Experience of successful organisations shows the variety of internal conditions. Another tendency has been, on the part of the members of the associations, to consider its works limited to the distribution of water, cleaning canals, collecting fees and resolving conflicts. The experience of the prized associations however confirm the necessity of conceiving those as living organisms, evolving and changing over time /Duewel, 1981/.

China has a different political system. But that does not dissuade us from a comparative study. The objective possibilities being the same, certain fundamental features must be met here too. During the initial years after the revolution, attempts to rectify the derelict state of water control management had concentrated on expanding and strengthening the bureaucracy of the water conservancy departments at all levels of government. But in a shortwhile it was clear that this was not enough. The 'fifties and 'sixties saw the rationalisation of the organisational structure. Through the compilation of experience over many units and over several years, a detailed approach to the organisation question emerged by around 1965. But the general approach throughout these rationalisation effort has been decentralisation and increasing autonomy of the local units. Beginning from 1957 local units have been given autonomous status. Because of the characteristic political system the extent of autonomy sanctioned to the local units has been much more thorough than in the case of Philippines or Indonesia. The difference therefore, is that the objective possibilities have been better realised in China. In addition, land reforms have changed the community composition. It is not the old traditional communities which enjoy these autonomous status. But we will set aside this aspect -- the internal changes -- for the time being and concentrate on the interaction between the community and the government in matters of irrigation.

Community in China consists of several levels - production team, brigade, commune. Autonomous status accrues for some works to one, for other works to another of these units. To avoid complications we shall often skip over these divisions. After all, this is not primarily a study of Chinese situation. "The primary operational unit for management is in all cases the production team" /Vaidyanathan, 1983 : 437. For large projects benefiting many such units, there are several layers of management bodies above the production team. But those bodies do not carry out co-ordination work through issue of instructions. In fact those are mere organisations for democratic action on key problems which concern many such units. The majority of the members of these higher bodies are representatives of the beneficiary units. China has also a strong core of professional management personnel, and they are included in all these upper level bodies. If it was not for this, the whole system of management could have degenerated into pedagogic practice. Probably the professional experts provide valuable help in construction and extension programmes. But it is also recommended that they do not indulge in any routine task in perpetuity. As soon as the user level organisations and personnel appointed by them (community members themselves) are ready, professionals are required to hand over charges to them. The latter groups are expected to work in close collaboration with the professional management personnel, but their accountability is to the user community not to the professionals /Vaidyanathan, 1983 : 42-557. In accordance with the shift in policy, since

1957 there is a strong emphasis on giving local communities a major role in planning and designing projects and in organising their construction as well as on the need for 'collectivism' in this effort /Ibid, 297.

In sharp contrast with the Philippino communal irrigation projects or Indonesian Dharma Tirtha units, the communal management system of China discussed here, concern 'large-scale' projects. As we have already pointed out, complete command over supply available is a precondition for the existence of a community. For the two other cases, where the projects are small village level structures, this condition is immediately met. In the Chinese case the condition is still fulfilled but through a complicated mechanism. Essentially, it consists of working out in a democratic procedure, detailed plan showing allocation available to every unit in each season. Since this plan is strictly followed, the units are certain, quite in advance, about the amount of water available to them. This is as good as having a captive reservoir in the village. In a sense it is better. If a captive reservoir breaks down, the irrigators cannot help but suffer in that year. But in case of similar contingencies, the units of a unified system in China are permitted to make even substantial alteration in appropriation from the whole system. However, it is imperative that they inform these alterations promptly to the higher level so that a suitably modified seasonal plan prepared through democratic discussion, can be released as soon as possible. Marginal

adjustments in the programme by appropriators units, in the light of the evolving situation in the course of the season, is permitted -- probably the higher level seasonal programmes are prepared in broad terms to leave rooms for such adjustments. The distribution of water available to the community is done completely at their discretion. Various measures have been introduced to increase the efficiency of water use. But those changes are considered while preparing the seasonal programmes. The supply available during a season is certain /Ibid : 64-66/.

It is in the matter of autonomy in broader aspects of social and economic life where the Chinese communities enjoy immensely more advantages than the Philippino or Indonesian communities. It is almost unlimited. As far as multipurpose role is concerned, the Chinese irrigation communities had no need to discover it. In fact, the communities were formed expressly for multipurpose function, one of these being irrigation. There is a basic difference between the first two and Chinese case discussed here. The Philippino and Indonesian cases are, what we have termed, strategy of the first kind, using productive force as the control variable. The Chinese strategy was of the second kind which started with the introduction of a new production relation. In fact, it is not even justified to discuss the Chinese irrigation plan as above, as a strategy of the first kind. We should study it as a different type of strategy, as changing production relations and formation of communities, as development strategy in general which succeeded

in multipurpose activity including irrigation. That there is a semantical difficulty for the second kind of strategy since those do not appear specifically as 'irrigation planning', has already been noted. But however, odd it may sound, the Chinese development strategy in general provides one of the best scopes of comparison of our thematic planning with an existing experience.

But before we turn to that let us draw attention to the problem of semantics even within the first kind of strategy. Vocabulary and semantic difficulties are one of the greatest red herrings in social actions related to irrigation. We have already noted how such a seemingly innocuous term like 'water users' association' may affect adversely by shutting some possibilities to irrigation associations. Also, it may be noticed in our exposition, large works like the pynes, finally got referred to only as 'supply lines' being rather insignificant in social matters to the small local structures. From the engineering point of view construction of large structures, the difficulties involved in training works at the intake points, are certainly more important. For them, the local units are really the subsystems, and their vocabulary matches this outlook. But the case is exactly the opposite when the considerations are social. As Tamaki [1977] has pointed out, all these broad range systems are only "sub-systems" of the socially main system at the local level. It follows therefore, a complete reappraisal of vocabulary is long overdue.

As long as irrigation administration remains bound to the terminology and vocabulary borrowed from other sciences, the changed attitude to irrigation development will never be reflected at the operational level.

How basic it is will be clear from the following example. In both Philippino and Indonesian cases it was felt that a different type of evaluation of irrigation system was necessary /Bagadion and Korten, 1979 : 21; Duewel, 1981 : 387. Construction, a mere engineering aspect, should not be the criterion for evaluation - the success of the system at the field level, the utilisation of water should be the criterion. The changed view reflected in the Dharma Tirtha model brought about another change which is highly significant. Ability to communicate with the top was once understood as an essential requisite for recruitment of officials of the organisation. But once success at field level became the criterion for evaluation, many others, not able to communicate with the top, fared better. The requisite qualification for officials of Dharma Tirtha has subsequently been revised from 'literacy skills' to 'familiarity with agriculture' /Duewel, 1981 : 177. If such is the result of a rather 'abortive' effort, it is beyond the scope of one's imagination what may be the result of a consorted effort to relieve irrigation management from the dead weight of engineering and other alien terminology.

Let us now turn our attention to the study of the Chinese development strategy[6/] as an example of the second type of strategy, that is, as a case of development of productive forces in general by using production relations as control variable. The changed production relations did attain a community of a different type not only in terms of levels (team, brigade and commune) but also at a more fundamental level, by collectivisation. Therefore, instead of describing these simply as communities we shall refer as collectives[7/] hoping to remind that it was also a different type of community. Finally, we prefer to talk in the past tense. The reform after 1979 may have affected the collectives by introducing contract farming etc. Since we do not know as yet, the exact nature of the changes that have occurred since then, it is

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6/ We are avoiding the term 'planning' for substantial partsof the tasks were "planned" and undertaken by the communities. By definition, we are considering only those undertaken by the government or any such public agency as planning.

7/ Terminological difficulties cannot be avoided. We are using "communalisation" for mixed property relations (as in our case study) and "collectivisation" for such cases where individual share in property cannot be even demarcated, where property is not only jointly owned but even physically consolidated.

"Private property" is synonymous to "individual property" in common use of the term and we too have retained this sense for most part of the thesis, to facilitate, later, reference to many well known historical anecdotes. Nevertheless, let us note, the term requires thorough definition. Collectivisation is indeed abolition of private property (socialisation) at one level only, not in general. Collectives now hold property as privately owned by them. If one is not careful, many contradictions may be altogether overlooked.

safer to talk only about the past.

In the Philippino communal irrigation development programmes too the formation or existence of an association is implicitly considered as the starting point. Yet it does not constitute a good example for introducing the strategy-2 since the associations were never seen as primary. Interest in them came from the question of irrigation and consequently, their potentials remained mostly unutilised. In the case of China, an organic view of the collectives as capable of undertaking multipurpose activities was present from the very beginning. A congenial civil system was not difficult to organise since the numerous intellectuals in the revolutionary party could substitute the old civil functionaries. If not always, the civil system lent considerable support to the collectives. During the initial years the local organisations were not given autonomous status. But soon it was learnt through the experience, and thereafter, from around 1956 there occurred a rapid shift in State policy from centralisation to decentralisation. Thus, being aided from many different sides the Chinese collectives have attained considerable maturity and constitute one of the finest examples for introducing the second strategy.

The Communes combined in themselves administrative, judicial and economic functions[8]. It was simultaneously a unit of local

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8/ The summary information here are mostly from Ellman [1979].

government, a unit of agricultural production, a unit of legal ownership of land and other economic assets, a unit for education, security, administration of justice, finance and marketing. Its functions included supervision of all economic works under its jurisdiction, agriculture, irrigation, industry and market all alike. It was the final authority to admit innovations, conduct experimentation and adopt new crop system. It mediated in all conflicts, not merely in those concerning irrigation, within commune members. It also collected tax and supervised the farm sales quota. The Communes therefore, had almost complete autonomy. As economic activities remained predominantly in the domain of the collectives and managed autonomously within those, the Chinese plan did not only cease to be instructive but also stopped showing the details of economic activities. Only with respect to the handful of materials for which a commune would have to look to its externalities (another commune, an industry in a town or even world market) such phenomena like market or price or (government) planning could have some meaning. Consequently, for most of the materials and economic activities China had no plan nor any price policy. But it did not even appear as laissez faire or anarchy or anything as stagnancy. Clearly, it had a development strategy. This brings us to an interesting feature of the second strategy. Similar to the semantic problems discussed earlier, planning here requires redefinition. When the functions of the State reduce drastically[9/] the State functionaries can

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9/ Deviation from the text, we may note an interesting corollary as collectives develop in scale and activities, the sphere of activity of the State reduces further. In this sense State gradually wither[illegible]

have only limited roles to play. This gets reflected as increasing stress on 'reliance on people' for developmental works as against bureaucratic concept of planning. The uncoded, unwritten, uninstructed activities constitute what is described as 'peoples' plan'. But that is not merely a rhetoric. It is a well-thought-out division of activities between the government and the people.

Such a plan or development strategy aims primarily to create and channelise peoples' initiative realised through the community activities. The approach of the central plan can be described in a single line -- to make resources available to the community. The State did not direct or even instruct how to use the resources. It was left to the communities to find out the most efficient way for utilisation. The strategy is comparable to the case of formation of water users' associations we have discussed earlier -- except that all resources and not merely irrigations water was extended to the community as a unit. Consequently, not merely irrigation, all other economic activities developed using the additional resources.

We need not make out here a full list of resource availability. Only certain features may be noted. The productive forces released for the use of collectives included subjects and instruments of labour earlier owned individually by the landlords and rich men. In addition, the granting of full autonomy to the collectives made available to them such

resources like natural watercourse, which were not available even to the landlords. Also, the State made available to the collectives, some more materials not available locally. These could have been instruments for land levelling as well as supply of certain raw materials on a continuous basis[10]. The material balance exercises of conventional planning as well as supply and sales order conferences, were taken help of in this matter.

Among other components of productive forces, the State made systematic arrangement for increasing knowledge and skill, for systematic dissemination of innovation. China has an interesting system of popularising one or the other of the communes as examplary in particular type of economic activities. The details were discussed widely, but the separate communes were not instructed to follow the models. The ultimate decision for adoption or rejection rested with the communes themselves. The huge off-season productive labour were available even earlier. But those could not be realised because the then-existing production relations did not make other components of productive forces available to it. Under the new system they were supplied with required knowledge and

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10/ Some of these may be required for once only. But some others required on a continuous basis, creates integration/dependence. Integration with units like local industry may be desirable, those with world market may not be. It may be noted that such crucial issues of planning as the latter one /viz. Thomas, 1974/ came up even in Chinese planning, no matter that it was practically 'no plan'.

given necessary access to land and other properties. This helped developments such as construction of roads, irrigation and flood control projects, improvement of health and sanitary conditions, complete elimination of pests, spread of literacy etc.

Obviously, these activities are such that their products can be realised only by the whole community, not by the individuals. In effect, those must have turned the weights increasingly in favour of the collectives. For the initial years at least, conscious efforts were created through political propaganda to discourage private (individual) enterprises. Doing everything through the collectives has been a popular slogan. China has shown considerable restraint in the matter of learning production technologies and work organisations from the West /Tse Ka Kui, 1978/. The productive forces have developed but those have also developed in a particular direction. One hopes that the course of development has been corresponding to the collectives, the new production relations. There is no doubt that some success has been made here and even some conscious efforts were given. But it is also known that private plots have not yet been completely dissolved in China, that such attempts resulted in loss of economic efficiency. One may presume that only in such matters where compatible productive forces exist, balance between the production relations and productive forces has been achieved. But even now there exists several areas where no such compatible productive force is known and therefore, a state of imbalance still exists.

6.4 Transition of Community : An Example

As far as our concern is specifically irrigation, we may very well stop here. We have discussed it both as a problem of planning and as a part of general development strategy. In the latter case, reference to irrigation has been only casual. The next step can only be a discussion of these development strategies in general. But that is even further removed from irrigation, and as an altogether different subject, may remain out of our purview. The formation of collectives or any other type of society determine the course of development of irrigation. But for analysis, it sounds reasonable that they should better be viewed as totally different topics requiring separate study for being justly treated.

But there are also other ways of looking at it. We have already indicated that the possibilities of social transformation are historically given. The analysis of that therefore, may provide us additional insights, the historical possibilities open to the irrigation system in particular. It may also be argued that in the method of political economy the barriers of disciplines and separation of topics are so much overridden that the two should not be considered as separate studies. Through the analysis of irrigation we have understood so much of the life process of community that it does not require a detailed study anymore to grasp certain essentials of their transformation. Rather, it will be unjust to leave these topics on the pretext of their being separate.

In chapter V we have introduced the hypothetical transitional possibilities open to the communities of our interest. In chapter IV we have discussed the concrete case of such a transitional character. As a concurrent possibility, the alternative course of transition traversed by China, will be of great interest.

Certainly there is a gulf of difference between the traditional societies in India and China. But let us also remember that there exist some essential similarities between communities in general which permits comparative study, provided of course, due care is taken. It may be noted that the six contradictions we have identified in chapter V (section 5.6) are sufficiently general to describe broadly the contradictions in any type of community[11]. The specific nature of the contradictions may differ from society to society e.g. the intravillage contradictions are those between jatis only in an Indian case but may bear a different name and different characteristics in China. But we need not enter even into that since the analyses of the transition processes (in 5.6) necessitated only the scheme of stratification, in community structures. For the analysis of transition process we need only the following broad description of transitional Chinese society :

11/ With minor modifications as the proper settlement units instead of villages if necessary or in addition to water resources, all such resources which necessitate communality of action.

(i) there existed some productive works which could be appropriated only through communal work. Individuals were engaged in this type of work. In addition, they also had individually negotiable activities.

(ii) the local (village) societies contained many different strata

(iii) there were many such local (village) units

(iv) above them were the religious and political authorities.

Obviously, such a characterisition has little room for disputes. If at all, the first point is the only one which may raise some doubt. We are assuming that community existence develops on the basis of material production process, hence presupposes a specific type of productive force.

Nor is it likely to be questioned, if we also assume that on the eve of the revolution class conflicts at all three different levels had reached serious heights. But even that is not needed by us, it is sufficient for our purpose to recognise that all these contradictions were in existence also in China. Whatever be the exact intensity of the contradictions, those certainly brought about a political change. The new government undertook several development measures. It is from this step that our analysis begins. The measures interacted with the objective conditions and intensified or resolved the above contradictions, thereby effecting a transition. We shall provide our explanations

about the characteristics of these measures, the method of resolving the contradictions, the nature of the transition and the newer contradictions produced by that. Once again, the information used by us are well documented -- we will only provide some explanations in the light of the characteristics of communal property relations that we have analysed in the thesis.

The contradictions at the upper level (the last two, in 5.6) were resolved by eliminating the warlords, overlords and landlords. A new political system prevailed which created new sets of contradictions, e.g. between the government officials, party functionaries, local community members. But the old conflict was resolved. The persons in authority were dealt with in drastic manner, but the contradictions at community level were handled more patiently, thereby avoiding serious class conflicts and disruption of the local communities. The village landowners, the privileged ones within the local communities, did not experience confiscation of their property. Rather, the policy pursued was aimed at their voluntary dissolution. Changes in production relations were initiated at the secondary levels, leaving the property relations as before. The changed production relations, even to the minor extent, were taken help of, in developing collectively negotiable productive forces and thereby turning the balance increasingly in favour of the collectives as against the old types of communities. In brief, the steps were:--

To begin with, production relations were changed only with respect to relations at workplace -- distribution of product or property relations were not disturbed, thus avoiding any possibility of conflict. Mass campaigns alone were taken recourse to for the first step, for the formation of mutual aid teams.

The 'teams' retained all distinctions in property but in course of consolidation altered the second component of production relations. The share of the labourers in the distribution of product was gradually increased following land reform directives. At the same time, the possible scope of development of productive forces within the changed production relations was fully realised. In consequence, the alterations in the distribution of product rarely affected the landowners in terms of the absolute amount they received in share. Once again, there was not much of opposition from the landowners.

In the next step property relations were touched. But even here there were several steps :

Firstly, holdings were consolidated and worked together. But distribution of product was done according to original contribution of each individual in pooled capital (including land). Thus, the old landowners having different sizes of holding, remained satisfied even after consolidation.

In the next step the distribution was switched (gradually) from 'capital contribution' to 'work done', ultimately developing a consolidated holding where members were paid according to work.

In every step, productive forces were developed as far as possible and mainly it was the additional product which went to benefit the poorer section of the past. Thus the privileged remained 'allies' of the revolution, rarely willing to oppose. But how is it that they did not ever try to appropriate the increased product?

This indeed, is the point where autonomy of the communities was violated. If the different units were allowed to function completely autonomously, the privileged would have cornered all the benefits and the poor would have been the ones receiving in absolute amount the same as before. In consequence, status quo would have been established and the transition process would have stopped. That this did not happen was because of State intervention, or more fundamentally because of a particular type of political party as dominant. The State reflected through the party, the class interests of the poorer sections and demanded, at the cost of the autonomy of the communities, changes in specific manner as above favouring the same class. This clearly shows that the Chinese communities had much but not full autonomy. Their autonomous status was violated particularly for effecting transition. This also explains why in China leaders like Mao have repeatedly stressed the Communist Party to have its base among agricultural labourers and poor peasants.

As the ultimate result of this transformation, the Communes appeared as communities very very different from the old ones. The whole of the property was consolidated and people were renumerated according to the works done, eliminating differences between propertied and propertyless (the contradictions ii and iii in 5.6). Lately, distribution was further switched from according to 'work done' to 'attitude to work' eliminating the distinction between strong and weak, old and young. The transition was made without strong opposition. While a thoughtful policy was responsible, it was possible, as must be noted, because productive forces could have been developed at each stage. Development of productive force was the basic condition of success.

Let us now turn to the fourth contradiction (in 5.6), that among the communities sharing a common resource. We have already noted that contradiction between adjacent villages (communities) can be solved when those villages combine into a single community. It is known that China has gone through several stages of amalgamation of smaller collectives to form bigger ones. While recognising this broad step we may go into some intricate details. In our discussion of the working of ahar system, we did repeatedly point out the disparity between formal (juridical) and real ownership. The merger and establishment of bigger collectives does not necessarily mean that those were not merely formal, that the production process was not carried out in reality in the smaller collective forms.

The Chinese communes were divided in brigades and production teams. It is possible that the commune was only formally the owner, the real ownership rested with the brigade or the team (or even with individuals). Bettelheim /1975 : 127-8/ has already drawn our attention to such a problem, to the distinction between what he calls 'juridical form of property' and its 'effective appropriation'. For example, Bettelheim noted /Bettelheim, 1975 : 128/, "in the Soviet Union, the collective-farm form of socialist property is better adapted to the level of development of the productive forces at the disposal of the collective farms than the state form would be. This means that, at the present level of development of these forces, socialisation of the production-process is more real within the collective-farm framework than it could be if formal ownership of these productive forces were transferred to the state". Bettelheim pointed out that in case the latter happened, the state would be left with no other option but to depute a manager on the spot to carry out the task erstwhile of the collectives, on behalf of the state. The tasks have to be carried out from the spot. Such a formal transfer therefore, would be a setback to socialisation. Transition from a lower to a higher form of socialist property has, Bettelheim noted, "a strictly historical significance". The existence of lower forms of socialisation "is thus not to be explained, as some would have it, by the "conservative mentality" of the peasants but by the reality of the actual production -- relations." How far were the communes really the unit of the community?

Worsley's /1975/ intensive observations lead us to believe that the historical stage that was reached by China in collectivisation was that of the Production Team, of 150-250 people. Although the communes were formally the owners of the socialist property, it was the Production Teams which actually managed the agricultural production and some other productive activities.[12/] The productive forces were at the time of observation, in such a stage where works had to be guided on the spot and could be done separately by the Teams all over the communes. Attempts to establish direct control by the commune would have resulted in undermining the compatible scale of collective production relations and probably in some cases this happened when managers were appointed by communes. However, there were also certain works like the road and embankments construction, of social health and education, which were done by the commune directly.[13/] At the same time there was also individual property to a limited extent,

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12/ "The introduction of communal ownership and cultivation has no doubt meant drastic reduction in the number of points at which conflicts could arise: until 1979, the production team has been the basic unit of ownership and cultivation under the new system. It is several times bigger than the average farm of the pre-revolutionary times. Nevertheless, conflicts could and did arise between teams, and between brigades and communes, over the use of water and the allocation of responsibility for (and cost of) maintenance". /Vaidyanathan, 1983 : 47/.

13/ One should also consider that through the use of many industrial products the units were also included in national or world market.

supporting certain other productive works. Thus, though the Production Team level of collective was only the dominant one, there existed a whole lot of other production relations, both individualistic and higher forms of collectivistic. The development of the production process has transcended the dominant form of property from individually owned to collectives and can also transcend the dominant collective form from Team to Brigade, then to Commune, Province and finally State. But that is a long way to go. The productive forces have to develop to such an extent that the effective appropriation of those can be made only with such huge collectives.

Let us now turn to the first contradiction (in 5.6), that between individual being and collective being. What is the basis of this contradiction? We have already indicated that the two types of property exists simultaneously because certain productive activities correspond to one and certain others to the other. As long as the society has to depend on the continuation of both types of activities, neither of these is completely abolished. But we have also discussed that the relative importance of the two can be changed. Since the process of development occurred under a specific production and social relations, such activities which corresponds to the collective relations, must have been favoured during adoption. But that is possible when there are alternatives. There cannot be any doubt that China adopted a particular type of productive forces for development of activities not essential for immediate

survival. In the handful of cases in productive activities where choices were available, selection must have favoured the ones corresponding to collective relations. But that does not mean that the society was able to dispense with all productive forces appropriated under individual ownership.

The well-known controversy regarding private plots[14/] is a case in point. In absence of an alternative, the productive force and its consequent individualism could not be dispensed with. There may exist some other essential activities where no such alternatives exist. The official policy was not to suppress these but to wait for a solution either through the invention of an alternative for the same product or its substitution by an altogether different product produced under the socially suitable producion relations. In agriculture, similar problem has been expressed as that "mechanisation is the weakest link". The country tried hard to replace individual cultivation methods by teams corresponding to machines, seeing it as an essential step to collectivisation.

14/ Let us include here Walker's description explaining the policy of continuation of private plots in China /Gurley, 1976 : 159-161/. The private plots produced mainly vegetables and pigs, and the pigs produced manure, the dominant fertilizer of the collective sector. During the Great Leap Forward the private plots were declared to be inconsistent with the communes and pigs were socialized resulting in wastage of such lands and increase in the cost of pig rearing as well as loss of manure. The policy was revised. It is explained that when the fertilizer consumption will greatly increase eliminating the necessity of manures (apart from other things) the peasants will voluntarily surrender their private plots and pigs.

Instruments of production need not be only mechanical - biological processes too are quite common in use as productive force.

The Chinese development process, though not the only one of its kind, is by far the best example of communal property relations still having sufficient capacity to absorb scientific and technological knowledge and convert those to productive forces suitable for the specific type of production relation. In fact, its own experience along this path led to the understanding that a complete reappraisal of science and technology is essential to replenish those with the communal ones that was achieved by the traditional communities and disregarded by the modern individualist trend as well as to relieve the modern science and technology of its intonations of private property relations. The achievements are probably nominal. In China the supremacy of communal property relations were not established in all economic activities. But it may also be true that China has been able to turn the balance greatly in favour of the collectives. The struggle between the two forms continue and once in a while being aided by a congenial state, developmental course may lean towards favouring the individualised sectoral possibilities. But probably, the relative advantages of individualism are much less after the substantial achievement that has been made in furthering economic activities supported by collective relations. The resistance offered by the collectives in China to the advancement of individualism may therefore, be much more than that of communities in Third World countries.

6.5 Some Broader Issues in Technological Change

If we now summarise the above discussion we find that every society contains several different productive forces with different levels of development. In the ahar-pyne society there are certain productive forces better adapted to the individual ownership of property while there are some others which correspond to communal ownership of property. In connection with the discussion of Chinese communes we indicated that the problem is more complex. Different types of productive forces do not merely differ in their correspondence to either individual or social ownership of property but that they also differ in their adaptabilities to different scales of socialization. The actual state of complexity is much more than what is reflected in the present study. We did not undertake investigation of all spheres of production in any of these societies. The ahar-pyne society of South Bihar requires grazing facilities for cows and Chinese communes have also farms and industries maintained by them, to mention only two of these. Besides, all these include domestic economic activities better adapted to a distinct type of property relations.

To each of these distinct property relations correspond different types of superstructure and consciousness. But only one of them enjoys the dominant status in any society at a particular time. As a result in any society at a time only one form of property and the corresponding productive forces enjoy

a climate congenial to its development. But other productive forces and productive activities suffer adversely. Once in a while the pressure may be so high that the subordinate productive forces face widespread decay in spite of the fact that those are not substituted by other activities producing the same product. The economy faces a crisis whenever such collapse of an activity with significant contribution occurs. Very often this is followed by a planned effort for regeneration, as has happened in the case of ahar-pyne irrigation or other communal irrigation activities or for the private plots in China.

It is not difficult to note that such plans are basically defeatist. Faced with a catastrophic economic situation, the dominant mode of production may permit for their partial regeration. But this is so only as long as it fails to find a proper substitute which corresponds to the dominant property relations, to replace the condemned productive force. In the case of Chinese communes this was clearly expressed. Private plots though resumed, were considered inconsistent and undesirable and the society was openly looking forward for their abolition when increased production of fertiliser etc. would eliminate their importance in production and economy. The protagonists of water-users' association strategy have certainly been loyal to their objectives. But they are only a minority and do not represent the dominant consciousness in the concerned societies. Faced with the consequent crises of a widespread deterioration, the dominant force may come to compromise and accept some of the

suggestions made by the protagonists of water-users' associations. But a look into the set of policies required to put these associations on a firm footing will reveal that many of these cannot be sanctioned. This is what we have already indicated that the irrigation associations can never become as consolidated in the Third World countries as their counterparts in the Chinese collectives. Similarly, the private plot cultivation and private piggery cannot realise its full potential in Chinese collectives while they do so in a society dominantly under private property relations.

Nevertheless, planning for such activities are quite important because of the actual circumstances. Although it is desirable, in the planned effort for development of a particular type of society -- to promote only a particular type of productive forces which correspond to the desired property relations, for many different products there may not exist suitable alternative productive forces. Such alternatives may not have been discovered as yet. Or it may so happen that those are globally available, but for various reasons the country in question cannot procure them immediately. In either case, the planners face a dilemma -- if the activities are shut down summarily the economy faces hardship and contraction of production process. But if such activities are allowed to continue neither those function efficiently, nor does the other activities corresponding to the desired property relations. Indeed, the first policy cannot be adopted when the product in

question is an essential product for the society. Thus planning for even such activities which are basically inconsistent with the desired property relations constitute an important part in most cases of developmental planning.

There is no anomaly here since planning is basically an exercise described over disequilibrium situations working towards the establishment of an equilibrium. An integral plan must start with the comprehension that it can operate only within the limits of feasibility given to it by the whole history, that at times it has to perpetuate or even extend many activities basically inconsistent with its ultimate social objective. There cannot be any objection about this. But the long term objective calls for an additional activity. The plan should also include a programme carrying search for suitable alternatives so that the inconsistent activities may be ultimately substituted. Without this the plan cannot be a comprehensive one. The partial plan for such a socially inconsistent activity should therefore, include a second objective in addition, that of its ultimate dissolution. Otherwise this is not an intrinsic part but a disjoint and conflicting strategy to the overall economic plan.

We may be even more specific. Not all the elements of productive force stand in the way of increasing the size of appropriator group. It is the material productive forces which are not easily adjustable. It is the instruments of

labour which develop only historically, and exert decisive influence on the form of property admissible in any historical epoch. It is this element which prevents wistful transition from private to social property, from lower to higher level of socialist property. But even if technological alternatives are available, a desirable change cannot be effected as an instantaneous process. Meanwhile the economy must also continue a steady state of production. For such reasons it often deems desirable to lend support to obsolete technologies and sick industries. These are sought however, as mere temporary measures. The case of irrigation planning under discussion is an exact parallel. As a temporary measure, perpetuation or even extension of irrigation associations may seem desirable under a State system characterised by private property relations. It may be an integral part of a comprehensive developmental planning. But the planning strategy should also seek ultimate dissolution of the conflicting part of productive activities and therefore, encourage the development of a substitute to it. A comprehensive economic plan does not encourage all types of economic activities. It practices selective promotion and discouragement according to its overall objective. Examples of such practices are found in abundance with respect to self sufficiency, or anti-monopoly objectives. The extension of such practices are necessary to facilitate development under a particular property relation and social system at local level. The correspondence of certain types of productive activities and technologies with

global market and its characteristic property relations are by now, well-known. The present thesis makes an attempt to show similar relations also exist between technology and local social structure.

The above observation is not restricted to the case of indigeneous or already existing technologies. It applies equally for new technologies. As an important dimension of development strategy or planning we may note the following. Although wide variety of productive forces are available in the world, it is imperative to pursue an extremely selective procedure for the sake of long-term benefits. To adopt whatever technology, whatever productive force is available may increase production and productive capacities of a society in the immediate future. But it prevents any particular social system consolidating itself and hampers full development of productive potentials specific to either of them. Being driven by the ideas of fast 'progress', countries may welcome without any reservation, technologies available anywhere on the face of the globe. But those also introduce additional contradictions between productive forces and property relations which in the long run, may bring in even economic stagnation as a consequence of inabilities in realisation of full potential from any one of the productive forces. It is important to recognise that every application of science and technology has certain local society-specific character and often need measures equivalent to import restriction when the objective is

to form a specific type of society. Such restrictions do not necessarily deprive them from developmental opportunities, but instead, are helpful from a long term point of view.

Yet, in spite of this long-term strategy a society is often forced to accommodate productive forces inconsistent with the long term objective. This may happen because of lack of an alternative, either globally or locally, the latter reflecting such constraints to acquisition as lack of financial resources. But the products may still be extremely important requiring continuation of the productive force. A comprehensive plan therefore, makes a distinction between short and long term objectives and should engage simultaneously in both. While in the short run it may be important to perpetuate and even extend a basically inconsistent technology the plan should also make a search for suitable substitutes corresponding to dominant property relations. Once again let us refer to a parallel situation that arises with respect to planning for self-sufficiency. A comprehensive plan does not only include an industrial policy for import-user industries but also encourages import-substitution research from a long term point of view. Only a dual effort similar to this can make irrigation planning a comprehensive strategy. Up till now we have discussed only one part of it, only the strategies required to perpetuate or extend irrigation associations even under a property relation and social system inconsistent with it.[15] The discussion is

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15/ This applies also for Communes. The scale of the irrigation associations are not necessarily adapted to the particular scale of communal property relations. We have already noted that there are conflicts at this level.

not comprehensive if we fail to include the possibility of substitution.

We face the final set of questions. What are the options open for technological development facilitating a desired type of social system? Are there many alternatives compatible with different production and property relations? How do the alternative productive forces develop? How does one judge their social characteristics and suitablity? Is the course of development completely determined by history leaving no scope for conscious action facilitating a particular type of development? These are questions crucial to planning for qualitative changes. We are certainly not in a position to provide definite and detailed answers to any of these questions. But the existing state of knowledge permits us to indicate the possible answers.

History provides an era with a finite number of alternatives. Nevertheless, these are alternatives available for different courses of development, though within a limit. If discoveries are mere accidents then qualitatively different productive forces always appear within every social system. Some of these alternatives propagate quickly because those are consistent with the dominant property relations and social structures. But others fail to receive such welcome. Choice in this manner from among available alternatives are always being made. But those are rather spontaneous. Conscious action rarely guides them.

That the engineering and scientific knowledge at present is rich enough to provide for alternatives compatible with a wide range of social structures can be easily shown.16/ Irrigation technology for example, can easily make big or small reservoirs (ahars) which are consistent with different scales of local communities. It may locate the heights of outlets at different levels so that the recipients at a distance drawing water from a lower level outlet can never be deprived by those staying nearer and getting their supplies from an upper level outlet. A highly problematic tail end situation can be remedied by separating it as another ayacut through the provision made in the form of an additional distributory. Choice among such alternatives are always being made. But those rarely come to be noted as choice guided by social considerations. Many different attempts for the improvement of irrigation management started with certain renovations of existing structures. We do not know whether viability from the point of existing local social conditions played any part in the redesigning. The spectacular success that was achieved after the Philippino and Indonesian farmers were inducted at the very planning and construction stage of irrigation projects has been explained in terms of their familiarity with terrain conditions etc. We do not know whether they were also able to influence the designs so as those match their existing social

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16/ In an interesting article Furushima [1972] has described a wide range of collective societies (gemeinschaft) that rose from different modes of management and drainage operations in pre-revolutionary China, though the discussion is very superficial with respect to the technological details.

associations, whether the spectacular success was because the designs found a compatible production and social relations readily available. But we know a few concrete examples. In order to improve the performance of canal irrigation in India World Bank has recently introduced a strategy very different from extension of local level associations. The strategy includes development of certain control facilities in the main system which will permit varying quantities of water to be delivered at will, by the irrigation department staff, to reach locations over the whole course [Wade, 1982]. This certainly will reduce the necessity of on-the-spot management from the villages; with the new designs the canal system will be better adapted to the bureaucratic management that exists at present. We have another example made under a different political system on a similar problem. Faced with the task of improving performance of an irrigation system, China sought the exactly opposite alternative, that of increasing decentralisation and make more reservoirs of a smaller scale [Nickum, 1976]. We need not talk of an altogether different technology, like the tubewells to replace communally managable canal irrigation. Even within the canal irrigation technology there are enough alternative designs available which provide considerable social manoeuvrability.

There is an increasing awareness that irrigation designs require modifications to develop adaptability to local social structures [e.g. Levine, 1977; Thavraj, 1979 : 23]. But little

systematic research has been done along this line. Such studies are urgently needed if choice of socially viable technology is to be made as a conscious process. We may nota here an interesting point which may help such researches. As the above examples show, it is only such points as a small increase in capacity, in number of outlets, slight improvement in control and operating facilities etc. which have far-reaching impacts on the structure of the recipient societies. Most of these do not pose any bit of challenge to engineering sciences and can be provided without any difficulty. It is quite possible that a whole lot of alternative technological possibilities consistent with different types of social structures exist in the form of such 'minor' considerations to science and technology.

Let us note it clearly that this is merely a hypothesis. The state of knowledge in this field is so poor that very little can be said with confidence. Yet we have preferred to note it in clear terms because such 'minor' considerations are often overlooked. The profound importance of such apparently minor changes on the social structures have frequently been noted.[17] That this aspect deserves increased attention

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17/ Of late, an interesting development in parts of South-East Asia has drawn much attention. As harvesting instruments traditional hand-knives have been replaced by sickles. As a consequence of the change community harvesting has collapsed leading to employment of agricultural labour including migrant labourers /Kuroda, 1971 : 311; Hutapea et. al., 1979 : 169; Kikuchi, 1981 : 291/.

It may also be recollected that for the feudal period of Europe substantial amount of research has been done which show profound impact of different technological innovations on social structure.

cannot be disputed. Such minor points posing little challenges to the present-day orientation of engineering and applied sciences may increase greatly in importance if the orientation is ever changed. If engineering and applied sciences ever aspire to use their knowledge for moulding societal structures to a desired direction they will have to devote as much attention to these minor points as are given to meet the challenge of building massive barrages and structures.

Hoshino [1973] has made a very meaningful attempt to describe the inter-relations between scientific and technological progress and social context. According to him the totality of such knowledge can be divided into two groups, one, that deals with laws and principles of nature and the other that deals with their applications. Obviously, the social context plays an important role in determining the course of development in the latter by indicating the priorities, by adopting the suitable ones and by refusing to lend support to the ones inconsistent with the existing social system. Thus, the same scientific principle may be used in two different set up, but because of the different social context the applications are sure to possess different characteristics. Hoshino has in fact, cited some examples to show that within about twenty years from the establishment of a new social system, by around 1930's, certain systems of production rose to prominance in the Soviet Union which had "characteristics contrasted with those systems under capitalism, although, of course, they did appear in past under the capitalist system as well."

History endows the human kind in any particular era (or in a locality) with only a limited knowledge of scientific laws and principles. But even within these limits many different applications consistent with many different social structures have been already made and can be made. But unfortunately, the choice from among these has remained mostly, spontaneous. This great inventory of components of productive forces has remained purely at the mercy of the dominant social and political system to be promoted or rejected, encouraged or discouraged, extended or suppressed, pampered or overlooked according to its short-run interest. Thus, in one instance we may find a particular form of productive force receiving overenthusiastic responses developing very fast. In a next instance it is engulfed in an awful lot of contradictions and has run completely out of its vitality; the society passively awaits for a substitute to come up. A second one, working efficiently for over a millenium suddenly succumbs to rising pressure. The society rises up too late to its care when already irrepairable damage has been done. A third one born before its time -- if inventions are a matter of chance such a case is not unlikely -- remains a toddler or even dies down being unable to receive any protection or encouragement from the existing social system. And when, in a future date the social relations corresponding to it arises, it makes a frantic search for its own base.

Evidently, a great much of difference can be made in the present situation by conscious process of selection. If only a dominant political system can judge the appropriate social contexts of different technologies it can make a really comprehensive effort towards realisation of its objectives. If it only knows their characters, the system can judge which are obsolete, which are current and which ones are useful for the future form of society. It can promote the currently suitable production systems, can gradually dissolve the decadent ones while facilitating the development of the future types. It will be able to identify the nascent productive forces compatible with its long term objectives so as to help development and dissemination of those. It will be possible to make a choice long before the desired productive forces have actually shown their potentials while being able to check wastage of resources in search of impressive but basically inconsistent technologies. It will not be necessary to wait for production relations of a different type to set in first through a social revolution. It will be possible to develop productive forces in a desired direction effecting ultimately, a desired type of society. All these are possible if only the inter-relations between technological forms and social structures are understood. The present state of knowledge in this area is far too limited to help such judgments. The present study probably makes a strong case for investigations in this direction.

"Social forces work exactly like natural forces : blindly, forcibly, destructively, so long as we do not understand, and reckon with them. But when once we understand them, when once we grasp their action, their direction, their effects, it depends only upon ourselves to subject them more and more to our own will, and by means of them to reach our end." /Engels, 1880/

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Appendix - I

SUPI DESIYAIN PYNE

Supi desiyain pyne flows through Jehanabad subdivision of Gaya district. Though it is only about 50 kilometres away from either Patna or Gaya, the area is not very well-linked with those towns. In fact a single track railway line constructed in the year 1876 has been its only link with Patna till recently. Probably because of this reason the region has been partly saved from the impact of the urban areas so very near. Thus during the fifty years period between 1901 and 1951, the population of the sub-division has increased by only 50.7 per cent and during the next twenty years (1951-71) by 41.1 per cent. As per 1971 Census the proportion of workers engaged in non-agricultural occupations in Jehanabad subdivision was low (13.5 per cent), much lower than the state average. The relative isolation of the area must have contributed partly for the continuation of the traditional system of irrigation.

Supi desiyain pyne originates from river Jamuna. The status of the river will bring out how numerous the rivers are and how complex is the drainage system here. River Punpun is a tributory of Ganga. Morhar is the principal tributary of Punpun. While entering Jehanabad subdivision Morhar bifurcates into two branches, the eastern branch is called river Dardha. Jamuna is a tributary of river Dardha.

To make it further complex, Jamuna has its tributaries. One of these, river (called nala or sot) Hongoa is an additional supplier of water to S.D.Pyne.

River Jamuna originates just below Chotanagpur Plateau and runs for about 90 kms. through Gaya district before it meets with Dardha. The catchment area of Jamuna lies between river Morhar on the west and Phalgu on the east, and on a rough estimate is about 400 sq. kms. Unlike the rivers originating in the hills, Jamuna has deep clayee bed. As such, the course does not change like the sandy rivers but substantial lifting is necessary for water level in the river to reach the levels of intake points of pynes. For this reason the number of pynes from Jamuna river is very low but those probably have survived better in absence of problems like silting. For most of the time in the year the river remains dry. Following heavy downpour in the catchment basin the river swells up and carries water in rushing torrents. At a guess, Jamuna carries flood discharge during high floods as high as 4,000 cusecs. Yet, because of the deep bed the water rarely overtops the banks. On an average the river has a slope of about one metre per two kilometres.

It is generally believed that the catchment area of Jamuna has been shrinking. In its upper reaches more water flows towards river Phalgu. This is quite possible in a country, where the watersheds between rivers are not very sharply demarcated and slight change in terrain conditions

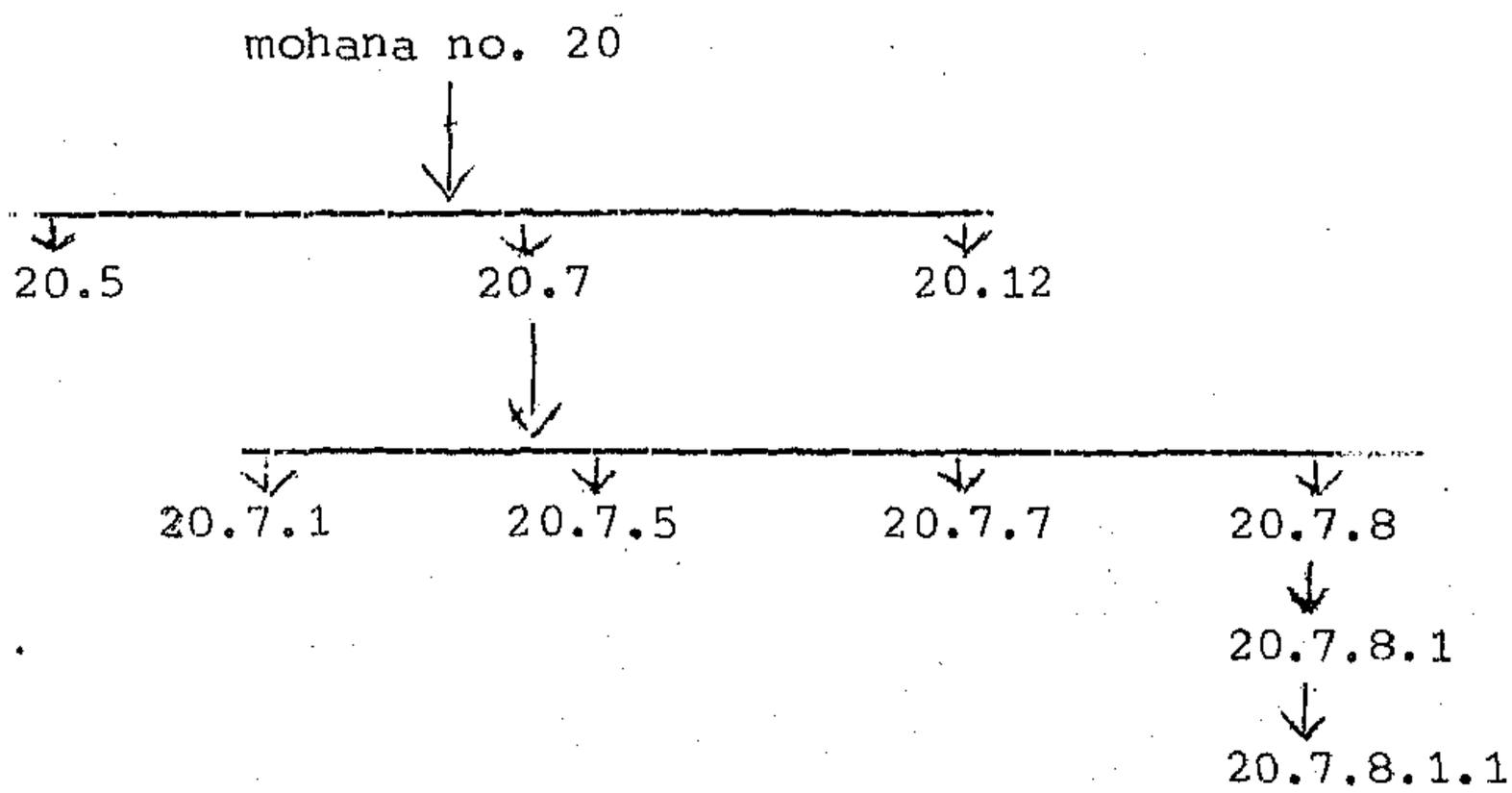
divert rainwater from one to another. However, the things may improve substantially after the multipurpose river valley project, Uderashtham scheme is commissioned. Uderasthan scheme, with an investment of more than 2 crores of rupees, include the construction of a diversion structure on river Phalgu and distribution of water to benefit a command area of 61,500 acres. Of late, extension programme like the construction of another pyne (Dharaut pyne) and that of the village channels, with estimated cost of 72 lakhs, have already been sanctioned. Part of these works are already completed. As a result S.D.pyne system has partly been replaced by new channels, partly been revitalised because of increased supply of water and part of its command area which could not be irrigated earlier has been brought under irrigation. A proposal costing rupees 18 crores, envisaging to link up the different rivers in this part of the country, is being discussed. If this is sanctioned the integrated project will drastically alter the distribution pattern of surface water among different rivers and different pyne systems that exist at present.

It is not known when, or by whom, the S.D.pyne system (or parts of it) was constructed. The system may be very old. The biggest village Kako has some antiquarin remains which may be as old as of 9th or 10th century A.D. /Patil, 1963 : no. 1797. It might have been a prosperous village even at that time and the existence of a rich irrigation

system might have contributed to its prosperity. Reliable information is available only since the last century. Those however, refer to improvement works. Thus, for example, the Tikari Raj who had the first part of the S.D.pyne included in his zamindari, had built a masonary weir over Jamuna for diversion of water into S.D.pyne. After independence this weir, known as Gangain bandh has been replaced by another weir slightly upstream, which was earlier the intake point for Solhanada pyne. In the past the S.D.pyne would have received only as much water as was let out to flow in Jamuna after appropriation by Solhanada pyne. Now the same weir supplies to both the pynes on either bank of Jamuna. For a week its sluices are open to Solhanada pyne, for the next week S.D.pyne gets its turn.

The S.D.pyne system originates in Makhdampur block, benefits almost half of the Kako block and some villages of Ghosi block in addition. The main pyne and its branch channels together passes through 60 villages providing some benefits to most of these villages. Altogether, its command area is about 10,000 acres. It is difficult to demarcate the exact command area because of the meandering of different units. For example, the S.D.pyne feeds the ahars at villages Murasa and Maniawan. From each of these ahars a new pyne emerges travelling through several villages. On the other hand, the different parts of S.D.pyne receive supplies of surplus water from many other pynes including that of the partly completed Uderasthan scheme.

In its course, the main channel of Supi Desiyain pyne passes through 32 villages. Of these, 21 villages are located on Karua nala, the natural watercourse part of the pyne. There are 53 mohanas on the pyne -- for a few of these there is no fixed location but can be cut open anywhere on a part of the embarkment. Out of these 53, the channels beginning from 12 mohanas reach other villages than the ones in which the mohanas are located. Customarily such channels are called sakhs and the others, which do not leave the villages are called karhas, bhoklas etc. Such a categorisation has been done probably because of social reasons. Sakhs may not be longer than the karhas, but because those pass through several villages those certainly raise extra complications in management. The sakhs in turn often give rise to channels going through other villages. Such branch channels are called darsakhs. The Pyne Records made during the Survey and Settlement Operations in Gaya district show the locations of the different fixed mohanas in revenue numbers of plots. For our purpose the mohanas may be serially numbered. Thus for example, 7.5 may be used to indicate the 5th mohana of the channel originating at the 7th mohana of the main channel. The decimals may be used to indicate the sakh, darsakh, karha, bhokla etc. The complicated network of S.D.pyne is brought out by the following scheme which shows the different channels those reach to more than one village:



Thus the channel which originates in the fifth order branch, in mohana no. 20.7.8.1.1 travels through more than one village. This is indicative of the complicated intervillage co-ordination that is necessary for the management. Most parts of the pyne system-as complicated as this-are now dead.

Some of the mohanas, to be exact 7 of the main channel and 12 of different sakhs, lead to ahars. There are 19 ahars supplied by the whole system. The 19 villages in which these ahars are located account for more than a half of total population of all the 60 villages through which the pyne system passes. Areawise too the ahar-owning villages account for more than a half of the total geographical area of the 60 villages.

Table - 1

COMPARISON OF VILLAGES WITH AND WITHOUT AHAR

IN S.D. PYNE SYSTEM

(As per 1971 Census)

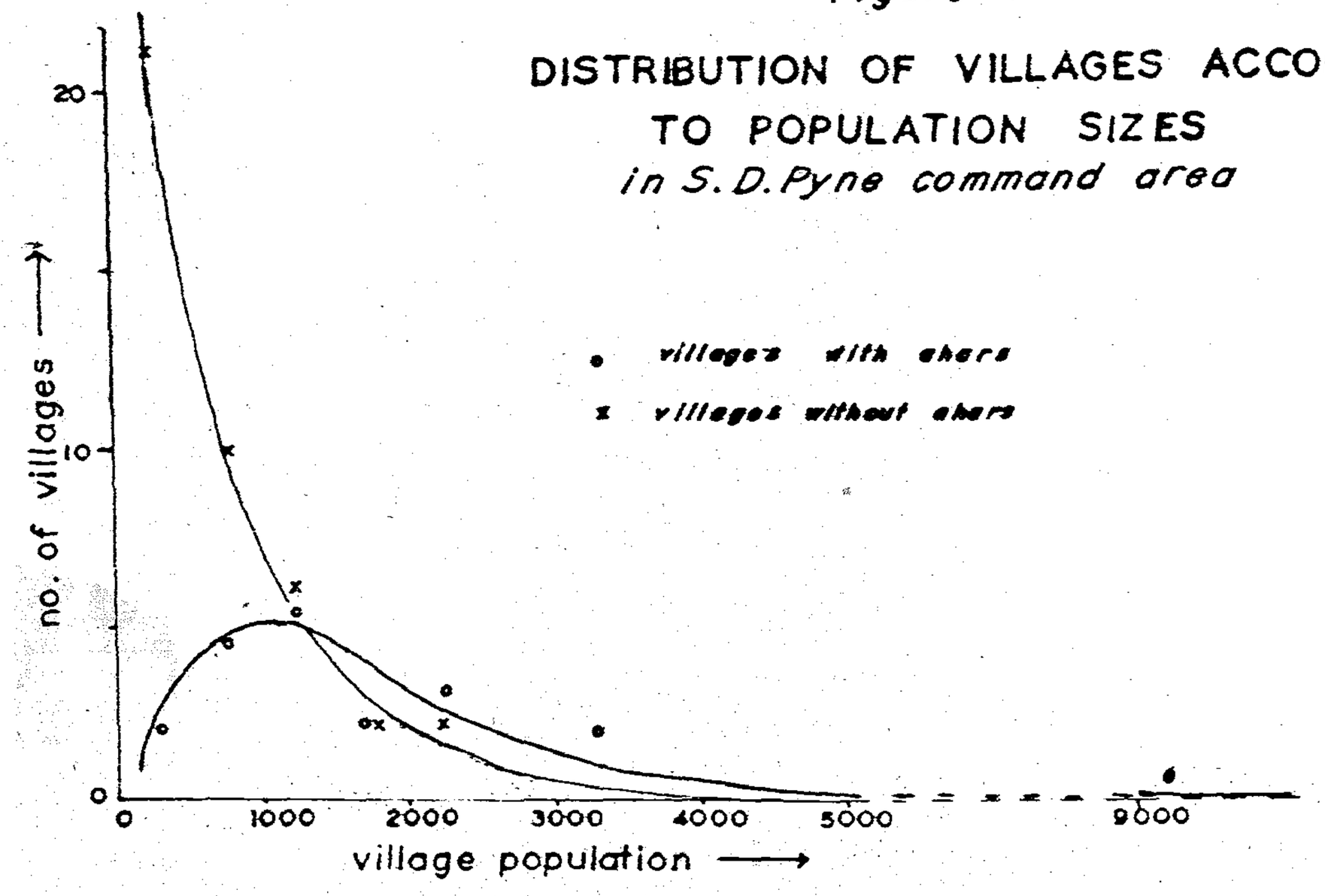
type of village	no. of villages	total area (in acres)	total population	population per village
(1)	(2)	(3)	(4)	(5)
with ahar	19	15,485	34,258	1803
without ahar	41	13,764	31,169	760
TOTAL	60	29,249	65,427	1091

Figure-7 shows the distribution of villages according to size-class of population (class interval 500 persons). Evidently, the ahar-owning villages have a modal distribution while the others do not have any such characteristic. This strongly suggests that the ahar-owning villages with well-defined sizes are socio-economic personalities, while the boundaries for the rest of villages meet no such characteristic. All these probably indicate that part of the population is organised in more numerous and more compact communities around the ahars. It may not be difficult therefore, for these communities, to dominate over the rest of the population scattered over small villages all around the system. This however does

Figure - 7

DISTRIBUTION OF VILLAGES ACCORDING TO POPULATION SIZES

in S. D. Pyne command area



not imply that these ahar owning villages also appropriate the major part of irrigation benefits. In fact evidences rather suggest the possibility of an equitable distribution. The density of population is not very different between the two groups - 546 per sq. km. for the ahar-owning villages and 559 per sq. kms. for the rest. Since all the villages are overwhelmingly agricultural, it may not be very wrong to presume that there is not much difference in the productive forces available to each group. The difference exists probably in roles, in organisation of irrigation works.

The Pyne Records also show the wide variety of methods regulating appropriation and allocation. Some of these are interesting. Some of these mohanas are such that water enters naturally whenever it flows through that part of the pyne. Mohanas 13 and 20, from which long sakhs emerge, are like this. Mohana no. 13 contains a pair of dhongas fitted under the bank of the pyne. The dhongas are always open but the intake is restricted by the size of the dhongas. Originally those were made of hollowed palm-tree-trunks. Now those have been replaced by hume pipes of similar size. For the big sakh that originates at mohana no. 20 the bottom level of both the mohana and the main pyne has been made equal. The whole mohana is left open allowing the division of water in proportion to the sizes of the main channel and the sakh. However, under parabandi arrangement, this mohana has to remain closed for 2 days in a month and the whole water flows through the main channel.

Mohana nos. 1-5, 9, 10 and 19 are always open but are located slightly above the bottom of the main channel. Water is diverted into these mohanas only when there is sufficient flow in the main channel for the level to reach the required height. But some of the mohanas are at levels so very high that water level never reaches so high as to get diverted into those. For example, mohanas 16 and 17 are about 60 cms. above the bottom level of the main pyne. To divert water into such mohanas gandis are erected in the bed of the pyne. In total 5 such gandis (one is a khanr) are erected at different locations in the first part of the S.D.pyne before the Supi ahar, to divert water into mohanas 6-8, 11, 12, 14-18 and 21-24. As gandis cut off the flow downward in the channel, detailed parabandi arrangements exist, which is shown in next page.

Thus for 3 days in a month (for half of the days the weir on Jamuna is open to S.D.pyne) no water flows to Supi village and for 10 days half of the water is diverted through mohana 20. The village Supi can divert water for its use whenever there is requirement. Otherwise the water is impounded into the ahar in the village.

Mohanas 24 and 25 are indeed, distributaries of the ahar. The channels thus drawn out from the ahar are led to two other villages. When the Supi ahar is full, a part of the water may be drawn out by breaching a section of the embankment (khanr). In spite of the protective works like .anwa there is always the danger of the ahar embankments

breaking down if there is too much water for a long time. Thus draining out a part from the full ahar through a khanr is desirable. The drained out water is then channeled through Karua nala which forms the next part of S.D. pyne main channel.

Table - II

PARABANDI REGULATION IN MAIN CHANNEL

IN PART BEFORE SUPI AHAR

Order of para	Type of work	Duration of para	Work done by	Next para
(1)	(2)	(3)	(4)	(5)
1.	gandi to divert in mohanas 6-8	36 hrs.	Sunera village	after 30 days
2.	khanr to divert into mohanas 11-12	12 hrs.	Dhonra Ikil	after 15 days
3.	gandi to divert into mohanas 14-18	12 hrs.	Chilori	after 30 days
4.	gandi to close mohana 20 and divert whole water through main channel	48 hrs.	Supi	after 30 days
5.	gandi to divert in mohanas 21-23	as long as necessary	Supi	--

When the east bank of the Supi ahar is breached, water rushes through Karua nala and is diverted one after another by three bandhs, before it reaches Kako ahar. The villagers of Kanauli, who erect the first bandh, have the right to breach a khanr in the Supi ahar. Quite conveniently, they first erect the bandh and then cut the khanr. Water is diverted through mohana no. 26 and collects in Kanauli ahar. After the bandh is removed, water flows down through Karua nala. A part of it gets diverted through a sakh, bypassing the next bandh (Goh bandh). The flow through the main channel is obstructed by Goh bandh erected at village Qazi Sarai Milk and is diverted through mohana no. 33 into a long sakh. The next bandh is at Ibrahimpur, which helps filling up of Maniawan ahar. There was no parabandi recorded in the original Survey and Settlement records on this part of S.D.pyne. But afterwards due to continuous litigations and judicial awards, a parabandi system has emerged. Kanauli bandh has no legitimacy, but there is an understanding among the people, that the bandh can be erected for 2 days in each 15 days. Goh bandh has its right for 7 days in each 15 days. Ibrahimpur bandh, the last in the series, has no para. But when a permanent structure was constructed (chahka) in the 'twenties it was challenged by village Kako down the stream and by court order its height has been reduced. After this part, most of the water is diverted into Kako ahar through mohana no. 42 which is always open.

In all the other (smaller) mohanas water enters naturally when the bandh immediately downstream obstructs further water. Alternatively, karin or latha kundi may be used to divert water through these mohans. Gandis are erected in the bed of Karua nala at mohana no. 40 and beyond for diversion of water. By the time water in Karua nala reaches this part its force is greatly reduced. Therefore small gandis can survive here.

Mohana no. 42 remains always open and leads major part of the water flowing through Karua nala into Kako ahar. A small stream however escapes-impounding in ahar and flows alongside it. Beyond Nonanhi village, it receives back part of the supply, when the excess water from Kako ahar spills down into Karua nala, through a chahka in Kako ahar. Beyond this chahka therefore, Karua nala again swells up.

In this part of Karua nala a bandh is erected to divert water to mohana no. 44 from which a sakh originates. Its para is one day in each 30 days. A second bandh is erected at village Narayanpur Murhari. There is no fixed mohana and water being obstructed flows from field to field to fill the ahar. After the ahar is full, water overtops the bandh and continues to flow downward, and hence there is no parabandi. At mohana no. 48, the flow is diverted to Usri ahar through a chahka. Like in the other parts, here too, gandis are erected in the pyne bed after this bandh, to divert water

through different mohanas. Thus practically whatever water is still left is appropriated. If any more water is left it is discharged in river Dardha.

Similar complex system of appropriation exists for the different sakhs and darsakhs. In addition, there are restrictions regarding the use of karins. In brief, towards the tail end, in any part, more freedom is allowed in the method of appropriation.

Appendix - II

EXTENT OF AHAR - PYNE IRRIGATION, BIHAR

The first statistical information about the area irrigated by ahar-pyne system in Bihar is obtained in the report of the Irrigation Commission, 1901-3. According to the Report, a total of 1.67 million acres were irrigated in Gaya district alone by this method /India, 1903 : 157/. It may be an overestimate, for the statistics collected in later years do not show such a high acreage. But the possibility of the figure being correct cannot be altogether rejected since the deterioration on a large scale started only after this period, from the time of Survey and Settlement Operations in Gaya district which began in 1911. From around the 'twenties, the Agriculture Department too began to collect somewhat reliable statistics. Its estimates for Gaya district was about a half of the acreage given by the Irrigation Commission. The Survey and Settlement Records tally well with the Agriculture Department data.

The Agriculture Department began to collect statistics since 1911 under heads : government canals, private canals, tanks and ahars, wells and other sources of irrigation. The technological distinction between modern canals and pynes are not of our concern; we may indicate that the canals under private ownership (landlords) were mostly pynes. The second defect of the categorisation is that ahars and pynes were shown under seperate heads. The technology is such that area

irrigated by the two cannot be seperated within any meaning; but that was done. The result was unbelievable fluctuations[1/] in the data for area irrigated by a particular method, be it 'tanks and ahars' or 'private canals' or 'other sources of irrigation'. A simple exercise of combining the data under all the three heads however, show a consistent pattern as shown in table - 2.1. The data for the earliest period when the statistical work of this nature had just begun, might have been a gross underestimate, though these were the years when the Settlement operations had just begun.

The miscellaneous 'other sources' include some other methods of indigenous irrigation as well as irrigation from sources like roadside depressions, rivers, streams or water-falls. Their inclusion in the ahar-pyne irrigated area may not be very justified. Therefore we have presented the table - 2.2 compiled from the Survey and Settlement Reports of different districts. The data collected in the detailed Settlement operations were certainly more reliable than that of the Agriculture Department. The table shows that the truly other sources were important only in North Bihar. In South Bihar their incidences were very low. Therefore the high acreage often shown by the departmental statistics under the head 'irrigation by other sources' should be explained as

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1/ Even a hundred times increase in a single year.

Table - 2.1 : AREA IRRIGATED BY ALL SOURCES EXCLUDING GOVERNMENT CANALS, TUBEWELLS WELLS IN SOUTH BIHAR

Sl. No.	District	Gross area irrigated in '000 acres						Annual average of	
		1911-12 to 1912-13	1919-20 to 1923-24	1929-30 to 1933-34	1939-40 to 1943-44	1949-50 to 1953-54	1956-57 to 1960-61	1971	S.S.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.	Shababad	244.3	271.9	327.7	260.4	333.2	415.0	212.6	258.2
2.	Patna	371.0	545.2	546.5	529.6	443.6	455.5	231.7	546.4
3.	Gaya	293.0	819.0	800.0	892.1	821.3	991.1	851.6	815.2
4.	Monghyr (whole)	209.5	283.3	325.1	325.2	333.3	172.7	82.5	325.2
5.	Bhagalpur	271.8	269.7	322.9	307.6	324.3	264.6	202.9	282.7
6.	Saharsa*					9.4	19.9	8.2	
7.	SOUTH BIHAR*	1389.6	2189.2	2322.1	2314.9	2255.8	2298.8	1581.3	2227.8

*Old Bhagalpur district was divided into Bhagalpur and Saharsa in 1951. Therefore, the data for all earlier years as well as the total for South Bihar in those years include the data for Saharsa district too.

N.B.: data for 1911 is actually the average for 1911-12 and 1912-13.

Figures for 1921 to 1951 are the averages of five crop years with the relevant Census years as the mid-years in every case.

The 1961 data are the averages of the five crop years including and preceding 1960-61.

(This rather haphzard compilation is the way it is bound in the source-Census. The years are noted exactly as it is given in the source).
Data for 1971 is for that year alone.

S.S.: Survey and Settlement records, done in S.Bihar between 1900-1918.

Source: Figures for Survey and Settlement Reports were compiled by E.L.Tanner, in Final Report on the Survey and Settlement Operations in the District of Gaya (1911-1918), 1919, pp.13
Figures for other years excluding 1971 from Table A5-V.Gross Area Irrigated by Sources, in District Census Handbook (of each district as shown) Census, 1961.
Figures for 1971 from Season and Crop Report Bihar, 1971.

Table - 2.2

ENTER OF AHAR-PYNE IRRIGATION IN BIHAR PLAINS DURING SURVEY AND SETTLEMENT OPERATIONS (1901-1918)

(in '000 acres)

Sl. No.	Name of the district	Net cropped area	Area irrigated by source			
			Private canals	Tanks and ahars	Other sources	Total of (4) to (6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Muzaffarpur	1555.3	1.0	3.7	6.3	11.0
2.	Saran	1284.0	4.9	35.9	14.1	54.9
3.	Champaran	1447.7	6.7	5.7	14.3	26.7
4.	Darbhanga	1692.8	3.2	46.9	52.7	102.8
5.	North Monghyr	675.5	-	1.7	14.2	15.9
6.	South Monghyr	794.0	55.1	155.9	98.3	309.3
7.	North Bhagalpur*	867.2	-	4.5	32.9	37.4
8.	South Bhagalpur*	704.1	116.2	39.0	90.0	245.2
9.	Patna	1073.6	232.1	261.4	52.9	546.4
10.	Shahabad	1745.8	66.8	179.1	12.3	258.2
11.	Gaya	1828.7	291.9	490.8	32.4	815.1
12.	TOTAL OF SOUTH BIHAR	6146.2	762.1	1126.2	285.9	2174.2
13.	TOTAL OF NORTH BIHAR	7522.5	15.8	98.4	134.5	284.7

*North Bhagalpur corresponds more or less to present Saharsa district. South Bihar includes Patna, Gaya, Shahabad, South Monghyr and South Bhagalpur.

Source: Compiled in E.L.Tanner, Final Report on the Survey and Settlement Operations in the District of Gaya (1911-18) pp.136.

that in case of South Bihar much of the data of irrigation from ahar-pynes were wrongly included in this head. Interestingly, the total of all the three surface-water irrigation methods (non-governmental) given by the Department and the Survey Reports agree fairly well.

After the abolition of zamindari system substantial changes have occurred with respect to the categorisation system. Pynes, originally shown as canals under private ownership of zamindars, were taken over by the government and could not be shown any more as 'private canals'. In order to distinguish from the modern canals those were not shown any more under the head 'canals' but were shifted to 'other sources'. The title 'tanks and ahars' too was modified to 'tanks' alone, the ahars were absorbed into 'other sources'. The Departmental data till 1975 mentioned 'other sources' as a head without any notes anywhere about ahars and pynes. Since 1975-76 the title has been modified as 'other sources (ahar, pyne etc.)'. The format for collection of irrigation statistics is the same for all the States, and accordingly, there is a head entitled 'tanks' in the statistics collected in Bihar. But the statistics for 'eries' - which are similar to 'ahars' - in South Indian States are shown in tanks, but those for ahars in Bihar are not shown under the same head. The result is 'tank' irrigation has been practically absent in Bihar and the State enjoys the distinction of accounting for more than a half of the all India acreage of irrigation

from 'other sources'. Indeed, it has been more serious. A Committee no less than the Irrigation Team appointed by the Planning Commission for reviewing the minor irrigation works in the country declared, after a statewide field survey as per admission, "In the alluvial region of Punjab and Uttar Pradesh as also in Bihar there are not many irrigation tanks."2/ /India, 1966: 87 More recently, data compiled by the ICRISAT /Von Oppen and Subba Rao, 1980 I : 117 mention that a total of 3.6 million hectares are irrigated by tanks in the whole of the country. There is no mention of Bihar, which has an additional 0.9 million hectares irrigated from the same source, as one of the areas of intensive tank irrigation.

However, we may reap one benefit from the anamalous categorisation in the official statistics. The head 'tanks' in Bihar may be taken to include the statistics for area irrigated by dug-out tanks alone. In that case the data for the later years show how insignificant is the regular tanks in Bihar and how the data for 'tanks and ahars' given in the earlier years may be taken as mostly for ahars.

Lastly about the comparison between private canals and pynes. The modern canals came into existence only in the more recent period and are well-documented. The only modern

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2/ The Team also reported that some tanks existed in the 'undulating terrain of South Bihar". Probably the team had meant Chotanagpur where some acreage is shown under regular 'tank' irrigation in the departmental statistics.

canals constructed by the zamindars were in existence in Champaran district irrigating a handful of acres. Excepting this, the private canals were pynes. The Settlement officers had faced a difficulty in the Sone canal area. There, it was sometimes impossible to seperate the area irrigated by the Sone canals and by pynes and ahars. Such discrepancies may exist in the data for the later period too, but there is no reason to suggest that the effect will be one way. In fact one may expect an underestimate for area irrigated by indigeneous methods when the government officers are likely to be more enthusiastic about the success of the modern canals.

On the whole the data compiled by us and shown in table 2.1 (also in the last column of table 2.2) may be taken as a fairly good indicator of area irrigated by ahar-pyne system in Bihar. We have not prepared detailed table 2.1 for North Bihar districts because the importance of truly other sources of irrigation does not permit such compilation to become representative for ahar-pyne irrigation. Yet, as table 2.2 shows, pynes were confined to South Bihar alone. In certain parts those were quite important. For example, nearly a third part of Beniapatti thana[3/] was irrigated by pynes /O'Malley, 1907 : 52/. A few pynes were noted in Palamau district in Chotanagpur /O'Malley, 1926 : 93-94/.

3/ In Darbhanga district of North Bihar - an important centre of Kisan movement.

South Bihar - the districts of Gaya, Patna, Monghyr, Bhagalpur and Shahabad are the major areas irrigated by ahar-pyne system. These are the old districts and have been partitioned lately. We will follow the old district names for convenience.[4/] The northern part of Shahabad as well as parts of Gaya and Patna districts were brought under the Sone canal system by the end of the last century. Ahar-pyne system exists in south Shahabad. The topographical conditions give rise to some differences in the north and south parts of South Bihar. In the southern extreme of the Plain, near the margin of the Chotanagpur Plateau, where the gradient of the country is much higher and the watershed between the rivers are very well-marked, the scope for construction of pynes are limited. The condition does not permit those to be led further away from the mother streams, nor is it possible to maintain the intake points in proper

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4/ In 1971 the districts were reorganised. The five old districts of South Bihar were reconstituted into ten districts as:

Old district	New districts
Shahabad	(Bhojpur (Rhotas
Patna	(Patna (Nalanda
Gaya	(Aurangabad (Gaya (Nawadah
Monghyr	(Monghyr (Begusarai
Bhagalpur	(Bhagalpur

Figure 1 shows the new districts.

shape eliminating the huge amount of silt and resisting the great force of water during sudden floods which the hilly rivers carry with them. In these parts therefore, most of the irrigation is done by ahars alone fed by rain-water on their catchment basins. Towards north where the slopes become gentler and the watersheds not so marked, the pynes are able to traverse the grounds between the rivers and may be long, even as long as 25 or 30 kilometres with several branches. However, here too ahars are constructed, the only difference being the pynes in addition to the run-off water in the catchment basins, feed the ahars. To some extent this is reflected in the data in table 2.2. Compared to the districts like Patna and Bhagalpur the districts of Gaya or Shahabad (south) closer to the hills have much less proportion of area irrigated from pynes.

The statistics does not reflect much the deterioration in the pre-independence period. It is possible that the major deterioration did occur before 1919, when the Survey and Settlement works were still going on. One gets tempted to suggest that the estimate of the first Irrigation Commission was not grossly exaggerated. It is also possible that the manner of data collection by the departmental officials were not suitable for indication of the deterioration. And of course, itis possible that actual deterioration did not occur - in spite of great difficulties the beneficiaries

somehow maintained most of those works as functional. Considering the fact that irrigation is absolutely essential for reproduction of the population the last one seems possible. The deterioration since the 'sixties actually shows replacement. Part of the area has been brought under modern modes of irrigation - canals and tubewells. The reduction in acreage reflects such replacement apart from decay.

Appendix - III

COMPARABLE SYSTEMS OF IRRIGATION IN ASIA

The basic postulates of the study imply that comparable production processes should give rise to similar social structures. Therefore, it is of great interest to know what are the comparable processes those exist or did exist all over the world. Of course, two different systems can be exact replications of each other only in an exceptional circumstance. We propose to consider only fundamental similarities in both production process and social structures. But even then, our knowledge is too insufficient to make such a wide-ranging comparison. The best that we can do is to note certain regions which have similar ecological characteristics as the present one, suggesting thereby that comparable systems may exist in those regions. Sometimes we have ventured to be even more specific, naming a particular system of irrigation/production as a comparable one. As the ecological perspective alone is not sufficient to describe both the geographical and historical contexts needed to specify an instance of production, we have also included some evolutionary information about the related production and social systems.

After the discovery of plant breeding, further advancement was brought when men learnt to use the natural water supply phenomena for the purpose of agriculture. Observations

must have guided them first to grasp the seasonality of rainfall and natural cycles of river floods. The first agricultural settlements must have been based on these knowledges. Areas like those where floods occur with some regularity, were the ones to develop first as the prosperous settlements. Egyptian, Sumerian and probably Harappan civilizations /Allchin and Allchin, 1968 : 260/ developed on the basis of knowledge about flood cycles of rivers.

Natural inundation was still a process in which men adjusted their behaviours to Nature without any change created in Nature as far as water supply question was concernad. The process of irrigation, to be exact, started only when man learnt to control the flow of water. Here too, the first developments should have occurred in a direction where men depended primarily on the natural supply but supplemented the supply with those from artificial works. In course of time, the techniques were developed further and further, reducing dependence on Nature. But probably those remained only supplemental in character where natural supply was in abundance.

During the period of inundation agriculture, prosperity was restricted to only those small regions where natural flood cycles occurred with regularity. Artificial techniques of supply extended this limit and with the development of the techniques newer and newer areas could be brought under

prosperous settlements. The types of training works depended on the ecological possibilities. In the dry West-Central Asia sub-surface water was the major source and the techniques those developed in the main were the techniques of well irrigation (including quanats). In the monsoon belt, the immense quantity of surface-water available made surface-water irrigation techniques develop in the main. Agricultural techniques developed differently in different localities depending on the availability of water, among other conditions /Tamaki, 1977 : 3-57.

In the Western part of Asian continent too surface-water irrigation techniques are found once in a while e.g. traditional irrigation system of Negev region or in Afghanistan. But the major modes are wells or quanats. The underground tunnel method is not found beyond Baluchistan. Thereafter, beginning from the boundary of Indian subcontinent, varieties of surface-water irrigation methods have been in use since long. Utilisation of groundwater sources by methods like wells are still abundant. But it requires so much of labour that it could never compete successfully with the surface-water irrigation techniques. Wells are still used as supplementary methods during the dry seasons, though in certain places, like close to big rivers, where groundwater levels are very high, well irrigation have been extensive in use.

One may agree with Childe /1972/ about the beginning of irrigation, but it seems that the spread of artificial irrigation techniques using surface water followed the discovery of iron. Without this the dense monsoon forests could not have been cleared for the establishment of agricultural settlements and for the introduction of artificial irrigation techniques, subsequently. Allchin and Allchin /1968 : 261/ suggested that the earth and stone embankments which are still used as storage tanks by the Badaga tribes of Nilgiri, for irrigation of terraced fields behind these embankments, were the first artificial irrigation techniques introduced in India following the discovery of iron in Mysore. However, it may be noted that very similar structures are still in extensive use among the Santhal tribe in the East-Central India, in regions close to the major deposit of iron ore in the country. It is better to hypothesisa that the irrigation techniques were discovered in many different places independently, for that is more likely when one considers the rudimentary nature of the works. It might have been developed indcpendently in many different parts of monsoon Asia and often developed in essentially similar manner in many parts of Asia.

Presentation in this manner may give rise to a wrong notion. After all, irrigation techniques were not developed for the sake of techniques but for facilitating agricultural production. It is therefore essential to discuss the development of agriculture first and then to study the irrigation

techniques with respect to that. The crop that predominated in the monsoon belt was rice. Unlike other crops, wet rice cultivation requires the plants to be standing in slowly moving water to an average height of 100-150 mm. for three-quarters of its growth period. Ideally, the water in the fields should be upto the same height upon the stalks, and so wet rice is normally grown in small, levelled plots surrounded by low earthen bunds which keep the water in, and which can be easily breached to drain the fields. The required water for submerging the plots may come simply from rainfall or river floods. If such natural sources are insufficient or unreliable, then only artificial irrigation is needed. Irrigation therefore, implies storage of water in some form or the other, for use when required as well as diversion and lifting methods for appropriation under various conditions. It may be noted that only in some localities rice cultivation required artificial irrigation. It must also be noted that in some other parts another type of waterworks were the mainstay of rice cultivation. This is protection from floods, mainly by embanking the rivers.

The probable course of development of the storage-appropriation techniques too may be suggested. It had begun in the proto-historic period, with the rudimentary techniques like those of the Badagas or the Santhals which too were only a step further from the diversion effected in small hilly streams at upper reaches by throwing a few stones in its

course. As settlements moved downwards to the plains, and the rivers and streams became wider, the same techniques were improved in various manners. Techniques for creation of bigger reservoirs and diversion of rivers were developed in course of time. We have already discussed in the previous appendix the difficulty of making diversion channels from rivers in the country where the slope is high. Probably the reservoirs were the first things those were developed and the channels for distribution of water from the bigger reservoirs were the first channels made. As dense forests in the lower reaches of the valleys were cleared, channeling techniques went on improving. The rivers without rapidity of flows could now be harnessed to divert water through the channels which then fed the reservoirs. However, in such plains (with some slope still retained) flood havocs are also frequent and the success of the settlements required development of flood control techniques. Further developments of the flood control techniques probably helped in the expansion of settlements deep into the flood prone delta regions.

This seems logical though we are in no position to substantiate it with data for various parts of the continent. However, we may insert some information from Bengal-Bihar region which rather, supports this hypothesis. Even till this date, in Chotanagpur and Rajmahal hills, the indigeneous population throw some stones in the course of very small hilly streams and turn those into small pools of water which are

used to irrigate adjacent fields. The Santhals in this part are a step advanced. They make small tanks on the hills, storing rainwater and irrigating the terraced fields down from these tanks. "The Santhal is a born reclaimer. He has an eye which is expert to take advantage of the inequality that exists in the surface of the country. He knows where to throw his cross-bundhs and where to make his terraces" /O'Malley, 1938 : 208/. Even till the nineteen thirties, almost every Santhal village had one tank. Probably the villages were established carefully after studying the possibilities of making tanks. The Santhals call these tanks 'bandh' or 'hir'. 'Ahars', bigger than the 'hir' but technically the same, are found in southern part of South Bihar, adjacent to the Santhal country of Chotanagpur. Here, instead of plot to plot irrigation as in Santhal country, the ahars are provided with small channels which lead water to agricultural fields. Further down in South Bihar, these channels become more important, now also supplying water from rivers to ahars and being called 'pynes'. Here, in countries adjacent to the Ganga, the irrigation is done from the combined ahar-pyne system. Control techniques including cutting a passage (khanr) in ahar banks or providing with a spillway (kanwa) are parts of these construction. Following Willcocks /1930/ it may be suggested that these control techniques became more important in the delta regions of Bengal (probably in North Bihar too). Here the reservoirs were not

made but whole rivers were embanked to prevent flood and the overflow or drained out water served the purpose of irrigation. The suggestion that Willcocks made about the so-called 'kana' rivers /Willcocks, 1930 : 77 that those were actually spillway channels ('kana' from 'kanwa'), may have some substance in it. Protective embankments for flood control and the use of the drainage cuts for the purpose of irrigation have also been reported from North Bihar Plains /Ramachandra, 1938/.

Exact details are not available to us, but it is understandable that the delta areas of Asia do not need much of irrigation works for rice cultivation. In Mekong and Menam or in Irawady delta, in large parts of Bengal and Orissa rice is cultivated mainly from rainfall and natural inundation. Much effort is given for flood control and drying (nigar) operations. In contrast, in the interrior non-deltaic regions artificial irrigation is more important. In the upper reaches of practically all these rivers there exists one or the other type of artificial irrigation systems. It may be noted that depending on the gradient of the country different forms of irrigation are practised. In countries with lower gradients, but not as flat as the delta regions, canal irrigations are the main source while in the steeper slopes, tanks and ponds are more common. Such forms of irrigation are found all over the monsoon Asia, particularly where the hill regions end, and the plain regions begin. As such, Japan, China, the Philippines,

Java, Bali, Sri Lanka and parts of India are the areas, where such irrigations are practised widely. However, one must not forget that there are many variations within the essential design and the works over all these parts may resemble but are not exactly like those of South Bihar. For example, in China, the firm ponds are much smaller than the ahars.

Let us review briefly the conditions existing in India. The rivers originating in the Himalayas contain water perennially. But there are innumerable small rivers which originate in the highlands without an ice cap to sustain a perennial flow. Diversion channels from such rivers as well as surface- drainage tanks in the piedmont areas are quite common in the countries along the Eastern and Western Ghats or the Central Indian Highlands (which includes Chotanagpur Highlands). Such reservoirs are extensive in the Southern Peninsula where those are called 'erie'. On the west also, in Maharashtra, similar structures are found which are called 'bandhara'. We have discussed 'ahar' of Bihar. Channels like the pynes exist in South India, rather on a much bigger scale of diversion works. The techniques have been reported also from Gujarat, Himachal Pradesh, Kumaon and Assam. In official literature these are generally known as 'tanks'. According to an estimate, /von Oppen and Subba Rao, 1980 : 117 as much as 3.6 million hectares of land are irrigated by tanks in India even if one excludes Bihar from the statistics.

The geographic description leads to a conclusion that such methods of artificial irrigation are restricted to very small area on the earth's surface. This is true, but it does not provide an idea of the real importance of the system. It may be reminded that while only 15 per cent of the land surface over the earth's surface has densities above 20 persons per sq. kms. /Grigg, 1974 : 6/ most of the rice areas are characterised by densities of above 200 persons per sq. kms. The cultivation techniques add to it intensive use of water resources while the flood control techniques in the delta regions help by reclaiming otherwise waterlogged areas. The rice belt of Asia, which may hardly account for a tenth part of the earth's surface area, sustains nearly a half of the world population. This need to be remembered for proper appreciation of the importance of these systems.

Population densities differ within the country depending on the terrain conditions and the techniques of irrigation. In hilly areas much effort is needed for terracing etc. and even then large part of the land surface cannot be levelled for rice cultivation or reached for irrigation. Supply of water too is limited since big rapid rivers cannot be harnessed. Therefore, the intensity of use of land is much less here and so is the population density. As one proceeds towards the plains, increasing proportion of geographical area can be brought to agricultural use and consequently facilitating subsistence of an increased number of people per acre. In

countries with very gentle slopes, where river water can be used (e.g. by pynes) and land is generally levelled to permit preparation of rice fields, intensity of land use is very high and population density reaches very high figures. (The same may be true for the delta regions, if those are made habitable.) Following table, showing the densities of population in blocks along a line lying between river Ganga and Chotanagpur hills, will bring this feature out.

Table 3.1

RURAL POPULATION DENSITIES OF BLOCKS ALONG 85° LONGITUDE BETWEEN CHOTANGPUR PLATEAU AND RIVER GANGA, 1971 CENSUS

Development Blocks (from South to North*)	Density (persons per sq. km.)	Predominant mode of irrigation**
1. Simaria	61.7	hir, bandh
2. Chatra	89.9	
3. Barachatti	198.5	ahar (no pyne)
4. Mohanpur	222.4	
5. Bodhgaya	323.4	
6. Manpur	436.5	
7. Belaganj	466.4	ahar and pyne
8. Makhdampur	478.6	
9. Kako	574.0	
10. Masaurhi	453.9	
11. Naubatpur	594.1	wells, tubewells etc.
12. Paliganj cum Bikram	704.9	

* Arranged from Chotanagpur plateau to river Ganga.

It is now possible to indicate what are the comparable systems, rather what are the similarities between the ahar-pyne system and some other systems. Firstly, the tank irrigation systems of Southern Peninsula and Ceylon, which by far, seem to be the most similar ones. Even the name 'erie' suggests, from its similarity to the name 'ahar', certain historical connections. Secondly, the indigeneous irrigation systems in the non-deltaic areas in Japan, China, Philippines or Indonesia, which developed more or less under similar conditions but probably without any historical connection, may have some variations. We are not knowledgeable enough to make detailed comparisons. It may be noted that part of Indonesia might have some historical connection with Indian techniques of irrigation e.g. Bali. In the third category of comparable systems one may retain the social irrigation works of similar nature which developed under different ecological conditions (resulting in different cropping patterns etc.). 'Tanks' or 'ponds' are not so prevalent, but canal irrigations are used in many parts of the world. One may include modern canal irrigations too. There are certain essential similarities between these works and the pyne systems. Fourthly, we may compare all collective water works, not merely the irrigation works. In this sense, even the flood control works like the making of dykes have some similarities in that collective works are necessary for the successful cultivation of privately owned plots. Considering the fact that the crop practices etc. are also very

similar, the similarity between irrigated South Bihar society and the rice producing societies of the delta regions are not unexpected. Lastly, if we extend the scope of comparison to include all such societies where communal property relations and individual property relations have to exist side by side due to the necessities of productive forces, we find a much wider variety to compare, including even cattle-breeding etc. The similarities in social structure may exist but at a very deep level.

We will note here certain observations made in different studies in the closely comparable societies. Most wet rice farms consist of several scattered parcels. In Japan, the average rice farms consist of fifteen parcels, and in southern China, six. More recently settled rice areas have less fragmentation. Average Thai farm consists of 2.7 plots /Grigg, 1974 : 77-79/. Lack of awareness on the part of the researchers do not permit us to seek the detailes of parcellisation rules. However, there are some studies. Leach /1959/ in his study of a tank-irrigated Ceylonese village observed the parcellisation pattern, similar as ours, ensuring equal access to water. Later Coward /1979/ made similar observation in case of Philippines. Though Harriss /1982/ did not find the same pattern in his village, he noted two references, one of the time of Vijayanagara Empire and the other of the recent past, which mentioned the existence of such rules in South India

ensuring equal access to water. It may be recollected that in the past redistribution of village land was a well-known system existing over large parts of India. But this system was never inquired into details.

The balance in locational advantage of course, is the most distinguished feature and seemingly, most difficult to achieve. Yet it is achieved as is reported from widely different areas. We may note something about the simpler conditions too. Thus, Harriss /1982 : 111-27 noted how the ownership of ayacuts returned to the compact group of people even in a market process in the post-independence period. Coward /1979 : 297 too has noted the compactness of a hamlet and sitio-ownership in Philippines. In the matter of crop practices, Hutapea et. al. /1979 : 1697 reported that in Indonesia, new crop practices could be adopted if only all subak members approved the required changes. On the other hand Tantigate /19797 reported that if different crops were cultivated in the same ditches even in modern canals, conflicts occurred and productivity decreased in consequence.

I cannot resist the temptation to quote here, at length, the relations at workplace described by Beardsley, Hall and Ward /1959; cited in Coward ed. 1980 : 1447 for community works in Japanese traditional irrigation systems.

> "Maintenance and repairs take place for the most part quite inconspicuously. However, each three or four years every pond must be drained in order to clean out weeds and water grasses and to inspect

> the ladder-like rows of outlet plugs. This becomes a festive occasion for the entire neighbourhood, since the draining ordinarily takes place in the slack season while the rice fields are dry for ripening. The water guards set a convenient date and spread the word around the neighbourhood. Old and young gather from all directions. Men and boys make great sport of wading through the shallows of the larger ponds to net fish and stab the slippery eels, and the spectators delightedly watch them getting splashed and muddy. The fish harvest is a respectable one, and it would be unneighbourly of Niike (the settlement studied) to take it all for itself. Anyone is welcome to join the festivities and share the catch, whether he uses the water of Obara pond or not."

Elsewhere Beardsley has also made a comparative study between the rice growing communities in Japan and Spain showing that in spite of different historical backgrounds there were certain similarities in the social structures of the two communities /cited by Wade, 1979a : 37. A word of caution at this stage. The points of similarities should not be taken too far. We are yet to know whether the same effects may be attained by many other types of social arrangements. One may recollect the grave error in concepts existing in the past century from the belief that village structures were homologous. To give an example, the subak organisation in Bali as described by Geertz /1967/ appears to have secured collective action in a much too different manner.

At the same time the scope of comparison may even be extended beyond irrigation if due restrictions are observed.

Besides irrigation, there exists many other productive forces which needs collective action for appropriation. It may so happen that the other economic activities in such societies can be carried out preferably under individual operations. Such societies are likely to have essentially similar structures arising out of the fundamental identity of co-existence of both individual and collective ownership of means of production, thought they will be of widely different forms. Such necessities may arise from the practices of hunting, pastoral activities, trade or even from the constant danger of external enemies. Indeed, Godelier [1965] made an attempt to collect many different types of societies under a single head from the consideration of a similar fundamental identity. It is now well-known that in Europe at a time such co-existence of individual and collective properties were widely prevalent, for various reasons other than irrigation.

Appendix - IV

SOME HISTORICAL FACTS AND SOME CONJECTURES

It is possible that small groups of people, mainly forest dwellers, had occupied these parts even in the prehistoric period, but archeological and historical evidences show that the effective settlement of the middle Ganges plain did not begin until the ninth or eighth century B.C. What was the character of the settlements? Iron users appeared in the middle Ganga basin only from around that period /Sharma, 1974/. Also the evidence of rice, dated between 500 to 700 B.C., has been obtained from Sonepur, near Jehanabad, in the midst of the present pyne country of South Bihar /Allchin and Allchin, 1968/. From all these evidences, it may be suggested that following the discovery of iron, intensive settlement began in South Bihar plains from around seventh century B.C. Urban development too began from around 6th century B.C. It was a civilisation based on rice cultivation and accompanied the development of ahar-pyne irrigation.[1/] The earliest references like the

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1/ The evolution of cultivated variety of rice (Oryza Sativa) had occurred long before. Irrigation facilities too might have developed for cultivation of rice at earlier periods. Stone or copper/bronze implements might have helped in the works of such irrigation and there is no reason to think that the ahar-pyne irrigation was a discovery of the period or the locality under review. But in the chalcolithic period, if the technique had existed, it could not have extended beyond the dry deciduous forest regions; clearing of dense forests as of South Bihar could follow only after the discovery of iron.

It may or may not have any connection that the major site and river of the rice-user Banasian culture are named "Ahar".

Jatakas, Arthashashtra or Megasthenes' descriptions mention the existence of irrigation works in this part of the country.

The old capital of the region was at Rajgir in the extreme south of the South Bihar Plains. Buddha suggested that the capital be shifted to Patna in the north extreme of the plains. It may not be incorrect to believe that by the time of Buddha, the whole plain was well-settled and during the previous two or three centuries, the technology of ahar-pyne irrigation and related cultivation were perfected and expanded. The flood-prone location of Patna could not have been chosen if the irrigation works in the upper reaches did not help diversion of most of the run-off water flowing through the plain in the direction of Patna.

It is likely that during the next few centuries the social systems were developed in greater ramification. Following the period of Buddha, the first great empire emerged in this part. But the more interesting development occurred in the social structure, particularly in the ideological sphere. I am not in a position to provide a detailed account. But certain points may be mentioned.

The period of Buddha corresponding to the initial period in the history of the new mode of production -- must have witnessed intense class struggles with the old mode of production and society. The Buddha as well as the Jain

Tirthankara, all did emerge during this time in this part of the country. In all likelihood, all of them were ideologues trying to resolve the existing social contradictions. Buddha's own advice, how the cultivators should look after irrigation works, is found in places like Kunala Jataka. Megasthenes too has described the existence of the irrigation system and the social complexities in management. Two major ideological contradictions in this period may be mentioned. One was with the Varnashram system, an ideology developed under a different mode of production. The other was the cattle sacrifice permitted under the Brahminic rituals. As the *new* mode of production found another use for cattles, as draught animals, the ideologue had to fight against the Yagnic sacrifices of cattles. This is well-known, but the **first** contradiction we want to suggest need to be studied. Under the Vedic Varnashram system, the <u>varna</u> Vaishya, the artisans, were placed above the <u>varna</u> Shudra which included the cultivators too.[2/] The new system of production made cultivators more important, so much so that they would sometimes induct captive artisans for their communities. The ideologues therefore, could not but oppose this distinction. Indeed, beginning from this period, the Vaishya-Shudra distinction in the Indian history has been lost. The Kshatriya and Brahmin <u>varnas</u>, it may be noted, can be included as distinct groups even in ahar-pyne irrigated society.

2/ In support let us note that Arthashastra mentioned that villages should be established with Shudras.

Buddha however, never took the concept of equality too far. He maintained the distinctions between Kshatriyas and others. A note may be added that in Buddha's talks there were repeated mention of communities by name (e.g. Nishad) who were not included in the Varnashram system. This too agrees well with the hypothesis that agricultural occupation of South Bihar plains had begun only around this period and there were large tracts of forests still left and large number of forest dwellers. Probably these were the people who were sometimes converted to labourers in ayacuts, receiving part of their subsistence from the forests. Only at a later stage, after they were fully integrated in the village system, they were assigned position in caste system.

Buddhist cannons upheld the concept of each one's duty as 'dharma'. It is the distinct concept of religion, devoid of ritualistic practices and capable of prescribing different sets of tasks for different groups of people. It may be noted that Buddhist ideology became highly successful in large parts of irrigated, rice-producing Asia. In India however, there was a revival of Hinduism in a later period. But the second wave of Hinduism did not violate the reform measures introduced, neither did it re-establish cattle sacrifice, nor did it enforce the old Varnashram system, but modified it to Jati system compatible with the social structure. Buddha was also the first well known theorist of State.

The replacement of the Buddhist ideology in this region by a modified Hindu ideology which occurred at a later period, might have been facilitated by the characteristic design of the reservoirs in this part. The multiple types of privileges and social status within the single unit of irrigation work gave rise to a far more complicated social system not well-distinguishable within the limited stratification admitted under Buddhism. The new Hindu social system proved to be much more competent. Whether the shift occurred because of certain changes in the original smaller designs or whether because of the fact that the privileges like those between the leading community and the follower community required a couple of centuries to crystalise into the social structure, cannot be asserted. The institutional practice of Brahminism too was more suitable for the purpose as it was based on deputing individual agents (Brahmins) to villages to look after the internal social affairs from within the village not from above a group of villages. The group-based Buddhist monks could not facilitate such close vigilance of dharma practices as the widely scattered institution of Brahminism. In a society where the stratification rules were very complex and required regular scrutiny, guardianship from close quarters is certainly more effective than from above a group of communities.

While Buddha appeared in the formative period, probably by the time of Arthashastra the social structure had largely crystallised. Arthashastra noted the existence of two types

of irrigation works, one being ahar (aharyodaka setu /Bhattacharya, 1978 : 215/). The name still survives in Bihar; in South India it has been slightly distorted to become 'erie'. Yet another term 'para' found in Arthashastra, is still in extensive use in Bihar. It is also in use still in South India; and has been distorted to 'bara' (barabandi) in Maharashtra and 'wara' (Warabandi) in Punjab. The book was written for a regal audience and treats only those spheres which concern the State. Therefore, we have only a limited scope to compare those with the structure deduced in Chapter V.

The second book of Arthashastra discussed the principles of formation of villages. Either by inducing foreigners to immigrate or by causing the thickly populated centres of his own kingdom to send forth the excessive population - Arthashastra mentioned - the king may construct villages either on new sites or on old ruins. About the specifications of villages it said, each of those should consist not less than a hundred and not more than five hundred families of agricultural people of Sudra caste. The caste specification must be noted. The boundaries of the villages should extend as far as a krosa (approx. 2 miles) or two. An idea of the density of population recommended may be obtained from the above. In the same chapter it has been specified that "lands prepared for cultivation shall be given to taxpayers only for a lifetime". About the rate of tax or revenue, the book suggested that the king should bestow on the cultivators only such favours and remissions as

would tend to swell the treasury. A king with depleted treasury would eat into the very vitality of both citizens and country people. Either on the occasion of opening new settlements or on any other emergent occasions, remission of taxes should be made. The king should also regard with fatherly kindness all those who have passed the period of remission of taxes.

About the construction of irrigation works, the book recommended that the king should construct reservoir (setu) filled with water either perennial or drawn from some other source. Alternatively, he might provide with sites, roads, timber and other necessary things to those who constructed reservoirs of their own accord. About communal labour the instruction is "whoever stays away from any kind of co-operative construction (samabhuya setubandhat) should send his servants and bullocks to carry on his work, should have a share in the expenditure but should have no claim to the return. The existence of servants in society as well as the claim of personal labour of those sufficiently well-off to keep servants, need to be noted.

The third book (chapter nine) discussed intercommunity water allocation principles to be followed by the king. "The natural overflow of water from a higher to a lower tank shall not be stopped unless the lower tank has ceased to be useful for three consecutive years." Severe punishment is recommended

for such an offense. The same punishment is meant for emptying a tank of its water. Setubandha neglected for five consecutive years should be forfeited except in calamities. Persons letting water out of para or stopping water from the fields of others during their para should be fined. And so on.

It requires a whole thesis to discuss this subject with some amount of authority. Neither do we have the scope nor do we have the capability to undertake such a study. It may be noted that except for once or twice, we have even refrained from citing any reference in this appendix. Frankly, our capability is very limited to talk with any amount of authority over this area, leave alone the controversial issues here. The appendix is being included here not with the pretension of a re-evaluation of history but to suggest, that the system under study has a historical importance.

GLOSSARY OF LOCAL NAMES

abpashi : Irrigation

Aghan : Name of a month. Hence -i, meaning of that month.

al : The ridge of a field

alang : The main embankment of an ahar where the water level is the highest, which in South Bihar is generally to the north.

amla : Zamindar's retainer or servant

ayacut : Land irrigable by an irrigation work is the ayacut of that work. Originally from Madras Presidency.

bakasht : Land under 'cultivating possession' but not in 'private possession' of the zamindars. Under the Permanent Settlement and the Bihar Tenancy Act, the zamindars were not allowed to extend their private possession. Bakasht therefore, appeared as a category defined by the officials, after land resumption by zamindars became a widespread phenomenon - to cover the contingency that arose when the zamindars could resume the land from occupancy tenant on grounds like rent default but could not occupy those in private possession. In order to claim a land as belonging to private possession (zirat) the zamindars were required to prove that they had held it in such capacities before the date of the sanction of Diwani by the Mughal emperer to the British /Sahay, 1967.

bala (balu) : sand

bandh : A dam or embankment across a river bed or a large pyne to divert water. Bigger than gandi.

bandhua : Side embankment of an ahar

bania : Trader. Also the name of the caste of grocers and shopkeepers.

batai : Sharecropping. See also text.

begari : Labour rent (corvee); unpaid forced labour

bhadai : A cropping season; pre-monsoon crops

bhaoli (bhauli) : A system of rent. For details see text.

bhaon : An outlet in the bottom of a bank of an ahar or a pyne. Sometimes there are two or three such outlets, one over another. When the ahar is full, both the outlets work. But when the water level sinks down only the one nearer the bottom, works.

bhit : A class of soil; upland; land not irrigable by ahar or pyne.

bhokla : Field channel

Bhoodan : Land gift; Movement initiated by Vinoba Bhave to persuade landlords to donate one-sixth of their landholding for distribution among the landless.

chahka : A spill dam across a pyne or in the bank of an ahar which is provided with a small sluice gate which shuts off the water when it is not needed further down in the pyne or in the channel outside the ahar. The sluice gate is called patri. A chahka is sometimes enclosed on its top.

chanr : Swing water-basket. Requires two men to operate.

danabandi : A system of rent. For details see text.

desiyain pyne : A large pyne; literally a pyne having ten branches.

devisthan : Temple (of Goddess)

dhanhar : A class of soil; lowland; land producing paddy (dhan).

dhonga : A wooden drain pipe usually made of the trunk of a palm tree. Comparable to bhaon in functions but smaller.

Diwan : Chief Officer of a state. Hence -i

Fard : Record

gairmazrua am : Land for public use.

gandi : A small embankment thrown across the bed of a channel so as to divert water into a branch channel taking off from it. Similar in functions but smaller than bandhs.

gaon : Village

garma : A cropping season. Summer crops

gila : Wet; irrigable. Gila bhit is often sub-classed as dih (garden land) and others.

gilandazi : The earth-work for repairing the banks of of pynes and ahars. A general term for civil maintenance of irrigation works.

goam : Community labour for irrigation works.

gomastha : Agent

jajmani : Traditional Indian system comparable to patron-client relationship. Artisans and others (village servants, agricultural labourers) were paid annually in kind, under this system, by each (peasant) household. The contracts were specified by village tradition, spelt out the exact rights and duties of both the parties and were valid for generations.

jeth raiyat : Understood mainly as the biggest raiyat. Generally the headman of a single jati village. Not a legal term under the British land system.

karwah : A safety device. It is generally a narrow opening at the low end of the side embankments of an ahar to let out the surplus water and to prevent an overflow. Similar in function to khanr in ahar. But khanr is a major cut made near alang while karwa is made on side embankments much behind the alang where the force of water is not so high.

karha : Field channel; watercourse

karin : Canoe

khazana : The bed of an ahar or in general of any irrigation work.

khanr : A passage cut in an embankment of an ahar or a pyne to let out the water, either for irrigation or to prevent overflow. See also karwah.

khata : A deep scour made by the current of a river in which water remains deep throughout the year. Sometimes such a scour is made behind the bank of an ahar by water rushing out of it. It appears like pool or pond, but is formed in different way from the so-called pokhra.

kharif : A cropping season; winter crops. Also taken synonymous to paddy, the major winter crop in this part of the country.

khesari : An inferior variety of pulse.

khetakheti	:	literally, from plot to plot. A method of irrigation.
khet mazdoor	:	agricultural labour
kisan	:	peasant
kudi maramat	:	Repair of irrigation works carried out by the cultivators (Madras).
lambardar	:	Literally, 'one who has a number'. It meant a person who was enlisted in the Collector's list of persons (revenue roll) responsible to bring in the land revenue of the village or a section of the village.
latha kundi	:	Lever and bucket - a method of lifting water.
malik	:	Master, owner.
marua	:	coarse millet (ragi)
milk	:	Revenue free grants held by Muslims (sanctioned by Muslim rulers).
mohana	:	The mouth or intake of a pyne or channel. However, literal meaning is 'the confluence'.
mukhia	:	Village headman - an elected post under local self government (modern panchayats).
mukarrari	:	A tenure held at a fixed and permanent rate of revenue
nagd	:	Cash, hence -i
nal	:	An earthen or masonary drain pipe
nala	:	A natural watercourse
nasta	:	Tiffin
nigar	:	The draining out of water from the rice fields to allow the plants to grow for some days, in dry conditions.

Panchayat	:	Caste/Village council (traditional). At present the name for village local self government. Often used in the meaning of 'arbitration'.
patawan or patauni	:	Irrigation
patri	:	Sluice gate, see chahka
pokhar or pokhra	:	a dug out pond. May mean depression formed by earthcutting but does not indicate generally, depression formed by rushing water.
para	:	A turn
parabandi	:	Regulations regarding rotational irrigation arrangement
rabi	:	A cropping season, summer crops
raiyat (ryot)	:	In zamindari areas the term means a tenant holding land immediately under a proprietor or a tenure-holder.
sabha	:	Association
shakh (sakh)	:	A branch channel; see text
SOUTH BIHAR	:	In Bihar it is used to denote the southern part of the Gangetic basin, which actually is only the central part of the State.
torua	:	Watercourse
tola	:	A hamlet in a village
zamindar	:	landlord
zirat	:	land under private possession of the zamindars. See 'bakasht'.

GLOSSARY OF SOME MARXIST TERMS

/The glossary includes only those Marxist terms used in the thesis which are not well-known or whose meanings are often confused. Without taking much of responsibilities on ourselves we have incorporated mainly extractsfrom the authoritative writings on the subject./7

BASE : See 'Mode of Production' below.

CIVIL SOCIETY : It is a term that developed in the eighteenth century in European languages, was an important concept in Hegel's philosophy critically adopted by Marx and later was greatly developed by Gramsci. Following Gramsci - the whole of the superstructural levels may be divided into two parts. One can be called 'political society' or 'the State', while the other, the ensemble of organisms commonly called 'private' is the 'civil society' /Gramsci, 1978 : 127. Civil society thus constitutes the whole multitude of organisations which embrace the material intercourse of individuals within a definite stage of the development of productive forces. It embraces the whole commercial and industrial life of a given stage and, insofar, transcends the State and the nation, though on the other hand again, it must assert itself in its foreign relations as nationality and inwardly must organise itself as State. Thus, in one sense civil society is the level of organisations

in between the State and the economic base while it may also be conceived as including the State.

We have used the term 'civil society' in the sense of intermediate level. There is a reason. When the civil society and the State emerge out of the base and are largely compatible, the distinction between the civil society and the State cannot be made always. At those times the civil society includes more and more the State too. But at other times, like in the case of colonial domination, the civil society, the 'private organisations', exists also in contradiction with the State and can be largely distinguished from the State. We had no difficulty in using the term to signify the 'intermediate level' during the early period of colonial domination. But as we have proceeded towards the modern period, the distinctions have become less sharp and finally, in our use for the later period sometimes the term also tend to include the State. This however, is inevitable, for the social concepts change with social changes and a term having a particular meaning at one stage may come to have a broader (not different altogether but rooted in the original meaning) or restricted meaning in a different stage of the society. We have used some other terms too in this manner of significance. e.g. 'mode of production', see later.

The term 'civil society' (burgerliche gesellschaft) appeared for the first time, in the eighteenth century,

when property relationships had already extricated themselves from the ancient and medieval communal society. Therefore, it was believed that civil society as such developed only with the bourgeoisie. However, the similarity of the process and hence the identity of the content led Marx to designate all the social organisations in all stages of society evolving directly out of production and commerce, which in all ages forms the basis of the State and of the rest of the idealistic superstructure, as 'civil society' /following Marx and Engels, 1846 : 767. It must be noted that the concept has nothing to do with 'civilization'. Unfortunately, the adjective 'civil' in English (as well as in French) has a meaning of 'non-barbaric'. The German word 'burgerliche' (not 'zivilisierte') is free of this ambiguity and hence is often cited in parenthesis as a precaution. For an interesting discussion of the many meanings in which the term was used see the discussion between Norberto Bobbio and Jacques Texier /in Mouffe ed., 1979/. Marx's particular contribution to its development has been to indicate its roots from within, to point out that "the anatomy of civil society is to be sought in political economy" not in themselves or in the human mind. /Marx, 1859/. As for the importance, we may quote Marx /1845a : 38/ :

> " ..... civil society is the true source and theatre of all the history, ... absurd is the conception of history held hitherto, which neglects the real relationship and confines itself to high-sounding dramas of princes and states."

CO-OPERATION : When numerous labourers work together side by side, whether in one and the same process, or in different but connected processes, they are said to co-operate, or to work in co-operation. There is a reason why this particular process need to be paid special attention. It is the first change experienced by the actual labour process when subjected to capital [Marx, 1867]. Co-operation is general (fundamental) to every capitalist production process. Marx distinguished between simple co-operation and a complex form characteristic of the capitalist mode of production in its developed stage [Marx, 1867].

Like any other labour process there are two aspects of co-operation. It effects increase of the productive power, hence is a productive force. It has also a social aspect, describing how the co-operators are brought together and how are they related to one another, in which it is also a production relation.

DIACHRONIC : See 'synchronic'

EXTENDED REPRODUCTION : See 'reproduction'

FORCES OF PRODUCTION : The definition has been given in the text. But one may find it very different from the prevailing notions. After all, such statements as, "As to forces of production, Marx seems to equate them with technology ....." [Llobera, 1979 : 261] are by no means uncommon. Therefore some excerpts from Marx's original writings are noted here. The reader may judge the validity of Stalin's definition that we have followed.

To the best of my knowledge Marx never defined productive forces. The first time it was mentioned was in the draft of an article on Friedrich List's book Das Nationale System Der Politischen Oekonomia (1841) which was written in 1845 but published for the first time only as late as in 1971. In the book List had introduced a new approach in political economy. He himself distinguished between the "present" political economy and his own method as that the former was based on exchange value and the latter on 'productive forces'. Naturally, the term was referred to by Marx in his draft article on the book. However, List did not discover the term and Marx in that article pointed out that he had plagiarised the term from a book written by Ferrier in 1805. It was Ferrier who had used this term as well as two other terms, 'means of production' and 'reproduction' which later formed the basic concepts in Marx's writings.

Evident in that article, Marx had read Ferrier (1805) at a much earlier date. But in all probabilities, the full significance of the subject had not occurred to him before 1845. Remembering the fact that it was the period 1844-5 when Marx (also Engels, independently from a different line of enquiry) came to realise that material production processes were at the roots of every different social phenomenon, it was at this stage only when he began to feel, for the first time, the necessity of terms connecting the material production process and political economy. The three terms introduced

by Ferrier - 'productive force', 'means of production' and 'reproduction', thereafter began to occupy central position in Marx's writings. The German Ideology, the first complete outcome of materialist conception of history, was written during the months following this period. It was in this book where the three terms suddenly burst in with great importance.

Since the draft article on List came to notice only in 1971 much work has not yet been done on the two books by Ferrier and List. Certainly the writings of these two authors need to be appraised with great care to understand Marx's expositions. The definitions of the three terms may be found in Ferrier's books. As it is not available to me I do not know what those were. However, the draft article of Marx found, in the way List explored the concept - an ethical justification of the bourgeoisie and an attempt to develop a new approach to get rid of the already discredited exchange value. It seems, like many other definitions, the meaning of this too was changed in Marx's treatment.

The following paragraph, where Marx demystified the capitalist productive force, will be of interest :

> "In order to destroy the mystical radiance which transfigures "productive force", one has only to consult any book of statistics. There one reads about water-power, steam-power, manpower, horse-power. All these are "productive forces". Is it a high appreciation of men for him to figure as a "force" alongside horses, steam and water. "Under

the present system, if a crooked spine, twisted limbs, a one-sided development and strengthening of certain muscles etc. make you more capable of working (more productive), then your crooked spine, your twisted limbs, your one-sided muscular movement are a productive force. If your intellectual vacuity is more productive than your abundant intellectual activity, then your intellectual vacuity is a productive force, etc. etc. If the monotony of an occupation makes you better suited for that occupation, then monotony is a productive force." /Marx, 1845b : 285/.

How could the writer of this passage have come to equate productive forces with technology?

The following description of productive forces were noted in Capital : the elementary factors of the labour-process are (i) the personal activity of man i.e. work itself, (ii) the subject of the work, and (iii) its instruments. The soil in the virgin state is the universal subject of human labour. An instrument of labour is a thing, or a complex of things, which the labourer interposes between himself and the subject of his labour, and which serves as the conductor of his activity. In a wider sense we may include among the instruments of labour all such objects as are necessary for carrying on the labour-process. Among the instruments that are the results of previous labour and also belong to this class, we find workshops, canals, roads and so forth.

If we examine the whole process from the point of view of the result, the product, it is plain that both the instruments and the subject of labour, are means of production, and the labour itself is productive labour. /Marx, 1867 : ch. XII/

Lastly, an important observation made by Hindess and Hirst /1975 : 11/ must be noted. "It is not the craftsman's tool or the industrial machine as such that define the productive forces, but the specific form of their articulation into a concrete labour process." In other words, the different elements are not productive forces by themselves, but are so only in combination with other elements, through the materialisation of productive work. Reference to productive force therefore presume the existence of a productive society, not merely the existence of the elements.

HEGEMONY : The concept was first introduced by Lenin /1905/ and later, well-known (e.g. Stalin - hegemony of the proletariat), but often as a concept related to class-alliance of workers and peasants. Gramsci however, did not use it only with reference to the proletariat but dealt it as a strategy practiced by ruling classes in general /Mouffe, in Mouffe ed., 1979 : 179/. The Russian and Italian words used by Lenin and Gramsci respectively can be translated literally in English also as 'leadership'. In fact, in dictionary meaning 'hegemony' and 'leadership' are rather equivalent. But in political sense it becomes essential to differentiate two types of 'leadership'.

Let us quote Gramsci /1978 : 57-8/ to show the two types :

> "The methodological criterion on which our own study must be based is the following : that the supremacy of a social group manifests itself in two ways, as "domination" and as "intellectual and moral leadership". A social group dominates antagonistic groups, which it tends to "liquidate", or to subjugate perhaps even by armed force; it leads kindred and allied groups. A social group can, and indeed must, already exercise "leadership" before winning governmental power (this indeed is one of the principal conditions for the winning of such power); it subsequently becomes dominant when it exercises power, but even if it holds it firmly in its grasp, it must continue to "lead" as well."
>
> (underline ours)

It is this type of "leadership", the leadership exercised over allied classes after the capture of State power, which need to be distinguished from the leadership of class alliance before the revolution. It is in this context only where Gramsci has used the term 'hegemony'.

For further clarity, let us look into the phenomenon from the point of the State and civil society. Gramsci made a crucial distinction between two functions of the class in power : "direct domination" or command exercised through the State and the "juridical" government and "hegemony" exercised throughout the society (civil society) in contrast to "direct domination". After the capture of the State power the question

of leadership on allied classes is not merely of a political nature but also of economic, intellectual and moral nature and hence is the distinction between 'leadership' and 'hegemony'. On the other hand, the ruling classes do not dominate only by direct method, but also indirectly, through the exercise of intellectual and moral leadership - and this latter function is called 'hegemony' against direct or political domination.

INSTRUMENTS OF PRODUCTION : See 'forces of production'

INTELLECTUALS : This term has been used specifically in the sense expounded by Gramsci. In the present use, the intellectuals are often regarded as a distinct social category (distinct from the basic classes, only pro- and against those classes). Such a notion has arisen /editor's note in Gramsci, 1978 : 37 out of a Social Democratic tradition which, following Kautsky, tended to see the relationship between workers and intellectuals in the Socialist movement in formal and mechanical terms, with the intellectuals - refugees from the bourgeois class - providing theory and ideology (and often leadership) for a mass base of non-intellectuals, i.e. workers. Lenin /1902/ has opposed such an understanding. So did Gramsci later:-

> " .... one cannot speak of non-intellectuals, because non-intellectuals do not exist..... There is no human activity from which every form of intellectual participation can be excluded : <u>homo faber</u> cannot be separated

from homo sapiens. Each man, finally outside his professional activity, carries on some form of intellectual activity, that is, he is a "philosopher", an artist, a man of taste, he participates in a particular conception of the world, has a conscious line of moral conduct, and therefore contributes to sustain a conception of the world or to modify it, that is, to bring into being new modes of thought."

Philosophically, it connects with the proposition that "all men are philosophers".

About the formation of the intellectuals, Gramsci points out that, "Every social group, coming into existence ... creates together with itself, organically, one or more strata of intellectuals which give it homogeneity and an awareness of its own function not only in the economic but also in the social and political fields. The difference between all members of a social group and the 'intellectuals' of that social group is not in presence or absence of 'intellectual activities' but only in its degrees. Thus, "When one distinguishes between intellectuals and non-intellectuals, one is referring in reality only to the immediate social function of the professional activity is weighted, whether towards intellectual elaboration or to muscular-nervous effort." /Gramsci, 1978 : 97

Naturally, specialised categories for the exercise of intellectual functions arise historically, within the class. These specialists are referred to as 'intellectuals' but should not lead one to believe that the others are 'non-intellectuals'.

Gramsci made a distinction between "traditional" and "organic" intellectuals. Permanent categories like priests, philosophers or scholars, doing specialised intellectual services under many different economic structures, enjoy a historical continuity, and often put themselves forward, because of this, as autonomous of the fundamental social groups, as independent groups themselves. Gramsci has called such intellectuals as of 'traditional' category. There is a different way of looking at the phenomenon, through the world of production. Intellectuals are also organic categories of fundamental social groups, who give these groups homogeneity and awareness of their functions in all fields. We have used the term "intellectuals" only in the latter sense; the term "traditional intellectuals" in our use, indicate the organic intellectuals part and parcel of the traditional economic structure, although accepting the Gramscian meaning would not lead to misunderstanding of the text. After all, traditional intellectuals (Gramscian) are not really autonomous or independent, but are either organic to, or dominated by the organic intellectuals of, one or the other of the social groups.

The distinction between the two categories is important, as Gramsci noted - because from this flows a whole series of problems and possible questions for historical research, including the origins, developments and forms of modern

political parties. "The political party for some social groups is nothing other than their specific way of elaborating their own category of organic intellectuals directly in the political and philosophical field .." /Gramsci, 1978: 15, underline by me/. (Gramsci has also written about political party for all social groups). Because of this we have discussed mainly the question of intellectuals instead of repeating the well-documented history of political parties and peasant organisations in Bihar. Also, this permits us to be concerned only with the organic category of intellectuals.

We have also used a term "new intellectuals". This term has been expounded by Gramsci /1978 : 452-3/ as

"Every new social organism (type of society) creates a new superstructure whose specialised representatives and standard-bearers (the intellectuals) can only be conceived as themselves being "new" intellectuals who have come out of the new situation and are not a continuation of the preceding intellectual milieu. If the "new" intellectuals put themselves forward as the direct continuation of the previous "intelligentsia", they are not new at all (that is, not tied to the new social group which organically represents the new historical situation) but are a conservative and fossilised left-over of the social group which has been historically superseded."

INTELLECTUAL AND MORAL LEADERSHIP : The specific function of establishment of hegemony, the functions of indirect domination. See 'hegemony'.

LABOUR PROCESS : The person who labours does not imply a process of production simply by his being. It is necessary to characterise what is 'labour' in tbe sense of production. Labour is, in the first place, a process in which both man and Nature participate, and in which man on his own accord starts, regulates, and controls the material reactions between himself and nature. He not only effects a change of form in the material on which he works, but also realises a purpose of his own that gives the law to his modus operandi, and to which he must subordinate his will.

In the labour process therefore, man's activity with the help of the instruments of labour, effects an alteration, designed from the commencement, in the material worked upon. The process disappears in the product; the latter is a use-value.

The labour process, resolved as above into simple elementary factors, is human action with a view to the production of use-values and describe only the everlasting nature-imposed condition of human existence, and therefore, is independent of every social phase of that existence, or rather is common to every social phase. As the taste of the porridge does not tell us who grow the Oats, no more does the simple process

cess tell us of itself what are the social conditions under which it is taking place, whether under the slave-owners' brutal lash, or the anxious eye of the capitalist. /Marx, 1867 : ch. XIII/

MEANS OF PRODUCTION : See in 'forces of production'

MODE OF PRODUCTION : The exact meaning of this term is widely debated and the present thesis may help partly to straighten certain conceptual complexities. The definition that comes out of the treatment here has been noted in the text. Therefore, here we will cite only some well-known passages from the Marxist writings which brings out the connections of this with other central concepts. The first is the well-known section of the Preface /Marx, 1859/:

"In the social production of their existence, men inevitably enter into definite relations, which are independent of their will, namely relations of production appropriate to a given stage in the development of their material forces of production. The totality of these relations of production constitutes the economic structure of society, the real foundation, on which arises a legal and political superstructure and to which correspond definite forms of social consciousness. The mode of production of material life, conditions the general process of social, political and intellectual life. It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness.

"At a certain stage of development, the material productive forces of society come into conflict with the existing relations of production or - this merely expresses the same thing in legal terms - with the property relations within the framework of which they have operated hitherto. From forms of development of the productive forces these relations turn into their fetters. Then begins an era of social revolution. The changes in economic foundation lead sooner or later to the transformation of the whole immense superstructure. In studying such transformations it is always necessary to distinguish between the material transformation of the economic conditions of production, which can be determined with the precision of natural science, and the legal, political, religious, artistic or philosophic - in short ideological forms in which men becomes conscious of this conflict and fight it out. Just as one does not judge an individual by what he thinks about himself, so one cannot judge such a period of transformation by its consciousness ...."

(paragraphing by me)

It may be noted that we have used the term 'base' instead of foundation defined in the sense of the above translation.

The above principles are part of what Marx called "the guiding principles" of his studies. The following is an excerpt from Lenin [1894 : XI, 417] where he elucidated the merits of Marx's principles of analyses :

"Marx's basic idea that the development of the economic formation of society is a process of natural history cuts the ground from under the

childish morality which lays claim to the title of sociology. By what method did Marx arrive at this basic idea? He arrived it by selecting from the various spheres of social life the economic sphere, by selecting from all social relations the "production relations", as being the basic and prime relations that determine all other relations."

This is how Mao /1977 : I, pt. 3/ defined 'all social relations' :

> "All social relations include in its meaning the production relations and the superstructure - economics, politics, ideology and culture etc."

We should indicate one particular feature of the use of the term 'mode of production' in this thesis. We have already indicated the difficulty in the use of the terms that arises because the social concepts change with social changes (see 'civil society'). It is easy to distinguish the term 'mode of production' from 'superstructure' when the latter is not developed organically from the former but is largely imposed from the outside. But when the two spheres - the base and the superstructure are organically related, the social concepts cannot be distinguished always as those belonging to the base and those to the superstrcture. The mode of production at those times express the totality of the society and if used to include the superstructure too, conveys the holistic concept. Therefore, in our uses in Chapter IV, 'mode of production' is a concept describing

strictly the economic base while in the use in chapter V this has a wider implication, including the superstructure.

PASSIVE REVOLUTION : One of the central concepts in Gramsci's writings. It means "a revolution without mass participation" /See editor's note in Gramsci, 1978 : 467. Lenin /1906 : XI, 348/ described a Menshevik prescription of passive revolution and characterised the "theory of passivity" as "a natural product of timid thinking". Gramsci did not differ, yet undertook detailed analyses of such changes, for, those actually happen and often baffle the Marxists.

I have generally refrained from using many Gramscian terminology in spite of the fact that the presentations could have been made with much precision. This is because the terms of common use rarely remained so in the uses by Gramsci, but were always elevated to the levels of precise concepts, though not uprooted from the original and common-use meanings (See 'intellectuals' for example. Of course this is true for many other Marxist terminologies e.g. Marx's use of 'co-operation', forces, mode etc. The additional ones e.g. those by Gramsci are not yet so well-known.) While this lends precision to treatments, it also may lead unaccoustomed readers to partial understanding and undesirable implications. Therefore, I have restricted uses to only those terms which are extremely helpful. The term 'passive revolution' is such

a term. For example consider the changes as the introduction of railways in India. Marx's description of the profound implications of this incidence has created much confusion. Was it a "revolution"? In fact, Marx often left room for a notion that revolutions are performed necessarily by the masses. As Gramsci described /Gramsci, 1978 : 114/ passive revolutions are "a necessary corollary to the Introduction to the Critique of Political Economy."

PRODUCTION RELATIONS : Same as 'relations of production'

PRODUCTIVE FORCES : Same as 'forces of production'

PROBLEMATIC : The statement of a problem is made as a complete statement itself. But this may not be correct method for statements of problems of all types. Some of the words or concepts exist only in the theoretical and ideological framework in which those are used and cannot be considered in isolation from those frameworks or the 'problematics'. See also Ben Brewster's Glossary in Althusser and Balibar /1970/.

RELATIONS OF PRODUCTION : See 'mode of production'

REPRODUCTION : This too is a term originally used by Ferrier and later a central term in Marx's writings (see 'forces of production'). Fortunately, far more details about Marx's concept regarding this is available. The term was used first in The German Ideology. The 'Premises of the Materialist

Conception of History' were described by Marx and Engels /1846 : V, 31/ as :

> "The first premise of all human history is, of course, the existence of living human individuals....
>
> "The way in which men produce their means of subsistence depends first of all on the nature of the means of subsistence they actually find in existence and have to reproduce.
>
> "This mode of production must not be considered simply as being the reproduction of the physical existence of individuals."

The fact of reproduction thus was considered as the first promise of human history. However, Marx and Engels did not use the term in the sense of common uses but elevated it to a precise concept inclusive of all the different aspects which need to be reproduced for reproduction of physical existence of man. In a nutshell, reproduction as a concept indicate that the reproduction of means of production, relations of production and also the superstructure are necessary for the reproduction of human beings.

It must be distinguished from simple repetition of social forms in toto. As the process occurs within the historical movements of societies, it is more a displacement in a spiral course, not necessarily exact replication. For clarity we should indicate the differences of reproduction from production. Reproduction is the process of production

as seen from the point of view of its uninterrupted movement and renewal. It is primarily a process consists of three stages - production, distribution and consumption not to be confused as comparison of outcomes..

In pre-capitalist societies these are united and therefore, reproduction is a social process. In the capitalist societies, the three stages are seperated and only here production, distribution and consumption become different social process, so much so that imbalances are created between these processes. It is only in the capitalist society that production becomes a process in itself seperate from the total reproduction.

For reproduction, only two normal cases are possible, apart from disturbance. One is the simple reproduction, when the process of production is renewed on an unchanging scale. The other is the extended reproduction, when it is renewed on an ever-increasing scale.

SIMPLE REPRODUCTION : See 'reproduction'

SOCIAL FORMATIONS : A concept denoting 'society' so-called /Althusser and Balibar, 1970 : 313_7

SOCIAL RELATIONS : See 'mode of production'

SUBJECT OF LABOUR : See 'forces of production'

SUPERSTRUCTURE : See 'mode of production', also 'civil society'.

SYNCHRONIC : Whenever an investigator studies a system he faces a twofold task. He has to find what the elements of the system are, at a given time in the evolution of this system (synchronic analysis). He has also to find out how these elements and their relations have been formed and evolved during the time (dia) that this system has lasted (diachronic analysis). Since 'structure' appears to convey an impression of being independent of time the term 'synchronic' is a better one. /Godelier, 1972 : 259-260/

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