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Title: Negotiation with an Under-informed Bureaucracy: the Case of Water Rights on System  
Tanks of Bihar

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## NEGOTIATION WITH AN UNDER-INFORMED BUREAUCRACY: THE CASE OF WATER RIGHTS ON SYSTEM TANKS OF BIHAR

Although there exists voluminous literature about the modern Indian legal system, and some about land and forest rights, there is little about rights to other natural resources. In general, the colonial government left most natural resources with poorly defined property rights. In the post-independence years the bureaucracy made great inroads through its different functions, using the possibilities for open access, but did not improve much on granting of rights. *De facto* rights, however, have existed all along. Whenever contested, by private parties or by the government, conflicts and negotiations ensued. The resolutions of these disputes were essentially spontaneous self-organization processes.

In recent years there has been growing attention to local management of common property resources, and a recognition of the potential of farmer-managed irrigation systems. Many indigenous irrigation systems provide good examples of farmer management and are therefore, being studied for learning principles of management. But these studies often overlook that the "traditional" irrigation systems no longer exist in the traditional settings. Their functions are now conducted in an environment of formal rights. In some areas the bureaucracy is careless and ignorant about the norms, customs and performance records of the spontaneous organizations or may interpret them as static "customary rights," a favorite construct of formal law. One section of researchers are blind to such inconsistencies and tend to accept that formal laws actually regulate the irrigation systems. The other section rejects these inadequate legal provisions and tend to treat the traditional systems as if they exist in isolation. Actually, even if misinformed, bureaucratic or legal interpretations always impinge on local negotiation process, delineating the space for forum shopping as various local parties use the threat of external intervention to reach settlements (see Spiertz, Chapter 6 in this volume, von Benda-Beckmann and van der Velde 1992).

This paper describes how farmers negotiate water rights in such a warped setting. If self-organisation processes are possible, the *de facto* rights are redefined again and again even in traditional systems. In such a case a rigid concept of customary rights makes no sense. However, some efficient principles may sustain over a long period. Particular attention has been paid in this

article to bring out the existence of such efficient and sustained principles through a historical case study of how rights to traditional irrigation tanks were negotiated as the colonial and post-independence Indian bureaucracy expanded its influence. The chapter moves from macro to micro, beginning with an overview of water rights in India, and treatment of indigenous irrigation systems. It then takes up the example of traditional *pynes* in Bihar, and negotiations in Supi Desiyain Pyne in particular. The final sections highlight the contrast between bureaucratic definitions of rights and farmers' own conceptions.

## DIVERSE LEGAL SET UP

There is no single system of water rights in India. One way to introduce the complexity is to list the various systems of rights. A better way is to introduce the evolution of the systems in different regions, which would then help the readers anticipate, to some extent, the regional specifics.

In pursuance of its mercantile objective the colonial government defined and protected property rights as private and introduced several legal conventions for markets and contracts. A judiciary independent of the executive institutions of the state and acting as a check on them was created to secure these rights of ownership and use, particularly from encroachment by executives (Washbrook 1981). To implement the law, records of rights and rightholders were necessary. It is from this point that different systems of rights began to emerge in different parts of India. While the mercantile objective and basic administrative set up was the same, the colonial government experimented with many different models for assigning legal rights over property and adopted different definitions of rightholders in different regions.

There were two major types of revenue settlements in India. In the Permanent Settlement introduced in Bengal and Bihar in 1793, the landlords (called *zamindars*) were the rightholders and recording of rights consisted of the recording of the *zamindars* and revenue payable by each. For a hundred years there were no records of tenants, let alone any property rights to be enjoyed by them. The settlement pattern prevented the government from having any concern about the economic system within the jurisdictions of the *zamindars* as long as they were able to pay the fixed revenue. Naturally, relations pertaining to waterworks or other natural resources within the domains of the *zamindars* did not come under the purview of public law in the Permanent Settlement areas.

In the Ryotwari Settlement introduced in south India in the first half of the nineteenth century, the British proceeded a step further in establishing private property. Settlements were made with individual tenants. Immediately when the records of rights was being prepared, it surfaced that no individual could lay claims on the local tanks, woodlots or grazing grounds. The colonial government declared its ownership over such properties and thus committed itself to their upkeep and maintenance. In a few years this necessitated the induction of engineers in the Revenue department and ultimately gave rise to the Public Works Department ? in charge of irrigation works as well ? with numerous personnel and considerable expense, but with dismal performance. This is the rise of the government-as-provider model.

Later, when zamindari system was established in North India, but not as a hundred years settlement, the government as provider role was adopted for increasing revenue. In the original Permanent Settlement areas too, around the close of the nineteenth century, rights of tenants were recorded after the expiration of the hundred year contract. After independence, the zamindari system was abolished, thus bringing the whole of the country under a single land rights system. But the actual state of affairs has not become uniform because of the colossal difference in knowledge about local resources, consequent upon the different settlement experiences. By around the 1830s, the irrigation department in ryotwari areas could produce engineers like Sir

Arthur Cotton, who were fairly well acquainted with the technology of the local irrigation works and could take up extension projects. By the 1880's the government could release a complete list of nearly 32,000 tanks existing in ryotwari areas (Sengupta 1991). In contrast, in zamindari areas at the same time, it was very difficult to find even a reference to these works in the official reports. Even till this date the similarity between the South India works and those of Bihar are not known to Indian irrigation planners (Sengupta 1993b). How can one talk of rights, when even the principal infrastructure is not known?

Water rights might have also been granted under general legal conventions. Legal experts often opine that water rights in India are riparian, following the British system. This is rather wishful thinking. The users do not have any statutory right over the sources. Because of the vagueness of the legal position, the public property concept on natural resources has been upheld at will, by the judicial court or by an administrative order. In turn, these case laws often guide local conflict settlements. Another general provision, recognition of customary rights also has its interface with water resources also fully aware that it would be politically and socially cumbersome to administer English or Western Law to supplant an already complex set of native rules (Galanter 1989). However, the coding of moral and community obligations in Indian society was restricted to matter such as marital customs, and rarely reached such heights as to address local natural resources. There were some exceptions (e.g., Sengupta 1980 ; 1984 ; Coward 1990), but the quality of records was not always impressive. Customary rights and regulations could also be recorded as improper reconstructs (van Benda-Beckmann and van der Velde 1992), serving the interests of the administration even if they took on a distorted meaning. For example, the Madras Compulsory Labour Act, 1858 or Kudimaramath Act, empowered revenue officials to summon farmers for unpaid labour for irrigation works, on the ground that voluntary communal labour was customary (Sengupta 1991, 69-77).

Current studies on water law sometimes report that there were clearly specified water rights in India. They refer to the numerous Irrigation and Drainage Acts in different regions. It is worth noting that water rights in these Acts are defined only with respect to irrigation water from government irrigation projects. There is no clear legal position on non-government communal works. Almost any position about the situation of rights on water resources can be substantiated by referring to one or another of the plethora of legal provisions. The totality, however, can only be characterised as a situation where rights are poorly defined making open access possible, particularly by the government. In subsequent periods, some parts of these resources have been diverted by the government to other uses; on some others regulatory measures have been introduced, and there are some common pool resources on which government has assumed the role of provider (Sengupta 1996).

Public control, as recognised in the colonial and modern Indian legal system, has practically curtailed all types of popular initiatives towards investment. This is unlike the United States, where recognition of prior appropriation rights encourages private investment, or Japan, where customary communal and private rights were given statutory recognition in modernizing the legal system in the Meiji Restoration period. A startling story from the modernisation of Tambraparni system in the 1870s shows how peoples' initiatives were discouraged to favour the public property rights (Sengupta 1991, 138). When the British engineers decided to construct an eighth anicut (weir) on the river the potential beneficiaries had collected a sum of Rs. 30,000 on their own for aiding the construction. The government did not use the local contribution on the ground that the beneficiaries might in future use this as a basis to ask for a reduction of rent. The fund was used instead for building a road.

In the post-independence period social justice has been of much greater concern and Indian policy makers are not keen on espousing traditional virtues. The institutional designs have rather

been keen to break the stranglehold of traditional vested interests. Sometimes in this process, the policy makers have paid too little attention to the pre-existing common property relations and remnants of customary rights.

Recently there has been some serious thoughts devoted to local governance, including management of natural resources. Several Acts have been passed, most notably the 1993 Constitutional Amendment promoting Panchayat Raj, the local self-government system. There are also efforts to devolve management responsibility for many irrigation systems to users. Although these recent management transfer programmes are extensive, they pay little attention to the rights issue. The Eleventh Schedule of the Panchayati Raj Amendment includes a list of several resources, including water, as spheres of influence of local Panchayats. But this is still merely an enlistment; no State has as yet defined the ownership and control rights of Panchayati Raj institutions over the subjects included in the Schedule, leaving considerable scope for dispute.

### IRRIGATION ACT ON PRIVATE WORKS

Surprising though it may seem, pre-existing irrigation systems survived much better in the zamindari areas (Sherrard 1916; Sengupta 1980). On second thought one would agree that this is expected. The very absence of alien and uninformed intervention, as in South India, could let the system continue as before. Throughout the nineteenth century the government had no need to worry about the indigenous irrigation works in Bihar. After repeated occurrence of severe famines in one or the 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 (India 1903) that the *ahar-pyne*<sup>1</sup> irrigation under the zamindari system, unlike its counterparts in South India, was not in a bad state, so much so that Gaya, the major district served by this type of irrigation, remained practically immune to famines throughout the nineteenth century. There was no necessity for protective works. However, there had been some deterioration which the Commission identified as due to the partition of zamindari estates. Mainly because of this the commission recommended an Irrigation Act.

However, there was no great alarm. The government moved in a very casual manner. By around 1911, an Irrigation Works Bill was drafted, but it was not proposed immediately, on the ground that the Survey of Gaya, which had started in the same year, would produce valuable additional information for drafting the Bill on a more sound basis. Survey and Settlement operations in Gaya district were completed in 1919. Subsequently, in 1922, the Irrigation Works Bill was proposed in the Legislative Assembly. In contrast to the government, the landlords acted swiftly and fought tooth and nail against the Bill. The original provisions made in the Bill 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 Orissa Private Irrigation Works Act 1922) in such a diluted form that it remained practically ineffective.

The Irrigation Act was drafted with the conviction arising out of the philosophy of the Permanent Settlement that the zamindars construct, maintain and allocate water from irrigation works as everything else in their domains. 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 what was basically a wrong premise regarding the strong role of the zamindars; the dilutions required them to be extra-cautious before they took a single step forward. During the introduction of an amendment in 1939 it was pointed out that only two chapters of the Act which were applied once in a while were concerned with improvement and repair works of an occasional nature and supplemental provisions like appointment of irrigation committees and recording of customary rotations (*parabandi*).<sup>2</sup> The provisions relating to regular maintenance or

extension were of no use. The Collectors were permitted to take up works where financial liabilities were small, and that too, after a lengthy legal procedure establishing that the landlords responsible would not take up those works by themselves. The Collector of Gaya noted later, "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" (Hardman 1938). On paper some irrigation cooperatives were formed. No recording of irrigation rotations (*parabandi*) during this period is known to us.

In the late 1930s there was some improvement consequent upon the formation of the Indian Ministry under the Congress Party. An Amendment (Bihar 1939) was proposed which gave *suo motto* powers to the Collectors, evolved emergency procedures for repair, and made provisions for cost recovery from the others if only one of the co-sharer landlords 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 the province to account for the fall in prices during the Great Depression and also the breakdown or neglect of irrigation arrangements (Williams 1941).

Another Regulation was passed in 1940 and following independence a second Amendment was made in 1950. These amendments increased the role of the officials vis-a-vis the zamindars. Ultimately, the zamindari system was abolished in the post-independence period and the authority roles vested with the government. This Act, still in effect after revisions, empowers the bureaucracy to intervene in indigenous irrigation systems almost in any manner they desire. Later we will study the consequences of this and other legal provisions for the Gaya district, which was, according to the Irrigation Commission (India 1903), immune to famine because of its indigenous irrigation system.

## RECORDS OF WATER RIGHTS IN GAYA DISTRICT

By implication, the Permanent Settlement had granted the zamindars paramount rights on all common property resources, including irrigation, within their domains. For a long time the zamindars had not felt any need to exercise the sanctioned *de jure* rights, for they had nothing to gain thereby. Long afterwards, at the height of the peasant movements in the 1930s, the zamindars' exaggerated legal standing proved to be an excellent instrument of power. During this time, the zamindars often forcibly asserted their legal rights over local tanks and prevented water supply to tenants (Sengupta 1980). These conflicts were ultimately resolved in the political arena and brought about revision of property rights through the abolition of the zamindari system.

Customs, including customary property rights, could survive longer within the domains of Permanent Settlement. The estates were constituted as small autonomous units. Within these units local regulations and laws could be determined by customs and practices. While administering in highly personalised form, usually the estate authorities adhered to unwritten local norms and customs. But there were written records too. Tekari Raj, the biggest zamindar family of Gaya district, had a much celebrated record, known as the *Lal Bahi* (red book), showing the rights of the beneficiary villages in all the major pynes in his zamindari.

Within the provisions of the Permanent Settlement, the modern judiciary could admit civil suits on irrigation zamindars. It is likely that the zamindars were the ultimate authority in negotiations and civil conflicts over water rights involving tenant farmers. After the expiry of a hundred years contract, for the first time, Acts could be made to protect the tenants. The Tenancy Act created the possibility of judicial mediation in cases of civil disputes between the zamindars and tenants on the question of irrigation. However, a record of rights was necessary if the government wanted to mediate.

Initially officials were of the opinion that the records of rights should be made as elaborate as for land, showing the rights of individual tenants. This is in accordance with the British system of settlement. As work began difficulties emerged. The final outcome was very different from the principle (Sengupta 1993a). In all the records of water rights prepared during the Survey and Settlement, communities -- groups of tenants, either the whole villages or parts of these - were shown as units. It may be recalled that unlike Spanish or U.S.A. water laws, the British legal system had little provision for communal rights (Sengupta 1985). Understandably the judiciary, trained in British jurisprudence, faced problems while dealing with such records.

Gaya, the most important district from the point of view of private irrigation, happened to be the last district taken up for Survey and Settlement Operations. Thus records of rights over water prepared in this district could not be repeated elsewhere. In Gaya Settlement Operations two types of irrigation records were prepared (Tanner 1919): (a) the village irrigation record or *fard abpashi* and (b) the general pyne record. The first dealt with information regarding irrigation within each village, while the second gave the details of a system which benefitted many villages.

*Fard abpashi* fell short of a detailed record of rights of individual tenants. Nor was it a document which truthfully described the existing indigenous system everywhere. It is a peculiar mixture of the two systems. For example:

Col. 7: "Harvest and area irrigated (approx.)" - 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" - was a record of the technological arrangements.

As a question of social arrangement, it required only information about whether any permission from the landlord was necessary. Implicitly, the tenants were regarded only as corporate entities and autonomous in function, for there was no inquiry about how they reached their decisions.

The corporate existence of tenants in the matter of irrigation was witnessed so vividly by the recording officials that they decided it would be sufficient to give copies of *fard abpashi* to only one tenant in each of the beneficiary units. Some *jeth raiyats* (senior tenants) were chosen for this purpose, who had no representative status under the State legislation. Such records would be of little help in civil disputes, and one does not come across cases where *fard abpashi* was referred to. Today its existence is practically unknown to both government officials and the farmers, although some can be found in district old record rooms.

In the general pyne record the corporate treatment of villages was made explicit. In it, the details of diversion arrangements (e.g., rotational regulations between villages, rights of particular villages to construct checkdams) were noted along with the 'customary' arrangement for repair works. Here, too, there was a tendency to reduce corporate bodies to individuals such as the *amlas* (officials) of zamindars or the *jeth raiyats* instead of whole groups. But it also described the division of rights between villages benefitting from a single system and therefore was sometimes referred to in legal suits between villagers on the question of irrigation rights, as described in the case study below.

This abortive attempt in the Gaya Settlement Operations is the lone case in preparation of formal water rights for the users to this day. Otherwise, by default, the government enjoys paramount right on water resources. In reality however theth respect to indigenous irrigation systems, engaging itself primarily in the development of modern irrigation facilities. The ownership of the existing waterworks is now vested in the government. But no specific policy has been developed, no further Act has been passed, and no systematic division of responsibilities between the government and the irrigators has emerged. Different departments carry out some

type of irrigation work occasionally. The state of ignorance that was characteristic of the nineteenth century has returned once again, after a fifty year lapse. In effect, the village communities have practically regained their autonomy with respect to indigenous irrigation. In the exercise of their autonomy they avail many different methods.

#### A CASE STUDY : THE PHYSICAL SYSTEM

Gaya district in Bihar is located between the hills in its south and the plains of Ganga in its north. Average annual rainfall is below 1000 mm. Further, because of the slope run-off water could drain out quickly (Singh and Kumar 1970). Rice cultivation would not have been possible in this region, but for the indigenous irrigation works known as *ahar* and *pyne*. Ahars are above-surface storage providing gravity irrigation. Pynes are diversion canals from rivers, primarily used as feeder channels for ahars. These are indeed 'system tanks' comparable to better-known cases in south India or Sri Lanka (e.g., the Ellegala system described in Chapter 4 of this volume). But because of historical ignorance (e.g., India 1966) these have not been identified as the same. We will describe here an irrigation system originating from river Jamuna.

River Jamuna runs for about 90 kms. before it meets river Dardha. For most of the year the river remains dry. Following heavy downpour in the catchment basin the river swells up and carries water in rushing torrents. During high floods Jamuna carries a flood discharge that is as high as 2000 cusecs. River Jamuna has many canals and system tanks. The last one in this series is called Supi Desiyain Pyne (hereafter S.D.Pyne). But its tail end passes through Gaya district and hence maps were prepared for individual pyne systems under the general pyne record. Figure 1 shows the tail end of the Jamuna river irrigation system.

[Figure 1?Thematic map of Supi Desiyain PyneFigure 1?Thematic map of Supi Desiyain Pyne]

It is not known when or by whom the S.D.Pyne system was constructed. It may be very old: Kako, the biggest village benefitting from the system, has some antiquarian remains of 9th or 10th century A.D. According to the general pyne record the S.D.Pyne system and its branches passed through 60 villages and irrigated at least some land in most of these villages. It is difficult to demarcate the exact command area because of the meandering of different pyne systems. For example, the S.D. Pyne feeds the tanks at villages Murasa and Maniawan and from each of these tanks a new pyne emerges travelling through several villages. The different parts of S.D.Pyne receive surplus water supplies from many other pynes including that of the partly completed Uderasthan project. Because of such intertwining very often it becomes meaningless to identify one pyne system as the sole benefactor of a particular area. For administrative or historical reasons, however, separate units have been demarcated. According to the records of the 1920s, the main pyne passed through 32 villages and contained as many as 53 outlets (*mohana*). The main channel exists today, though some of the branches are now defunct.

The lower part of the S.D. Pyne, down the Supi ahars, is also known as Karua Nala. This is also believed to be a natural watercourse (*nala* = rivulet). It is difficult to distinguish natural *nala* from artificial *ahar*; even in this century artificial channels in this district have become natural drainage lines. However, legal provisions differ depending on whether or not it is a natural watercourse, as discussed below.

The diversion channels beginning from 12 outlets reach other villages and are called *sakhs*. The S.D.Pyne, thus, contains 12 *sakhs* (branches) and hence the name *desiyain* pyne, literally, with 10 branches. These branches and their sub-branches reach an additional 28 villages. Often the branches give rise to channels going through-branches). The diversion channels which do not leave the villages of origin are called *karha*, *bhokla*, etc. One should note that the nomenclature has clear bearings on the division of rights. Branches are not necessarily longer than the *karhas*, but because they pass through several villages they raise extra complications in management of

water and therefore, demand separate categorisation. The general pyne records dealt up to the level of *sakhs* and *darsakhs*. The records show the locations of the different fixed outlets in revenue numbers of plots along with the rights of corporate groups to divert water by permitted types of structures, duration, etc. An idea of the complicated network of S.D.Pyne may be had from the layouts shown in Figure 2, prepared from the description of the general pyne record for S. D. Pyne. Even a fifth order branch could travel through more than one village, indicating the complicated inter-village coordination necessary for management. When they were functional under the authority of the zamindars, the rights must have been clearly defined and disputes settled so as to enable these complicated networks to continue. Most parts of the pyne system as complicated as this are now extinct.

*[Figure 2?Network of Supi Desiyain Pyne: A system of branches passing through several villagesFigure 2?Network of Supi Desiyain Pyne: A system of branches passing through several villages]*

Some of the outlets (seven of the main channel and 12 of the branches and sub-branches) lead to tanks. Thus, the whole system feeds 19 tanks. Although the great majority of the outlets over the whole pyne system are used for direct irrigation, together they divert much less water, and benefit a much smaller area, compared to the handful of outlets supplying water to tanks. The 19 villages in which these tanks are located account for more than a half of the total population of all the 60 villages through which the pyne system passes. Areawise as well, the tank-owning villages account for more than a half of the total geographical area of the 60 villages.

In the three following sections we will discuss the water rights situations at three different levels.

## DIVISION OF WATER RIGHTS BETWEEN SYSTEMS

S.D. Pyne shares the water flowing through Jamuna river with many other pyne systems. There was another weir, slightly upstream of Jamuna river, from which Solhanda Pyne took off. S.D.Pyne therefore received only as much water as was let out in Jamuna river by the beneficiaries of Solhanda Pyne. Earlier, there was a rotation (*parabandi*) by which Solhanda Pyne was prevented from taking water from Jamuna river in each alternate week. Since both systems were included in the estate of the Tekari Raj, a famous zamindar of the district, the rotational regulation could be enforced. But after the influence of zamindars declined, such regulations were not effective. In consequence, since the 1920s, S.D.Pyne received only irregular and insufficient supply from Jamuna river. This might be the reason why shortage of water began being felt in the S.D.pyne since the 1920's. The common belief, however, was that the catchment area of Jamuna was shrinking. In its upper reaches more water was flowing towards river Phalgu. This is quite possible in a country where the watersheds between rivers are not sharply demarcated and slight changes in terrain conditions divert rainwater from one side to another. In the past this might have happened again and again and water rightly be a range of pre-existing water rights at any point, it is important to recognize that there is no single customary water right.

In the post-independence period the irrigation department combined the two intake points and built a masonry weir over Jamuna river for easier diversion of water into the pynes (see Figure 1). The departmental staff operate the weir. The water rights of the two systems are not clearly defined, but by convention the weir is opened on each alternate week to left and right sides, supplying the two pynes alternately.

In the post-independence period a medium irrigation river valley project, called Uderasthan scheme, has been taken up in this area. With an investment of more than Rs 20 millions, this scheme includes the construction of a diversion structure on the adjacent river Phalgu and distribution of water to benefit a command area of 24,800 hectares. When the scheme was



proposed in the 1960s the irrigation department was absolutely ignorant of the potentials of the indigenous system. The layout had not considered the existing pynes and had proposed alternate channels. As expected, the department was drawn into numerous litigations over the land acquisition and for several years the project remained half completed. By then, however, awareness about the indigenous systems was growing. One of the Chief Engineers had even recommended that the local pynes be strengthened. By default they were. Since the project could not be commissioned surplus water from the project drained out through the existing pynes in that area enriching them. This is how Karua Nala started getting more water in the 1970s, but this is not a secured share. The additional supply may stop once the project is completed. However, the source of the additional supply is so very distant - not only in geographic sense - from the farmers that they do not even think of negotiation for securing this additional supply.

Lately, an extension programme has been sanctioned and partly completed whereby a branch pyne (Dharaut Pyne) has partly replaced the old course of the S.D.Pyne. A proposal is under consideration for an interbasin diversion, costing Rs 180 million. If this is sanctioned, the integrated project will drastically alter the present distribution pattern of surface water among different rivers and pynes.

## NEGOTIATION BETWEEN SETTLEMENTS

The Tenancy Act marked a watershed in the introduction of modern civil law. Before its enactment any civil dispute on water rights would be referred to the zamindars for settlement, but since that time laws are referred to wherever problems occur. Supi Desiyain Pyne is one such system where physical problems had already appeared and the Tenancy Act provisions came into use almost immediately. We will describe here the situations only in the middle of the system.

For reasons discussed in the earlier section, by around the 1920's, the supply of water to Supi Desiyain Pyne and consequently to Supi tank decreased (see Figure 1). The beneficiaries of the checkdam and diversion (*bandh*) at village Kanauli, who received only the surplus water from the Supi tank, needed more time to fill up their village tank. Naturally, they were reluctant to remove the *bandh* letting water flow further downwards through Karua nala. The affected villagers downstream in the system appeared and tried to remove the *bandh* by force. There was bloodshed, and not only criminal cases but also civil suits were registered. The first of the affected villages, the villagers of Golakpur, contested the right of the villagers of Kanauli to erect such a *bandh*.

After prolonged litigation a verdict was obtained. The court had considered the records of rights (general pyne record), but objected to its treatment of a natural watercourse as private property. The court held that no one has any right to obstruct flow in natural watercourses, which would imply that most of the indigenous irrigation practices were illegal.

However, the award was not executed, thanks to the reluctance of the administrative 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 the others for a compromise. The villagers of Golakpur too, aware of the seriousness of consequences the villagers of Kanauli would otherwise face, agreed to let them divert water for two days a month. Thus, a new rotational (*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 sharing arrangements to remain shy of the judiciary for all of these might be held illegal by reference to the same award.

When a second conflict ensued a few years later down at Goh *bandh*, the contestants had to invent a legally admissible clause. After the Kanauli *bandh* case was decided, shortage of water was 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 would deprive the villagers downstream, lead by village Maniawan. In the very first year there occurred a violent clash followed by a prolonged litigation which lasted for over twenty years, reaching from the lower to the higher Courts. Since the case would be immediately dismissed if the villagers of Golakpur admitted that their bandh was on the natural watercourse, they phrased their objection thus: the channel going to Maniawan was the branch (and therefore could be cut off without violating the court award) and the one going to Golakpur was the main nala (the natural watercourse). Thus the dispute was now over which one was the true course of Karua nala. In 1960, Patna High Court gave its decision in re was a mutual agreement between the two villages outside the purview of the civil court, permitting Golakpur to erect such a bandh in each alternate week.

Thus by now it was 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 a party seeks adjudication, this is not for mediation but to harass the opponent and to bring them to terms. This may be seen as an instance of forum shopping, similar in some respects to the Nepal case described by Pradhan and Pradhan in this volume. 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 area.

In the absence of a useful legal system the *de facto* rights are negotiated directly between the stake-holders, but the negotiations cannot occur independent of the law. The law in this sphere is not confined to normative discourse level, so as to have only marginal significance. Instead, it contributes towards determining the real incentives of the agents, not by settlement of rights, but by lending strength to each side in the negotiations. The explanations of primary (national) property law and the recognition of customary law by local law or administrative orders leave many ambiguities and inconsistent judicial interpretations. Parties in conflict can muster whichever is convenient, but there is always some ambiguity to contest any resolution. In the context of the disputes it is not the legal provisions but the legal procedures which matter more. Transaction costs are so high that court cases are beyond the reach of many. Thus the legal system is more an instrument of harassment than a clear property rights charter. Far from being marginal, the law heavily influences the cost-benefit balance for cooperation and conflict, and favors the competent litigant in the matter of rights on water. It is true that the final award in court cases may go to either side depending on personal leanings of the mediators. But by then it is not the court awards but the reputations built by the contestants which count more. Thus, the net effect of law is that conflicts linger in civil courts for decades with jugglery of explanations and smattering of criminal cases ultimately being resolved primarily through self-organization by the users outside the ambit of the legal system.

## FARMERS' CONCEPT OF WATER RIGHTS

The farmers' concept of water rights differ from that of the agencies in many different ways. The following section describes a few, which are by no means exhaustive.

That conflicts are restricted to a part of the pyne system is noteworthy. The awareness of irrigators about physical units located beyond 10-15 kilometers are not well-developed. Most of the beneficiaries regard the three parts of S.D. Pyne as different units, so much so that in the second part of the pyne, beyond say 15 kms. from the intake, most people did not refer to Jamuna river as its source and did not know what kind of diversion structure exists there. The supply received to each distinct part is taken by farmers as extraneous and uncertain. Therefore, the cases of negotiations and conflicts are also restricted within a part of about 10-15 kilometers length. Some other researchers (McCay and Acheson 1990) studying other forms of common pool resource like sea-fishing, have noted similar phenomenon. Community property senses are

stronger over sources in the immediate neighbourhood, and weaken as distance to source increases.

Distinct rights to water simply do not exist: it is secured only by being a member of a particular corporate group or 'community.' Most members who own land in a particular command area also belong to the same caste and reside in the same hamlet. In fact, they have to follow somewhat uniform agricultural and water application practices. These are not demanded explicitly, or even consciously. The very functioning of the system is such that one cannot avail the benefit, or at least the full amount of it, by differing in one or the other of the community attributes.

Among the same caste members residing in the same locality formal meetings are rarely necessary. Instead, decisions are taken and information circulated in the day-to-day interactions. One would note that given the setting, this decision process attains the best of both worlds. It is cost-efficient. At the same time, the decisions are not worse than that in a formal democratic meeting since within the same caste everyone looks after every others' interests. But if one member resides in a different hamlet, he would often fail to receive information about the different decisions taken.

This is exemplified in one small command area (Sengupta 1991). Before independence some parts of this command were owned by an absentee zamindar. The estate land was cultivated by his tenants from another hamlet. After independence the Muslim zamindar sold his estate and emigrated to Pakistan. At that time residents of many other hamlets purchased plots of the estate belonging to this command area. But faced with the problem described above, some of them exchanged their holdings, some others sold those off. By now, only one of the 35 landowners benefiting from this command area does not reside in the adjacent hamlet. The transactions have been fully in accordance with the modern law, but the consequence has been reproduction of the traditional community attributes.

Another interesting feature was that equity in water allocation was in-built, not a granted right. The total landholding of each individual in a command was highly fragmented. In consequence, every major landholder who could influence the allocation had interests both at the head and the tail regions of the distributary (Sengupta 1993a). If water available is not sufficient and does not reach the tail end, a part of the command area remains unirrigated, but everyone suffers.

Even though it appears a strange phenomenon one can easily identify the logic. Comparable approaches to ensure equitable benefits through constitutive rules are found in other parts of the world. Under the *bethma* system of Sri Lanka same plots are relocated between families from year to year giving everyone a piece of good and bad land. Persistence of fragmentation in many different societies is a well-recorded phenomenon and is not without rationale (Heston and Kumar 1983 ; McClosky 1975). Implementation of *bethma* however, requires negotiation and consent. The case discussed here occurred without a conscious design.

In the above cases, rights on water were defined indirectly, by regulating rights on land and other complementary resources (Sengupta 1996). By using this approach the farmers are able to define rights and regulate use of some complex attributes of water resources.

In south India and Sri Lanka tank beds are besieged with problems. They are encroached by farmers. Desilting has rarely been done. To prevent this, tank beds are state owned and rights of agricultural use do not exist. In sharp contrast, most parts of the beds of tanks in Bihar are still privately owned and cultivated. These contain excellent subsoil moisture after the rainy season and hence produce very good cash crops during winter. Besides, in the years of drought the farmers do not use gravity irrigation for command area cultivation. Instead, the tank bed becomes the major rice producing land.<sup>3</sup> It was rather by chance that I became aware of an interesting

aspect of ownership pattern of this part of land. Land consolidation operations began in the village I was studying. The farmers, after repeated lobbying, could finally impress the consolidation officers about the necessity of observing some principles. These were:

- (1) land owned by one in and out of tank bed should not be consolidated, and
- (2) the size of one's landholding in tank bed should not exceed a half of his holdings in the command area of the same tank.

Once again, this is actually a water right, though defined on irrigation related land. The two principles together ensure that each farmer has a dominant interest in using tank land as an irrigation source and not encroaching it for perpetual cultivation. The thousands of tanks of Bihar suffer from many other problems, but not the encroachment problems of south Indian tanks. Also, the farmers have succeeded in more intensive use of village land. Complex and imaginative property rights such as this are indeed essential pre-requisites for full utilisation of the participation and management capability of farmers. But because of their complexities, officials may fail to understand the logic, even in negotiations.

Probably the practice of tank bed cultivation existed in south India before the government asserted its ownership through ryotwari settlement. In some parts it lasted until recently. Ramnathapuram district in Tamilnadu was an exception within the ryotwari tract since it was earlier a zamindari settlement. Unlike in the rest of south India, here some of the customary practices continued till the time of independence. One was extensive tank bed cultivation during the dry season. The land in question was not perpetually privately owned as in Bihar. Every year the Revenue Department used to distribute temporary ownership (*patta*) for cultivation of tank beds. We learn these from official reports in the 1950s because of official objection against the continuation of this practice. After zamindari abolition the engineering wing, the Public Works Department had taken over the tanks from the revenue department. They were determined to stop the tank-bed cultivation on the plea that the department was not getting enough time to undertake desilting work. To put an end to the practice was not an easy task ; the soil produced very good cash crops. For ten years there was a tug of war between the unrelenting farmers and the P.W.D. The Planning Commission recommended high penalty tax (Sengupta 1991). Finally the government has succeeded. But what kind of success was it! To prevent the possible problems the off-season utilisation was forbidden. No amount of negotiation could succeed because the imaginative property rules were beyond the grasp of the technocrats.

## CONCLUSIONS

In this part of the world the greatest obstacles to effective negotiation between farmers and the bureaucracy is that the latter often have a warped sense of rights. While rights are primarily meant for creating desirable incentive structures (Coward 1985), the bureaucracy tend to view them in terms of regulations or disincentives. In the matter of water rights they are rather quick to attend to the negative side, and unimaginative or reluctant to attend to the positive. Preventive Acts are quickly designed, facilitating processes are not even discussed. In the final analysis this may boil down to a firm conviction that water is a public property. This belief is so deeply rooted that the bureaucracy tends to think of itself as fully informed about what is good and bad with water. Participation is talked of, but farmers are expected to do what the bureaucracy desired them to do. Negotiations in this setting can have little effect. The prerequisite of a meaningful negotiation is that both parties are willing learners.

This is not to say that leaving matters to the control of local communities is necessarily the answer. A single authority over a territory can facilitate systematic allocation, whereas division of authority into smaller territories may endanger existing networks. It may be recalled that the

Bihar and Orissa Private Irrigation Works Act, 1922 was proposed partly because of the problems of maintenance due to the partition of zamindari estates. The Act empowered the bureaucracy to function as a single authority over the whole system. That the bureaucracy did not address the allocation issue is a different matter.

The challenge today, in the context of policies favoring local governance over natural resources, is to find the appropriate balance between government coordination, and incformal laws and regulations may not be followed in practice, they cannot be ignored, as they form an essential part of the context within which local negotiations take place. At the same time, there are a range of systems through which rights have been defined and redefined, though formal law may try to freeze this into a misunderstood snapshot. The arrangements in any irrigation system constantly change--for environmental, institutional, or other reasons. To provide full scope for creative local adaptations to emerge, the state apparatus needs to be flexible in its approaches, based on better information about local conditions.

## ENDNOTES

1. Pronounced as *paa-in*. This spelling was in use in early English records. Replacement by a modern mode of spelling or by a proper English word (canal) would create some confusion in the following text. Hence, this term will be retained.
2. This local term is more famous as 'barabandi' or 'warabandi' used in Punjab and U.P., as well as in the terminology used by the irrigation departments of India. The form, 'parabandi,' which still survives in Bihar, is found in *Arthashastra*, a public administrative manual written at least two thousand years ago.
3. This flexible land use pattern is widespread in the drier western India.

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