

S. Janakarajan¹

1 INTRODUCTION

An issue which has attracted considerable attention in the study of agrarian structure and transformation is the phenomenon of 'interlinked' markets. Amit Bhaduri's (1973) paper is an important early effort at analysing interlinkage as a possible explanation for stagnation in Indian agriculture. An important feature of Bhaduri's agrarian economy is the prevalence in it of crop-share tenancy arrangements. In this setting, the landlord is seen as transacting with the peasant-tenant by combining within himself the role of both rentier and money-lender (the land-lease and credit markets are 'interlinked'). As a rentier who leases out his land, the landlord claims a share of the produce raised by the tenant; and as a money-lender who offers consumption loans to the tenant, he extracts usurious income by way of charging very high rates of interest on the credit advanced. Yield-improving technological innovation undertaken by the landlord will, given a fixed rental share, raise the tenant's income. This could reduce the latter's dependence on the landlord's credit for his consumption requirements, and so eat into the landlord's usury income - to an extent where the landlord's gain from the land-lease market could be swamped by his loss on the credit market. Whence a theory of stagnation predicated on interlinkage.

Bhaduri's explanation of stagnation has been criticized for relying on an inconsistent use of the notion of **power**. Specifically, if the landlord, in the first instance, is seen as having the power to raise the interest rate or the rental share in order to prevent the tenant from wriggling out of his debt-trap through (say) a voluntary one-period reduction in his consumption, then why cannot he (the landlord) exercise power over the **same** levers in order to extract the entire benefit from yield-improving technological innovation? (Griffin 1974). Quite apart from this theoretical difficulty, there is empirical evidence - as in the surveys undertaken in Eastern India by Pranab

Bardhan and Ashok Rudra (1978) and in Bangladesh by Atiqur Rehman (1979) - to suggest that, contrary to Bhaduri's hypothesis, the behaviour of landlords is fully compatible with an interest on their part in raising productivity through innovation. Briefly, it would appear that Bhaduri's model of interlinkage provides important insights into the mechanisms for perpetuating backward agrarian relations, but serves the thesis of technological stagnation rather poorly.

This last point of view furnishes the motivation for the present article. It will be my concern to argue that interlinkage is not in any sense an exclusive characteristic of a backward, or static, agrarian economy. To the contrary interlinkage can be an integral feature of a **dynamic regime**: one in which tenancy cultivation has given place to owner cultivation as the predominant prevailing tenurial mode; in which traditional methods of irrigation have given place to modern methods; in which farming practices are governed by systematic technological upgrading, as manifested in the increasingly wide use of high yielding varieties of seeds and chemical inputs; in which credit requirements of agents are available to meet not only their consumption needs but also their production needs; and in which traditional foci of power, such as landlords, have yielded place to other powerful agents, such as traders who are in a position to offer credit, and water-sellers who have crucial control over the immensely important resource of private irrigation. In many ways, the agrarian regime I shall be describing is one characterized by emerging forces of capitalist development; and while the agents involved in exploitation - at both the dispensing and the receiving ends - may be different from those in Bhaduri's semi-feudal setting, it will be observed that the instrument of interlinkage has an important role to play in establishing social relations of oppression and dependence which bear a strong family resemblance to those which obtain in Bhaduri's model.

1 I owe a great deal to my colleague, Mr. S. Subramanian, who has helped immensely in shaping an earlier version of this article which has appeared in S. Subramanian (ed). *Developmental Themes, Essays in Honour of Dr Malcolm S. Adhisheshiah* under the title 'Interlinked transactions and market for water: case study of Sirunavalpattu village' published by Oxford University Press, Delhi,

1992. Professor Gordon White evinced keen interest in my work and I owe a special debt to him for editing this article for this Bulletin. The empirical judgements made in this article are based on detailed survey data which can be found in my doctoral dissertation (Janakarajan 1986).

The issues outlined above are in this article studied in the concrete context of Sirunavalpattu Village of North Arcot District in Tamil Nadu. What is reported in this article are some major findings of a survey conducted in 1982-83 by the present author, and dealt with extensively in his doctoral dissertation (Janakarajan 1986). Particular emphasis is placed on changes in the extent and nature of irrigation available for cultivation, and on other resultant structural transformations. A central theme of this article has to do with the polarization of agents deriving from their differential access to the crucial resource of groundwater. A market for groundwater has emerged which forms one component of an integrated interlinkage of the credit, product, water and labour markets involving three main agents in interlinked transactions: the trader, the water-seller and the water-purchaser. This paper describes this interlinkage in the context of Sirunavalpattu village, analyses the triadic power relations that it embodies and demonstrates how this pattern of interlocking markets, which is socially exploitative, has emerged as an integral part of a dynamic agrarian regime characterised by rapid technical and institutional change.

2 A BRIEF DESCRIPTION OF SIRUNAVALPATTU VILLAGE

Agriculture is the mainstay of the village in as much as more than four-fifths of the households (263 out of 298) derive their income either by engaging themselves directly in cultivation, or by way of leasing-in or leasing-out activities, or by way of hiring themselves out as agricultural labourers.

Of primary interest in the present context is the system of irrigation that obtains in the village. The traditional form of irrigation has been surface irrigation, constituted by tanks and spring channels. The capacity of the tanks - in terms of the duration for which water is available - has become greatly curtailed in recent times owing to the effects of long-term siltation. In fact, the area irrigated by tanks at the time of survey was virtually nil. For the most part, the tank water is now used virtually only for washing cattle, and that too during the monsoon months. A spring channel, fed by the Palaru river, still irrigates a few plots of land. Under the circumstances, it is not surprising that the traditional irrigation institutions - based on community participation, and responsible for the maintenance of the tanks and the regulation and distribution of water - are now practically defunct.

The decay of the traditional system of surface irrigation has been accompanied by the growth of groundwater irrigation on a massive scale, not only on *punjai* (registered dry land) but on *nanjai* (registered wet land) as well. While the origin of sub-surface irrigation in the village dates back to the 1940s when irrigation wells were first dug, it was only after the introduction of high-yielding varieties, sometime around the mid 1960s, that investment in wells and pumpsets began to take place on a large scale. The high-yielding varieties were an inducement to the farmers to attempt to raise three crops in a year; and pumpset irrigation penetrated for the first time into the registered wet lands. With the introduction of the new technology in agriculture (a package of assured, controlled lift irrigation and high yielding varieties), the crop pattern in the village, on both *nanjai* and *punjai*, was radically transformed. Over time, monocropping became the rule in the village, with paddy being grown on most plots of land. At the time of the survey (1982-83), the irrigation regime in Sirunavalpattu has undergone such drastic changes that wells accounted for nearly 82 per cent (400 acres) of net area under irrigation - the balance 18 per cent being accounted for by the spring channel (84 acres); tanks had virtually no place in the irrigation system of the village.

The tremendous changes that have been witnessed on the irrigation front in the village have been accompanied by transformations in other aspects of the agrarian structure - transformations attending the passage of the village from a traditional to a modern regime. First, there have been important changes to the pattern of land ownership. There have been very substantial land transfers from the erstwhile landlords - Brahmins and other upper caste Hindus - to the Naicker households of the village. The Naickers, (a traditional labouring caste largely concentrated in the northern part of Tamil Nadu), increased their share of land from a little more than 40 per cent in the mid-sixties to 82 per cent by the time of the survey. The shift in the pattern of land ownership also witnessed a sharp change in the dominant mode of tenurial arrangement, from tenancy to owner cultivation. The proportion of land under tenancy decreased from about 50 per cent in the mid 1960s to as little as 10 per cent by 1982-83. The erstwhile tenants (Naickers) opted for cultivation in favour of leasing-out operations when land entered their possession.

Very considerable changes have also occurred in the level of adoption of modern technology in cultiva-

tion. This is reflected in the widely-prevalent use of HYV seeds, chemical inputs, and modern agricultural implements, and in the exploitation of technologically superior methods for the lifting of groundwater and its conveyance via channels to the fields.

An immediate implication of the irrigation-led adoption of modern practices of cultivation, with its emphasis on the use of more advanced technology and complementary inputs, is that it enhances the liquidity needs of the farmers, and their need for the timely availability of credit. In this dynamic setting, the demand for credit for production - and not only for consumption - requirements already marks a departure from the static setting of Bhaduri's model. Further, the agrarian regime under review is no longer one in which a single agent - as is the case with Bhaduri's landlord - combines within himself multiplex roles. To the contrary, functions are more specialized, and with the fading away of traditional landlordism in favour of the emergence of a class of entrepreneurial big farmers whose dominant interest resides in the consolidation of their holdings and in the investment of surpluses into yield-improving cultivation, conditions are favourable for an easy passage of external finance, managed by traders, into the village to meet its credit requirements.

Access to water plays a crucial role in the dynamics of such a situation; as a source of market and nonmarket power within the economy, and as a contributing factor to the manner in which transactions become interlocked. It is important to consider the extent and implications of the differential access to groundwater which is a concomitant of the transformation in the irrigation regime.

Access to groundwater in the village is lopsided. Of the 227 cultivator households (excluding 14 households which were hard to classify) in Sirunavalpattu village at the time of the survey, 71 households owned wells and 156 did not. These two groups of households will hereafter be referred to as the WW ('with well') and the NW ('no well') group respectively. Among the WW group of farmers, wells are more intensively concentrated in the larger holdings: on average, households with holdings of less than five acres own one well, while households with holdings in excess of five acres own 1.8 wells.

This lopsidedness is reflected also in the pattern of ownership of land and other assets. The survey reveals that the 68.7 per cent of cultivator households

in the NW group own only 21.3 per cent of the total area of wet lands and 35.5 per cent of the total area of dry lands. The average landholding (wet and dry together) for the WW group (7.38 acres) is nearly five times that for the NW group (under 1.5 acres). The extent of inequality in the distribution of land across all 229 cultivator households is extraordinarily high, with a Gini coefficient of 0.88. What is remarkable is that Gini coefficients calculated separately for the NW and the WW groups of farmers, are relatively small - 0.34 and 0.40 respectively. These figures suggest that the 'between group' component of inequality is far greater than the 'within group' component.

Inter-group differentials are very pronounced in the matter of the quality as well as the extent of land owned. If we treat the value of land as a proxy for its quality, survey data clearly indicated that (i) the best land is concentrated in the hands of the larger WW farmers; and (ii) in general, the quality of land owned by the WW category of farmers is superior to that owned by the NW category. Evidence of the vastly superior socioeconomic status of the WW group of cultivators groups receives additional support from data on the pattern of ownership of all assets (agricultural and nonagricultural) for the two groups. The average value of assets owned by a WW household, at RS.269,000, is over nine-and-a-half times the average value of assets, at RS.27,500, owned by an NW household; further, the 31 per cent of cultivator households constituting the WW group have a claim on 82 per cent of the total value of all assets.

The concentration of access to water (in the form of lift irrigation) thus confers tremendous differential advantages on the WW group of farmers *vis-a-vis* the NW group. Given both the importance and the relative scarcity of this resource in the scheme of the village's agrarian economy, the emergence of a market for water was almost inevitable. Equally inevitable, in view of the control over productive resources that goes hand-in-hand with the control over water, is the prospect of a market that favours the seller. Features of this market, as it has developed in Sirunavalpattu village, are described in the next section.

3 THE MARKET FOR WATER IN SIRUNALPATTU VILLAGE

The practice of the sale and purchase of water in the survey village dates back, as far as can be ascer-

tained, to 1958 when a few oil engines were installed by some rich Mudaliar landlords on the registered dry lands of the village. Sale of groundwater extracted from registered wet land also began to become a common practice with the growth in the numbers of electrified pumpsets installed to lift water from wet-land tracts. An essential feature of the terms and conditions under which water is sold is that the purchaser will transfer a fixed proportion of the produce raised on his farm to the seller. This payment is referred to as water rent. The share of produce, on both wet and dry land has displayed a remarkable constancy, over time, at the figure of one-third. Prior to the introduction of lift-irrigation in the village, and when the tank was the main source of irrigation, the convention was to recognize only two claimants to the produce raised on any plot of land: the owner of the land and its cultivator (both of whom could, of course, be subsumed in a single agent). The norm was that 50 per cent of the produce would go to the landowner and 50 per cent to the cultivator.

With the emergence of lift irrigation as a resource, like land, in which a private property right was vested, the convention was introduced of recognizing **three** claimants to the produce raised on any plot of land: the landowner, the owner of water, and the cultivator. The norm now was that each claimant was entitled to a share equalling a third of the produce raised on the plot of land. Some possible configurations of claimants and agents that could, in principle, obtain are listed below:

- a the three claimants could all be constituted by a single agent who controls both the land and the water resources, and also engages in cultivation of his own land;
- b each of the three claimants could be a distinct agent;
- c the three claimants could be constituted by two agents of whom one only owns land which is leased in for cultivation by the other agent, using the latter's own water;
- d the three claimants could be constituted by two agents of whom one owns land and cultivates it after purchasing water from the other agent; and
- e the three claimants could be constituted by two agents of whom one owns both land and water which are respectively leased out and sold to the other agent who does the cultivation.

In Sirunavalpattu village, category (a) in the list above is comprised mainly by a set of small land-owners belonging to the WW group of farmers; category (b) does not obtain in the village; category (c) corresponds to a case of ordinary land-lease and tenancy; and categories (d) and (e) are the ones which involve bilateral transactions in the sale and purchase of water, and in which we are primarily interested.

I shall restrict myself to a consideration of category (d), which is the most widely observed configuration in Sirunavalpattu village. In view of the tremendous groundwater resource-gap between the WW and the NW groups of farmers, it is not surprising that, with some minor exceptions, the two parties to the transactions in water are usually distinct subsets drawn from the WW group (the water-sellers) and the NW group (the water-purchasers). Survey data for the year 1982-83 indicates that over 72 per cent of the NW households were purchasers of water. Area under paddy accounted for the largest share of land (84 per cent) for which water was purchased. A considerable transfer of output from the NW group of farmers to the WW group has been a concomitant of the transactions in water. Survey results indicate that a little less than ten per cent of the total receipts of produce by the WW group of farmers is through sale of water, and about eight per cent of the quantity of output marketed by the WW group of farmers is accounted for by output received from water-purchasers.

Just how favourable the market for water is to those who have control of groundwater resources becomes clear from a more detailed consideration of the terms and condition under which water is sold, and of which the water rent is only one component. In addition to the customary payment of a third of the produce raised on his land, the water-purchaser is also required to perform certain unpaid or underpaid labour services for the water-seller. Some at least of the **free** services are the following. To begin with, the purchaser is required to exercise vigil in the water-seller's motor-shed so that he is in a state of readiness to switch on the motor from the moment that power is supplied. He must then irrigate the seller's land and his own, in that order. He is further required to clear the field channels that convey water from the well to the seller's fields; to assist in lifting the motor and pump from the well in the event of repairs to the pumpset; and, above all, to protect the seller's crops from grazing cattle. The water-pur-

chaser is also required to be on call to perform a variety of other **paid** services, which include uprooting seedlings, ploughing, and manuring. While the purchaser is generally paid wages at the prevailing rates for these operations - although a few cases of underpayment have also been reported - he is in no position to decline the seller's demands on his time and labour. For the most part, the water-purchaser is tied to the seller's farm and motor-shed till the harvest is over. This interlinkage of water and labour markets parallels the tie-up between land-lease and labour markets which one frequently encounters in situations of traditional landlordism.

A particularly potent source of the control which a water-seller can exercise over a water-purchaser resides in the fact that the former is in a position to cease supplying water to the latter at a crucial stage of crop-raising, on alleged grounds of his pumpset being in a state of disrepair, or some such similarly flimsy excuse. Such a cessation of the provision of water could expose the water-purchaser, who by this time would have invested substantially in raising his crop, to the danger of heavy losses. Neither is the purchaser free to turn to an alternative supplier of water: a customary practice in force in the village ensures that a water-seller may supply water only to owners of contiguous plots; and this practice is easily enforced by an interested water-seller's denial of conveyance, through his own field, of water from some other potential supplier. Under these conditions, a water-purchaser often has no recourse but to accept an exploitative contract from the seller - a contract which ties up the water and labour markets in a way which fully capitalizes on the seller's superior bargaining strength.

In addition, the often object dependence of cultivators who have no access to private lift irrigation facilities on those who do, is also a potential source of the very considerable control which the latter can come to acquire over the land-lease and land markets. The means to this control against reside in the water-seller's ability to exercise his caprice in switching off supply of water to the purchaser at a critical stage of crop-raising on the purchaser's farm. Under these circumstances, the water-purchaser can be driven to incur heavy losses on the investment already undertaken in the expectation of an uninterrupted supply of water from the seller. If the purchaser's investment has been financed by borrowing, he could find himself in a state of hopeless indebtedness; and to redeem himself from such a

situation he may have no option but to lease out his land (unusually on unfavourable terms) to the water-seller, or to effect a distress sale of his land. (For a similar pattern of such 'reverse tenancy' in Gujarat, see Shah and Raju 1986). For example, in a detailed sample survey of 51 cultivator households belonging to the NW category, it was found that, in the two years preceding the time of the survey (1982-83), five farmers had sold their land under pressure from WW farmers from whom they had purchased water, while two farmers had sold their land due to non-availability of potential water suppliers. All of these seven NW farmers were small landholders, owning less than two acres of land each. Six of the seven farmers subsequently purchased land elsewhere in the village. However, since these were all cases of distress sale, the price obtained by the farmers for their land was relatively poor; and after paying off their debts from their sale proceeds, the amount left over was sufficient only to permit purchase of land that was both of inferior quality and smaller in extent than their previous holdings. Processes such as these, which link control over water with the functioning of the land market, thus contribute both to the impoverishment of the NW group of farmers and to the consolidation of the holdings of the WW group.

Another condition of sale of water relates to the market sale of the water-purchaser's output. Water-purchasers are often directed by water-sellers to sell their produce to a particular trader with whom the sellers have entered into a prior relationship in the credit market. The credit market, and the manner in which it is interlinked with the product market, however requires extensive treatment and will be dealt with in the following section.

4 THE CREDIT AND PRODUCT MARKETS: INTERLINKAGES AND TRIANGULAR TRANSACTIONS

An important consequence of the prolific growth of lift irrigation - in conjunction with the development of HYV technology, mechanization in farming, and the extensive use of complementary inputs in cultivation - has been to afford a strong incentive, particularly among those cultivators with access to private lift irrigation facilities, to organize production on a large scale. Sustaining a large production base inevitably generates a considerable demand for liquid balances in order to meet the expenditures associated with agricultural operations in a regime

of relatively modernized cultivation practices. Since concentration in ownership of land is linked with concentration in ownership of groundwater resources, the scale of production is likely to be much larger among cultivators who have access to private lift irrigation facilities. Partly as a consequence of this, and partly because of irrigation-related expenses, it is to be expected that the demand for liquid balances should be particularly large among such cultivators. The development of a market for credit required to finance **production** activities would also appear to be inevitable; and one might expect to find that cultivators who have control of private groundwater resource will constitute the single largest component of the demand side of the credit market. To what extent does the experience of Sirunavalpattu village bear out these hypotheses?

First, it should be noted that there is no such thing as a single credit market in the village. There are several sources of credit available to the residents of the village, and these sources can be broadly categorized into institutional and non-institutional. The institutional source of credit is constituted by a Cooperative Society, a Commercial Bank, and a Land Development Bank. The principal non-institutional sources of credit include landlords, money-lenders/pawnbrokers, relatives and friends, and traders. Survey data on sample of 51 WW and 51 NW households indicated the dominance of the socioeconomic status of the WW farmers *vis-a-vis* the NW farmers, as reflected in the perceived superior creditworthiness of the former group. For every source of credit (save landlords who are a source of less than 2 per cent of the total value of loans outstanding), the WW farmers accounted for a considerably larger proportion of the value of loans outstanding than the NW farmers. The quantum of institutional credit is quite sizable, but it has been availed of, by and large, by a relatively small number of wealthy landowners; and the credit generally has been employed to finance investment in assets such as milch animals, pipe-line installations and power tillers. Moneylenders and pawnbrokers advance money for a number of purposes, as do friends and relatives (who constitute the single largest source of credit in the village): for digging new wells, deepening existing wells, repaying old debts, performing marriages, and so on. The main source of credit for the financing of working capital requirements in **agricultural production** is constituted by traders: this is an important source of (nearly 22 per cent of) the total value of loans outstanding, and is oriented

almost entirely to financing the costs of cultivation of the WW group of farmers. It is the transactions in the credit and product markets between traders and WW farmers that are of primary interest to us; accordingly, all future references to the credit market will be to the credit provided by traders.

The term 'traders' is a generic one which, in the context of Sirunavalpattu village, refers specifically to a set of six commission agencies (*mandis*) which operate from nearby towns, and to a local paddy broker (hereafter LPB) who operates from within the village. The money-lending activities of *mandis* evolved initially as a set of restricted, personalized transactions with a few farmers who were close to the *mandi* owners; but given the increasing pressure on the demand for loans to finance cultivation, *mandi* owners quickly recognized the advantages of an extensive tying-up of the credit market with their own grain trade. The profitability of this tie-up is exemplified by the meteoric ascent of the LPB in Sirunavalpattu village: from a mere bullock-cart hirer to an independent trader and source of credit.

While traders have been known to offer credit for unproductive purposes (marriages, village functions, medical expenses, even liquor-consumption), their main emphasis is on lending for **productive** ends. The principal purposes for which traders advance loans to farmers are to finance the purchase of fertilizers and pesticides, new pumpsets and motor spares, and to meet the costs of replacing motor coils, deepening wells, and paying the electricity tariff.

An essential feature of the transactions between traders and farmers is the manner in which the credit and product markets are interlocked. Loans are advanced in seemingly 'liberal' terms by the traders, but large implicit interest payments are extracted by purchasing the farmers' output cheap and selling it dear to the hulling merchants in the towns. Thus, the most important conditionality of a loan advanced by a trader to a farmer is that the latter should sell his produce **only** to the trader who has lent him money. In fact, an indebted farmer is expected to sell his **entire** product - and not just the amount that will cover the value of the loan he has borrowed - to the trader. So complete is the command of the LPB and *mandi*-owners over the marketed output of farmers in the village, that the regulated markets in the nearby towns of Kanceepuram and Arcot are thoroughly inactive. When this author approached a clerk at the Kanceepuram regulated market for data

on agricultural output sold through the market committee, the clerk replied that no produce had been sold through the market. Interest is not explicitly charged on the loan advanced, except in the event of default in repayment when this is accompanied by default in selling output only to the concerned trader, in which case interest is charged at the rate of 24 per cent per annum. A farmer who displays consistency in selling his output to the trader he has borrowed from is often deflected from settling his debts: the trader is reluctant to lose his hold on a steady source of cheap output.

A variety of mechanisms are deployed for purchasing output cheap from the farmer. First, a **commission** of 2 per cent on the value of sales is charged by the trader who serves as a middleman between the farmers on the one hand and the hulling merchant and millers on the other. Second, a trader often resorts to **false weighing** as a means to undervaluing the output purchased from the farmer: at a conservative estimate, 2 kilograms per bag of paddy are accounted for by underweighing. Third, a deduction is effected towards **wages** payable by the trader to labourers who weigh paddy in the *mandi*: the customary deduction is half a kilogram per bag of paddy. Fourth, a deduction of one kilogram per bag is made as an **allowance towards dirt and rot** in the paddy marketed. This deduction is mandatory, and is allowed for even if the paddy happens to be unmixed with dirt; if there is evidence of dirt, two or even three kilograms of paddy per bag may be deducted. Finally, there is resort to **direct underpricing** whereby the trader understates to the farmer the price available from the hulling merchant, and pockets the margin between the purchase price and the sale price: this is locally referred to as 'undercover trade'. In addition the trader frequently avails himself of a credit cycle by deferring payment for produce (on which he pays no interest) to the farmer.

A final aspect of the bilateral transactions between traders and WW farmers that must be mentioned is that these bilateral transactions are often transformed into trilateral transactions which involuntarily involve NW farmers as well. This is an instance of the sort of '**triadic power relations**' which mediate the interlocking of markets in agrarian settings, and which have been extensively dealt with by Kaushik Basu (1986). In the specific context of Sirunavalpattu village, the triadic transaction in question assumes the following form. Traders are keen to identify

resource persons (that is, large WW farmers), and to make credit available to these farmers on very liberal terms. In exchange, and in view of the position of superior power enjoyed by water-selling WW farmers *vis-a-vis* water-purchasing NW farmers' the 'resource person' is required to direct those who purchase water from him to sell their produce cheap to the concerned *mandi*-owner. The water-purchaser, who is greatly dependent on the water-seller for an uninterrupted supply of water, has usually no option but to comply with this.

5 SUMMARY AND CONCLUDING OBSERVATIONS

I have, in this article, attempted to trace the passage of a North Arcot village from a 'traditional', 'stagnant' agrarian regime to a 'modern', 'dynamic' one. At the heart of the processes attending this evolution has been the prolific growth of lift irrigation in the village. The importance of groundwater in the scheme of things is reflected in a clear polarization of the cultivating households into a small group of powerful, resource-rich cultivators who have access to private lift irrigation facilities, and a large group of relatively deprived cultivators who have no access to private sources of irrigation. The interlocking of markets has been shown to be an integral feature of an agrarian regime of the type exemplified in Sirunavalpattu village - one which is subject to rapid technological modernization accompanied by the secular displacement of traditional institutions such as landlordism. The interlocking of markets has been noted to take place at, as it were, two layers.

The first layer involves **the tying-up of the market for groundwater with the market for labour**: cultivators with access to groundwater resources exploit the dependence on themselves of cultivators without such access by selling water in exchange for a share of the produce raised on the water-purchaser's farm; in addition, the purchaser is required to perform a number of unpaid labour services for the seller, and also to be on call for performing a number of paid services. Control over groundwater resources also permits a gradual encroachment of the spheres of control of resource-rich farmers on the land and land-lease markets. The transactions between water-sellers and water-purchasers are often reflective of the exploitatively superior bargaining power of sellers *vis-a-vis* purchasers; and the findings available in this regard from the survey of Sirunavalpattu village are in stark contrast to the

purported equity delivered by the operation of groundwater markets which has been remarked on by a number of authors including Shah and Raju (1986), Mandal (1989) and Roth (1985).

The second layer at which interlocking of markets has been observed, and in which, again, water plays a central role, relates to **the tying-up of the credit and product markets** in transactions between traders-cum-moneylenders and cultivators with access to groundwater resources. The increased scale of cultivation attendant upon the development of private lift irrigation facilities and the use of complementary inputs, together with the large expenses that have to be incurred on irrigation-related costs, has resulted in a great pressure on the demand for liquid balances by cultivators with access to lift irrigation. The emergence of traders as a potential source of credit to meet this demand, and the operation of a credit market that could promote their grain trade, have been inevitable concomitants of these developments. An essential feature of the transactions between traders and farmers is that the traders offer interlinked contracts with a view to wielding optimal control over the twin levers of the interest-rate on loans advanced and the price paid by the traders for the farmers output. A particularly severe aspect of the terms and conditions under which credit is offered relates to the involuntary involvement of resource-poor farmers in the transactions between traders and resource-rich farmers; the power wielded by water-sellers over water-purchasers is

exploited by the traders who induced their water-seller clients to direct farmers who purchase water from them to sell their output cheap to the traders. This is a specific instance of a **'triadic' power relationship** whereby agent A (by threat or inducement) persuades agent B to exploit his power over agent C to coerce C into a transaction whose terms are favourable to A and unfavourable to C. It is particularly worth emphasizing that the way in which triadic power relations work themselves out does **not**, necessarily, result in the emergence of Pareto-preferred outcomes. Typically, the most vulnerable agent in the triangular transaction (the water-purchaser in the present context) is rendered worse off in the end.

The instrument of interlinkage, imported explicitly by Amit Bhaduri (1973) into formal analysis, is thus seen to be a source of transactions between agents which are often mediated by exploitative social relations. While Bhaduri advanced the phenomenon of interlinkage as an explanation for agrarian stagnation, this article demonstrates the centrality of the phenomenon in a regime of agrarian dynamism. It also suggests that, in the process of transition of an agrarian regime from one mode of production to another (from feudalism to capitalism), it should not occasion surprise, at any given time-slice of history, to observe mixed or impure forms that reflect the coexistence of elements of essentially feudal social relations with elements of emerging capitalist forces of production.

REFERENCES

- Bardhan, P.K. and Rudra, A., 1978, 'Interlinkage of land, labour and credit relations: an analysis of village survey data in East India', *Economic and Political Weekly*, 13: 367-384
- Basu, K., 1984, *The Less Developed Economy: A Critique of Contemporary Theory*, Bombay: Oxford University Press
- Bhaduri, A., 1973, 'A study in agricultural backwardness under semi-feudalism', *Economic Journal*, March: 120-137
- Griffin, K., 1974, *The Political Economy of Agrarian Change: An Essay on the Green Revolution*, London: Macmillan
- Janakarajan, S., 1986, 'Aspects of market inter relationships in a changing agrarian economy: a case study from Tamil Nadu', D Phil thesis, University of Madras
- Mandal, M.A.S., 1989, 'Groundwater irrigation in Bangladesh: access, competition and performance', Paper presented at the World Bank Colloquium on **How to Reach the Poor Through Groundwater Irrigation**, Washington D.C., April 12-14
- Rehman, A., 1979, 'Usury capital and credit relations in Bangladesh agriculture: some implications for capital formation and capitalist growth', *The Bangladesh Development Studies*, Summer: 1-46
- Roth, G., 1985, 'The role of the private sector in providing water in developing countries', *Natural Resources Forum*, New York: United Nations
- Shah, T. and Raju, V., 1986, 'Working of groundwater markets in Andhra Pradesh and Gujarat: results of two village studies', mimeo, Anand: Institute of Rural Management