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Tripta Wahi

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Irrigation, State and Society in Pre-Colonial India*

Tripta Wahi**

I

The paper proposes to look at water as a parallel component to land in agrarian production. It intends to explore the political economy of irrigation and water relations in agrarian production and their import both for the state and the society in pre-colonial India.

(i) Irrigation is human intervention in water for purposes of producing bio-mass. At the outset it is important to state that irrigation is distinct from water reaching any land mass on its own leading to its tillage. This distinction is important as the two are invariably confused even in the best of scholarly works. For instance, there is a clear distinction between the *sailab* (inundation) reaching the riverine areas leading to crop production and channelization of the *sailab* through human intervention to take that water to any specific area for agricultural production.

(ii) Irrigation has had vital implications both for the state and the society. We may begin by stating the obvious that for agricultural production there are two main natural resources required : water and land. Both are different in nature. While land

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** Tripta Wahi is Affiliated Fellow at the Nehru Memorial Museum and Library, and Senior Academic Fellow of the Indian Council of Historical Research, New Delhi

is by and large a fixed entity,[1] water is in a constant flux. Further, while the land once cleared and developed can be regarded largely as a constant natural resource for agricultural production, water on the contrary is a constant variable and, thereby, a factor of instability in agriculture. Variability of water produces a constantly fluctuating agricultural landscape;[2] stability in agriculture is in direct proportion to human intervention in water.[3] As the pre-modern states and societies within the Indian subcontinent depended primarily on the agrarian surplus, irrigation was at the core of their organization and existence.

(iii) In this paper the theme 'Irrigation, State and Society in Pre-Colonial India' is being explored in relation to two modes of irrigation, namely, canals and wells. These two modes have been chosen as they represent almost two ends of the scale in irrigation. It may be borne in mind that water is available in different forms, namely, precipitation, surface water and underground water and the form of water availability defines the nature of irrigation. Different sources of water require different scales of organisation and resources, technologies, structures of organisation and forms of labour for creating irrigational mechanisms and also involve different systems of usage, distribution and control. These features stand out conspicuously when dealing with the two ends of the scale.

(iv) While canals deal with running surface water, usually huge volumes covering large areas, the wells are field-specific and their source is underground. The role of the state and the society individually and in interdependence and interaction is distinct in these two modes of irrigation. Yet there is commonality in terms of right to water, labour appropriation and socio-economic and political consequences both for the state and the society.

(v) While the structure of organisation, form of labour, mechanism of usage, distribution and control emerge more clearly from the canal irrigation, rights to water stand out in sharp relief from the field-specific mode of irrigation, the wells, because contestation takes place at the ground reality level.

(vi) There is centrality of irrigation both for the agrarian production as also for the structures and mechanisms of appropriation of the surplus produce. The state itself was deeply involved in creating and controlling irrigation facilities. Indeed the water rights defined the nature of the state.

II A

For primary data for the canals the paper confines itself largely to the region covered by the British Punjab,[4] which encompassed more than two *subahs* of the Mughal empire, namely, Lahore, Multan and parts of Delhi.

(i) There was a great deal of irrigation from canals in the pre-colonial Punjab.[5] Indeed, there were canals all over the region, notwithstanding Babur's observation that there were no canals in Hindustan.[6] There is plenty of evidence to show that all rivers, streams and *nullahs*, perennial or seasonal, large or small, had canals. It can be safely asserted that topography and gradient permitting, canals were made on all running surface water. The British carried out an extensive survey of all the existing canals in the region with a view to working out their future course of action regarding canal irrigation. They even recorded remains of the abandoned canals. The exhaustive British survey forms the initial and main basis of evidence to work on the theme under discussion. However, invariably this evidence gets corroborated and supplemented by information from a variety of other sources from the earlier periods of the history of the region.

(ii) There were two types of canals, namely, perennial and seasonal. The perennial canals by definition had a constant supply of water whereas the seasonal canals worked for a few months in a year. The duration of the seasonal canals synchronised with the optimal flow of the source of running water.[7] The seasonal canals are described as inundation canals in the British sources and by modern historians, but to avoid confusion between the actual *sailab* (inundation) and the channelisation during the period of optimal flow of rivers etc. of the water through human

intervention,[8] it is preferable to call them seasonal canals. While the seasonal canals could be located anywhere on the river, they tended to be concentrated in the middling courses of the river. Their operations were directly linked to the fluctuating flows of the river. Thus, for instance, of the fifteen main seasonal canals in the Multan district, the Diwanwah, Mahmudwah and the Bahawalwah on the Satluj worked from April to October, while the Sardarwah and the Sultanwah were operational from April to November and the Kabulwah and the two Jumwah Doobabs worked from April to September. On the river Chenab, three canals were operational from April to October and four from April to September.[9] Operation timings of these and such other canals were linked to the volume of flow of the rivers/streams on which they were built. The volume of flow of the Indus river is at its lowest from October to March while in the pre-monsoon months their flow gains from the melting snow of the Himalayas[10] and the river water gets diverted by the *bunds* to the canals from where it is conducted inland. The seasonal canals existed equally on the non-perennial rivers, but they were more dependent on precipitation as these rivers did not originate in the snow-clad Himalayas. Numerous canals on the Ghaggar and the Saraswati are an instance in point.[11]

The perennial canals cover short or long distances. The constant supply of water was due to their head-works/ embankments being usually located in places where rivers debouch from the hills. The submontane region with so many streams and *nullahs* having a constant supply of water, was full of perennial canals; such canals covered short distances in between numerous streams. Thus, for instance, canals from the two perennial streams in the Dera Ghazi Khan region represent such a phenomenon.[12] Making canals covering longer distances required far greater technical expertise, management and resources. Many such canals are known to have been built in the Punjab several centuries prior to its annexation by the British. Two large canals were built by Firuz Shah Tughluq in the 1350s and at least one by Akbar and Shahjahan each. All these canals subsequently fell into disuse and were reconstructed, extended

and/or remodeled by the subsequent rulers at different points of time. Firuz Shah Tughluq built an extensive network of canals in the Sirhind and Hissar region, the dry belt in the Satluj-Jamuna interfluve, and linked these to two perennial canals with one each from the rivers Satluj and Jamuna.[13] As stated earlier, the Firuzi canals were rebuilt by Akbar; Shah Jahan too had them repaired and extended.[14] Shah Jahan also revived the Firuzi canal on the Jamuna and brought it further to Delhi.[15] The Shah Nahr on the Ravi, with its head-works at Madhopur, was built during Shah Jahan's reign. Running through the upper Bari Doab, it brought water to Lahore.[16] Ali Mardan Khan also made a perennial canal on the river Tavi; it was brought from Sodhra to Ibrahimabad, a town that he had founded and named after his son.[17] There were four more perennial canals on the Ravi; they could well be branches of the same canal. They all started from Shahpur but had different destinations, namely, Lahore, Pathankot, Batala and Biar Pati Haibatpur.[18] There was also a perennial canal from a branch of the river Aik; this served the Sialkot region.[19] Seasonal or perennial, these canals often fell into disuse and were revived periodically. Shah Jahan's Shah Nahr was rebuilt by Ranjit Singh as the Hasli Canal,[20] while the Khanwah, attributed to Akbar's period, was revived by the British in the 1840s.[21]

The names of the canals invariably indicate their origin. To cite a few examples, the Bahawalwah canal goes back to the Daudpotras of Bahawalpur, Kabulwah presumably owed its origin to the Kabul rulers who held sway over Multan for some time, the Dewanwah was made by Dewan Sawun Mal and the Shah Nahr by the Mughal rulers.

(iii) The construction of canals required technical expertise, planning, knowledge of the river regimes, topography of the area and its gradient, besides financial outlay, organisation of labour and the actual construction. By any standards the making of a canal required well-established state structures to carry out the work. However, there were notable exceptions where canals were made by private individuals/groups of individuals or villages/ communities.

In the British sources while there is a good deal of information on the maintenance of the canals, there is very little information on the processes of construction of the canals by the earlier rulers. This abundance of evidence on the maintenance of the canals is due to the fact that when the British assumed power in the region they also assumed the role of their predecessors in maintaining the canals. Till they established their own structures, they used the existing system, 'native' as they called it, with some improvisations. The near total absence of information on planning and construction of canals by their predecessors may be due to the fact that they constructed new canals entirely on their own without having to fall back on the past. Nevertheless their surveys of the existing and abandoned canals occasionally convey some good insights in to the planning processes. Also, as scattered pieces of information spread over several centuries, from different sources and contexts are pieced together and analysed, there emerges a fairly coherent picture of the structures and processes of canal-making in the pre-colonial times.

(iv) In the Mughal times, improvement and expansion of agriculture was the responsibility of the *Sipah Salar.*[22] This presumed expansion of irrigational facilities. The *Subahdar* was, in any event, the custodian of water-related structures.[23] Decision to make canals presumably could emanate from him. However, it was Akbar who took the decision to rebuild Firuz Shah's canal.[24] This may be due to the fact that the canal fell within the *Subah* of Dehli and that the Sarkar of Hissar had been conferred on his very young son Salim. In any event, the long perennial canals in view of the hugeness of the project, must assume decision-making by the rulers themselves. However, relatively smaller canals are known to have been built by powerful individuals/groups/ communities/groups of villages. Numerous examples of such canals are available from the districts of Dera Ghazi Khan, Bannu and Muzaffargarh.[25] In fact, the region had water lords.

(v) Rebuilding a canal may or may not involve any survey, but making a new canal would necessarily need reviewing

topographical and gradient surveys. Such an exercise would involve experts to work out where to situate the head-works, particularly of the perennial canals and also the route to be followed in terms of feasibility and desirability; local knowledge would be an integral part of the entire exercise. In the 1840s when the British were carrying out a survey with a view to supplying water to the eastern Majha region, they discovered that they had been anticipated on the 'very best line of country' and 'in the most favourable direction, by the traces of an old canal'.[26] The opinion that the old canal followed 'the very best line of country' indicates that the survey for the decayed canal had been carefully carried out. Any lacunae in the survey could lead to catastrophe as it happened in the case of the Nahr-i-Bihisht during Shah Jahan's reign.[27]

(vi) The work of making a canal involved several agencies and structures at multiple levels. It is evident from Akbar's *sanad* concerning the reconstruction of Firuz Shah's canal on the Jamuna that a skilled *maimar* (architect/mason), the superintendent of construction and the *faujdars*, all worked in unison to make the canal.[28] Such co-ordinated activity of various agencies and structures of the state at multiple levels would be essential for any canal-making exercise, even seasonal canals. For seasonal canals small political units/chiefdoms could undertake this activity, but much bigger states and extremely well-coordinated and cohesive activity in different places at different levels was a given prerequisite for the canal system that was of the magnitude of the canals of the fourteenth century or of the sixteenth–seventeenth centuries.

In a huge network of canals drawing water both from the Satluj and the Jamuna and linking it up with the entire Ghaggar system of rivers, Firuz Shah Tughluq himself seems to have organised this huge undertaking. He was keen to get a constant supply of water in the region of deficient precipitation without a perennial river. It is quite remarkable that prior to his decision to draw water from the rivers Satluj and Jamuna, Firuz Shah Tughluq had attempted to cut through a mountain to ensure a constantly

flowing stream in the region.[29] He did not succeed in his enterprise. This was followed by drawing water from perennial rivers on two opposite sides of the region. This huge exercise involved big labour. While Akbar, on revisiting the canal, could mobilise local labour everywhere,[30] this could not have been possible during Firuz Shah's period as much of the region was not under cultivation during this period and, therefore sparsely populated.[31] Firuz Shah, it may be safely conjectured, used his own slave labour of which he was the master. As a matter of policy he was collecting slaves and training them in different spheres.[32]

Perennial canals covering long distances were far more difficult and complex to make than the seasonal or short distance perennial canals. Perennial canals covering long distances had invariably to negotiate difficult terrain and opposing streams and torrents on the way. Thus, for instance, the Shah Nahr had to cross the torrents of Chakki and Jena on the way.[33] Technical aspects and the execution of the project could only have been handled by the state.

(vii) Constant maintenance and vigil of the canals, including regulation of water supply, were essential components of the canal system. For both types of canals annual desilting was essential; the Himalayan rivers because of the poor rock formation of the mountains, always carried heavy sediment with them. This affected both the head-works[34] and the canals as well as the sub-channels. So a systematic annual de-silting was the norm. This was undertaken during the winter months when the flow of water in the rivers was low. Even during the operational season, a constant vigil was maintained on the canals for any repair that might be needed in case any *bund* got damaged. We may keep it in mind that the *bunds* were semi-permanent structures and, therefore, vulnerable to damage with a strong and heavy flow. The stoppage of breaches required constant watch.

On the Multan canals the annual repair, clearance, stoppage of breaches and all other expenses were borne by the 'public' and this was so on almost all canals when the British assumed power.[35] While the labour was provided by the villages using the canal

water, the management was done by the state agencies. Within the villages using the canal water, work of desilting was carried out locally, but for the mouth the labour was requisitioned from villages.[36] The same norm was applicable to the main channel. However, where the canals were the property of private individuals/groups etc., their maintenance was also undertaken by the self — same agencies.

For an overview of the kind of establishment that was needed for the maintenance of the canals and the regulation of water supply, it may be noted that the British, after considerably reducing the establishment, still had 197 persons for the Hasli canal, among whom 130 persons were *beldars*.[37] In the mid-eighteenth century the British had learnt that on the extended Jamuna canal reaching Delhi, a *daroga* was stationed at every 3–4 *kos* for purposes of police and the ready repair of accidents and he had peons and *beldars* under him.[38] One thousand armed peons and 500 horses were supposedly maintained on the establishment.[39] Under Ranjit Singh even army contingents were assigned to keep vigil on the Hasli.[40] That a very close watch was maintained on the use of canal water is apparent from the fact that in 1732 an order had to be issued to the *darogas* of the Shah Nahr[41] to restrain their *gumashtas* from charging *naharana* from the village Talibabad in the Batala *pargana*. Obviously, the *gumashtas* were not aware of the nature of the grant and they had started demanding the *naharana* when the new *muzarain* were settled in the village and the canal water had begun to be used. Hence, the canal establishment was truly functional at the ground level.

(viii) There was a state establishment for the allocation of water and the *mir-i-ab* was in charge of it. The *Ain-i-Akbari* tells us that the *kotwal* in the Mughal empire was the appointing authority for the *mir-i-ab*.[42] However, Akbar, after virtually reconstructing Firuz Shah Tughluq's canal, conferred the title of *mir-i-ab* on Muhammad Khan Tarkhan, the superintendent of the work 'from first to last'.[43] He was presumably made the *mir-i-ab* for the entire canal while the appointments made by the *kotwals*

would be at a lower level. The British records show several *mir-i-abs* on a single canal.[44] The office holder was supposed to be a person of integrity who would allocate water fairly to all.[45]

Firuz Shah Tugluq also had an establishment to oversee the reach of the water of the canals that were made by him. Some *maliks* were especially designated for that task.[46] Afif's own father and uncle had held this duty.[47] It may be safely assumed that the purpose of such an establishment was to regulate the supply of water with the intent of raising accurate *naharana*. Indeed, such establishments continued through the entire pre-British period in the Punjab. Ranjit Singh, as noted above, even sent army contingents to police the Hasli canal. Where the canals were built by the non-state agencies, the distribution and supply of water was regulated by the owners/builders of the canals; the entire system of distribution was worked out to its minutest detail and the British were struck by its accuracy and equity.[48]

II B

The making of canals found reverberations in the changing social impulse of the region within the reach of the canals. They changed the social dynamics of the region that they covered. The impact of the canals both on the state and society was immediate and multi-dimensional. It was reflected in the pattern of economic activity encompassing agriculture, horticulture and trade. It got physically reflected in the construction of buildings and beautification of the existing towns as also in the establishment of new towns. Indeed, the entire canal-making exercise was symbiotically linked to the establishment of new towns, centres of administrative power and control.

The canals stabilized,[49] expanded and diversified agricultural production. They gave impetus to the production of cash crops and orchards flourished everywhere the canals reached. In and around Hissar-Firuza where only one crop used to be grown, the network of canals led to the growing of two crops.[50] Both crops began to yield abundant produce and a variety of fruits and

flowers began to be produced. Orchards and gardens were made on a large scale and they were made both by the Sultan and the nobles. Similarly Fathbad was established with a network of canals. The network of canals alongwith the newly created centres of power transformed the entire region. Agriculture improved dramatically both by way of variety and also production of high quality cash crops, besides expansion of the area under cultivation. The region began to yield such huge revenues that Firuz Shah Tughluq deemed it appropriate to convene an assembly of the Muslim learned and the devout on the issue of the revenues being generated by the canals.[51] The assembled personages gave the opinion that since the canals had been built entirely with the labour and expenditure of the Sultan, he was entitled to *haqq-i-shurb*, that is, one-tenth of the revenue so generated. Similarly, he founded and brought numerous villages in his *imlaq* (personal property) by bringing them under cultivation.[52] The revenues collected from the *naharana* and the *imlaq* went to his personal treasury as distinct from the *baitulmal* (public treasury).[53] Similarly, the founding of Ibrahimabad[54] with a perennial canal from the river Tavi by Ali Mardan Khan during Shah Jahan's reign translated itself into an analogous transformation of the area. He made in it a garden rivaling the Shalimar garden of Lahore, constructed numerous buildings and patronized men of learning. The place became famous as a centre of learning and good handwriting.[55] There was a substantial increase in the population of the area and Shah Jahan gave in *inam* a village to Ali Mardan Khan and his family for the maintenance of the canal.[56]

When the British took over the Sikh possessions, they found that they could not substantially repair or enlarge the Hasli canal as cultivation extended right up to the brink of the canal.[57] With the extension to Delhi of the Firuzi canal on the river Jamuna under Shahjahan, channels reached innumerable villages around the capital city of Delhi and with these channels orchards came up all over the region. We may also recall that Akbar had fruit trees planted all along the banks of the reconstructed Firuzi canal.[58] Canals defined the landscape, the social habits and the milieu through prosperity and patronage. The canals, and for that

matter all irrigational facilities, also encompassed within their ambit of impact religious institutions and religious ambience of the region. With the revenues generated by the canal system, Firuz Shah Tughluq bestowed extensive patronage on the Muslim divines and learned men.[59] It is a distinct possibility that the family of the *pirzadahas* of Dhatrat, from whom the document 'A Canal Act of Akbar' was procured in the nineteenth century, goes back to Firuz Shah's patronage.[60]

The seasonal canals during their dry period would become easy footpaths for the people to travel by instead of having to traverse thorny and bushy wayfares.[61] Further, most canals were navigable for shorter or longer distances. It is remarkable that in the Multan region thirteen out of the fifteen main seasonal canals were navigable.[62] Akbar's clear instructions for the restructuring of the Firuzi canal to Hissar Firuza mention that the canal must be navigable; small boats could ply even on very small canals. These canals thus provided a network of communications to various regions and sub-regions and connected them with larger networks of communications. With the expansion of agrarian production and especially of cash crops, increase in trade would be a natural corollary. The network of canals by being navigable would facilitate trading activity. Trade too would benefit both the state and certain sections of society. Most of all, canals provided some safeguard against famines.

II C

The canals generated huge revenues for the state. Firuz Shah's personal treasury getting filled with immense wealth accruing from the canals directly or indirectly has been noted above. Increase in agrarian production and greater emphasis on the production of cash crops inevitably enhanced the state revenues and gave impetus to trade. Also there was *naharana* on the canal water. Increase in revenues came not merely from substantially enhanced agrarian production and the *naharana*, but also through the ferry tax. With canals being navigable, boats would be a constant source of income to the state. Increase in trade too would

generate additional revenues through taxation. It is amply evident that there was a close and multi-dimensional relationship between the state, society and the canals.

The relationship between the state, society and the canals is best summed up in the preamble to Akbar's *sanad* regarding rebuilding of the Firuzi canal. We may let it speak for itself:

> My government is a tree, the roots of which are firm in the earth. In acknowledgement of God's mercy in establishing this great empire, my desire, purer than water, is to supply the wants of the poor; and the water of life in my heart is larger than the sea, with the wish to dispense benefits and to leave permanent marks of the greatness of my Empire, by digging canals, and founding cities, by which too the revenues of the Empire will be increased.
>
> *God says, sow a grain, and reap sevenfold. My desire is to reap one-hundred fold that my crown may become wealthy, and the zamindars may obtain double returns.*[63]

Remaking the canal and making water available is the 'best purpose to which my wealth can be applied'. Akbar goes on to add:

> For God has said, from water all things were made. I consequently ordain, that this jungle, in which subsistence is obtained with thirst, be converted into a place of comport, free from the evil…
>
> *'Behold the power of God, how he brings to life land that was dead'.*
>
> Truly a canal is opened…
>
> He (Akbar) is such a king, that from the canal of his liberality, the garden of the world is green all the year round…[64]

Akbar acquired name, fame, resources and a stable social base in the region. He was also concurrently hoping for a reward after

death as is stated in the preamble, 'The seeds sown in this world are reaped in the next'.[65] This perennial canal was extended further to Delhi during Shah Jahan's reign. It reached thousands of villages around the capital. Except for the 'reward in the next world', history is testimony to the fact that the canal yielded all the multi-dimensional results anticipated by Akbar. According to a proverbial expression current in Delhi in the mid-eighteenth century, the net revenue from these canals was reckoned equal to the maintenance of 12,000 horses.[66]

II D

The material benefits accruing to the state and different sections of society from the making, remaking and maintenance of canals came from the labour provided mostly by the villages on the canal routes. With the exception of Firuz Shah Tughluq, who seems to have used slave labour on a large scale, the labour for canals was provided by the superior land-holding sections on the canal route. The labour supplied by the superior land-holding sections would inevitably be comprised of tillers, artisans, service and menial labour castes, *sepi* as they were called in the Punjab, who were tied with agricultural production during the period under study. Among those whose labour produced material wealth, only a small section of the tillers of the soil might have gained marginal access to and benefit from the canals, the remainder either had no access to or use for the water their labour made available to others. Their labour generated increased surplus through stabilization of agriculture, expansion of the area under cultivation and production of superior/cash crops which supported the state and the dominant sections of society.

III A

The field specific mode of irrigation, the well'[66A] known by different names in different parts of the Indian subcontinent, was extensively used and still continues to be used within the entire length and breadth of the subcontinent. While the prevalence of well-irrigation and the state policy of encouraging sinking of

wells, the history of various technical devices, their dissemination, efficacy and costs and their impact on productivity have received attention from historians, the issue of rights and mechanisms of sinking and repairing wells largely remains a desideratum in historical writing on the subject. This may partly be owing to the fact that despite serious attempts by a few historians,[67] water rights have substantially remained outside the discourse of the history of the agrarian system in the subcontinent.[68] Also the fact that being field-specific mode of irrigation, the wells may have been assumed to be part of the land system itself. The issue emerged clearly and powerfully when, during the course of my research on irrigation and social relations in the Punjab, I came across a document entitled the 'Right of Tenants to Sink Wells'.[69] The document defined the issue itself.

(i) There were proprietary rights in wells. The ownership of the well belonged to the individual, family, community, authority depending upon who had sunk the well. The well could also be owned by institutions such as temples. The state-sunk wells belonged to the state. The property in wells was inheritable and alienable; it could be leased, rented, mortgaged or bestowed. Each well had a title plate indicating its ownership. It is precisely owing to the title plate of the well that we have rich epigraphic evidence on the subject. Each well was known either by the name of the individual / caste / community/ authority who had sunk it or by the purpose for which it was sunk. If the well was sunk outside of the state authority, permission was required. The tillers of the soil had no right to sink wells almost till the end of the nineteenth century.

There is varied and substantial evidence to support each one of the points made in the preceding paragraph. It comes from different sources from different parts of the subcontinent and is spread over nearly two millennia. There is a remarkable continuity and convergence in the entire range of evidence from different sources, places and time. The British settlement reports are replete with information on each one of the issues outlined in the preceding paragraph and several additional issues pertaining to

wells and irrigation from wells. Once the issue gets defined through the British records, already known and existing evidence acquires a new meaning and yields information and throws light on the rights relating to wells. This is true of all genres of evidence: epigraphic, documentary and literary.

The ownership of the irrigation wells was not subsumed under the land-holding. It was a property in its own right and was distinct from the land rights of a land-holder. An irrigation well owned severally watered several land-holdings and there were defined shares in its water. Even an individually owned well serving only one estate was a property by itself, an entity distinct from the land-holding.[70]

The British government recorded extensively and meticulously property in wells besides the land-holdings during the course of making and revising land settlements in different parts of the Punjab, mostly in the second half of the nineteenth century.[71] These rights were recorded in view of the litigations that invariably followed any land settlement. In some districts it was noted that while litigation in severally-owned wells was frequent, it was not totally unknown in the individually-owned wells.[72]

(ii) In view of the information in the British records regarding property in wells and the fact that water rights attached to particular plots of land were often enumerated in the deed on the occasion when they changed hands by sale or transfer,[73] the information regarding wells in the documents from an earlier period of grant or sale of land assumes a new meaning. Thus, for instance, in a collection of 52 documents[74] from the Mughal and Sikh periods covering the time span AD 1695–1857, there are seven documents that deal with the substantial question of grant, sale or lease of land[75] as distinct from grant of proceeds from land, their confirmation subsequently or issues relating to or emanating from such grants, sales or leases; one of these seven concerns culturable waste.[76] Of the six documents dealing with the developed land, five contain explicit information on the wells,

information which is significant from the point of understanding property in wells as an entity distinct from the land in which they stood. Document no.1, coming from Aurangzeb's reign, dated AD 1696 deals with a certain amount of land being given on *ijara*, land 'irrigated by well'.[77] The subject matter of the Document No. II, dated April 1711 dealing with the sale of an entire village with 'valid proprietary and exclusive rights' records that this sale was 'with all its rights *and including*, *in full*,[78] fruit-bearing and non-fruit bearing trees and one *pucca* well of sweet water'.[79] Document no. IV of January 1738, registering the sale of land comprising of the entire village, does not specifically refer to any well but qualifies it with 'each and every right'.[80] However, the document no. V of March 1738 dealing with the grant of a village 'with all its cultivated and uncultivated and, inhabited and unihabited land', adds that this was '*together with* all its fruit-bearing and non-fruit-bearing trees and one pucca well'.[81] Similarly, the document no. XXVII of October 1789 records the grant of twenty-four *ghumaons* of land '*together with* a well, and an orchard'.[82] Document no. XLIV of 1823 recording Ranjit Singh's *dharmarth* grant goes beyond all earlier documents in terms of information regarding the well in the document. The grant of the land is captioned in Gurumukhi as 'A well has been granted'.[83] The document records that 'some land together with a well, with a single Persian wheel, named after Amin Chand Thalwala' was granted in *dharmath* to the *mahant* of Pindori.[84] This alone validates all the points made in the preceding paragraphs. The fact that land grants / sales were being made 'together with' trees and wells is important in the context of the theme under discussion. There were distinct rights on trees and, therefore, the grant of trees was also specifically recorded.[85] For the same reason the grant of wells was being separately recorded and one well was recorded with its type and name. From another set of documents coming from Akbar's period from Vrindavan-Aritha there are similar references; there is one reference to a well by name[86] and another to a plot 'including well',[87] and yet others to trees.[88] In a document from the family archives of a *madad-i-maash* assignee in the village Nandla in the *pargana* and *subah* Ajmer, the mention of both the lined (*Chah-i-Basta*) and

unlined well (*Chah-i-Kham*) would undoubtedly fall within the category of the wells within the Pindori documents.[89] From south India too there are records of land being sold with wells. There is a reference to 3,000 *kuli* of land with five water levers being sold by the villagers to Ukkal during the period of Rajendracola Deva I.[90]

Our reading that land and well rights are treated as distinct entities in all these documents receives unambiguous support from the evidence coming from the reign of Firuz Shah Tughluq (AD 1351–1388). Two of Firuz Shah Tughluq's letters/orders in the *Insha-i-Mahru* deal with the subject of grant/its confirmation to two *khanqahs*. The first one reads 'the wells of the khanqah and of the neighbourhood of the Nahrwala town, which are related to the khanqah and for various reasons been under the control/right of Sayyid Muhammad were being given/confirmed' (the *khanqah* and the wells).[91] It was being ordered that all officials of Gujarat, from the *wali* to the *karkun* were to regard the *khanqah* and the wells as under the right/control of Saiyyid Muhammad.[92] Similar distinction is made in the next document regarding the *khanqah* of Kodia where rights over 'wells and land were granted'.[93]

There is also ample epigraphic evidence on the ownership of wells and rights in wells. This evidence exists precisely because each well carried a title plate and some of these title plates have been recovered, rescued and deciphered as inscriptions; many of these are from step-wells or otherwise large wells constructed by royalty. But there are a few inscriptions dealing with wells sunk by private individuals/communities, albeit those are also from fairly big wells. A close scrutiny of the entire *Epigraphica Indica* series is likely to yield more extensive evidence on the subject.

One of the earliest known inscriptions from a well is on a massive stone and it is ascribed to the first century BC.[94] It is from Ghosundi in the Udaipur State. From AD 644 onwards there are numerous inscriptions from Rajasthan pertaining to different kinds of wells that have been used and noted by B.D. Chattopadhyaya. They are given in a tabulated form

indicating chronology, sites and types of wells.[95] Similar kind of information is available for other parts and dynasties too.[96] A few examples may be cited; a Chalukya inscription of the Vikrami Samvat of 998 records the construction of a well[97] and some of the Pallava inscriptions give similar and more information about wells.[98] There is a remarkable continuity in the inscriptions from wells from the Sultanate and the Mughal periods. One of the earliest inscriptions from the Sultanate period is regarding the restoration and construction of a well by Qutlugh Khan in Bengal 'in the days of Iltutmish'.[99] There is an inscription recording 'the clearance and re-digging of a well' in Bayana in Bharatpur state from Balban's period under the governorship of Nusart Khan; this was done 'as scarcity of water was causing trouble to the people'.[100] The inscription was found in a well when it was being re-excavated.[101] From Ghiasuddin Tughluq's reign there is a bilingual inscription from Petlad in Baroda recording the repair and completion of a well and the grant of 20 *kubhas* of land for its maintenance.[102] There is an inscription which is preserved in the Delhi Museum of Archaeology but which was originally found in a ruined well at Humayunpur near Hauz Khas. The inscription is engraved on a marble slab and records the building of a well named Chahi Khass during the time of Sikandar Shah Lodhi when Munnavar Beg was the governor of Delhi.[103] A Persian inscription of AD 1584 from Bhonsara in the 'Gwalior State' records the construction of a well by the order of the Mughal emperor Akbar.[104] There are several inscriptions recording the construction of big wells by the Kachchwahas, Sisodias and other Rajput chieftains during the Afghan-Mughal period; *Bhogidas ki Bavadi*[105] and the *baoli* at Joda Raya Simha are two such examples. The latter was built by Purohit Chakrapani and his sons during Salim Shah's time.[106] Among the numerous extant wells, the best preserved example is of a well built by the Muttaraiyar family, a subordinate of Dantivarman. The well is known as Marpidugu-Perunginaru well after the title of the Muttariyar family.[107]

(iii) While most of the wells were constructed by powers that be, there are several instances of individuals and communities

constructing wells of different types. Thus, for instance, the Dabok inscription of AD 644 refers to the individual ownership of the *araghatta* fields. Also the Kekind inscription of AD 1143 refers to individual ownership of the *arghatta* fields.[108] Four centuries later, a *baoli* called Kalibaya near Khandela was constructed by one Agrawala Vania Prithviraja of Kolha and his son. The construction work was begun in *samvat* 1575 (AD 1518) during the reign of Sultan Ibrahim Lodhi and it was completed seventeen years later (*samvat* 1592) during the reign of emperor Humayun.[109] An inscription built into the wall of a *baoli* at Gyaspur in Pratapgarh records that the well was constructed by the Banjaras in the *samvat* 1684 (AD 1627) in the time of Rawat Singha. Together with Nayak Gira of the Banjara caste seven other family names are mentioned and one of them is from Agra.[110]

For individuals and communities to have sunk wells, permission to sink would have been acquired from the state. Presumably permission would have been acquired from the rulers whose names appear on the title plates of the wells. In the case of the Kalibaya *baoli* the names of two rulers appear, one of Ibrahim Lodhi during whose reign the construction work was begun and the other of Humayun in whose reign the work got completed. Presumably permission was acquired again from the new ruler with the overthrow of the dynasty in whose rule the construction had begun. Also because it was a huge work, renewal of permission would have been essential with the change of the ruling dynasty. Indeed, no well, particularly of such huge dimensions, could be constructed without the royal permission.

III B

(i) Two of the earliest pieces of evidence on the right to sink wells come from the seventh and eighth centuries from the Pallava charters gifting land to Brahmadeyas.[111] Besides the land, those who received land were also given the right to sink wells 'small and big' in the lands granted to them. The Anabil plates of Sundracola also give the donees the right to sink wells.[112] These rights were qualified by certain restrictions.[113] Obviously, the state

controlled the construction of wells. In fact, there was double control over the construction of masonary wells. Besides controlling the right to sink wells, the state also controlled the right to the usage of the burnt bricks. While the Tanjavir plate gives the right to use the burnt tiles, Chitrur Plates give the donees the right to the usage of the burnt bricks for houses and mansions.[114] In view of these controls, it is not surprising that most irrigational facilities, including the *arghattas* in Rajasthan emanated from the State. Obviously the right to sink wells rested with the state and it granted that right to others.

(ii) The state maintained a close watch and control over the wells through various administrative mechanisms. Thus, for instance, the formal sanction of the village governing bodies for sinking wells (particularly a large well) through the payment of a small cess called *ulliya-kuli* retained the control of the ruling power.[115] In south India there were inspectors of wells called *kupa-darskas*.[116] In Rajasthan there was a tax called *kosya*, presumably a tax on the *kosas* or leather buckets used for irrigation.[117] Also several cesses were levied on the *araghatta* fields; sometimes parts of the arghatta fields were earmarked for certain purposes.[118] Disputes in wells could receive attention from the rulers themselves; Maharaja Ranjit Singh's order to stop the sinking of a new well on another's land is on record.[119] At the village level, the *panchayats* could grant the right to sink wells.[120] While a cess was charged in south India for permission to sink wells, in the Punjab a *saropa* had to be given for sinking a well.[121] Even repair of wells was regulated; in some areas shares of repairs were defined,[122] in others applications were made to authority seeking permission to repair wells.[123] In south India there is ample evidence of village and supra-village bodies supervising irrigation facilities, including wells.[124] Firuz Shah Tughluq addressed himself to the entire hierarchy in Gujarat from the *wali* to the *karkun* regarding the grant of wells to the *khanqah* mentioned earlier. In the Multan region of the Punjab, and even elsewhere, the state was fully cognisant of the state of wells in the nineteenth century and so was it in different parts of Rajasthan. The issue will be discussed a little later.

It is apparent that there were well organised structural mechanisms of controlling even field-specific mode of irrigation. They might have varied in form in different regions and at different times, but the systems of control was maintained by the state throughout the entire subcontinent. These systems of control could have been maintained directly or in partnership with different levels of authority/power/dominant groups as the situation would have required at any given point of time.

IIIC

The tillers of the soil had no right to sink wells. While it is understandable that they could not have had the means to construct masonary wells, what is remarkable is that they did not have the right to sink even a *kachcha*[125] well, which, in greater part of north India was 'no more than a hole dug in the ground to the depth of a few feet within a diameter of three to four feet'[126] with stake/wattle but invariably without it. A *kachcha* well is sunk down low enough to ensure a good supply of water. The *kachcha* wells are not renewed or repaired, but have to be cleared out.[127] It is significant that the tillers of the soil had no right to sink even a *kachcha* well which only required their family labour and a small sum of money. Indeed, they were debarred from sinking wells.[128] The vital import of this denial of the right to the tiller of the soil and its *raison d'etre* would emerge in the following paragraphs. Suffice it to say here that the economic irrationality ascribed by Frykenberg to the villagers of lower standing for borrowing money not for improving productivity of land, but for supporting 'unproductive ceremonials and extravagances' is poignantly misplaced;[129] they did not possess the right to improve the productivity of the soil on their own. In fact, they were penalised for doing so as it would emerge from a judgement of the Agra High Court in 1867.

The right to sink wells was a highly prized right and it was closely guarded by those who possessed it. Sinking wells was one of the privileges of the superior land-holding class and the cultivators were debarred from that privilege.[130] It is repeatedly

underlined in the customary law digests, settlement reports and the tenancy documents from the Punjab that the tenants did not have the right to sink wells. It was emphatically stated that the 'right of tenants to sink wells is recognised under no circumstances'.[131] In a report of the Law Committee of the *Anjuman-i-Punjab*, it was noted that in certain adverse circumstances the owner of land could be compelled by the need of securing tenants at any cost, including 'allowing them to exercise certain rights almost resembling proprietary rights over the land'. The *Anjuman* unanimously objected to the use of the expression 'almost resembling proprietary right' and wished it to be substituted by an expressedly unambiguous statement that the tenants never acquired the right 'to sell trees or sink wells or transfer the land'.[132] It is apparent that the right to sink wells was a proprietary right. In one of the exceptions to the prevailing customs in the common holdings in the Punjab, sinking wells has been mentioned 'as exercise of one of the powers attending absolute ownership'.[133]

Control over rights to sink wells gave control over the tillers of the soil and the untouchables. Historic denial of rights in wells underlay untouchability; they were not allowed to draw water from the wells used by the upper-castes. The untouchables were provided with wells much beyond the village boundary limits. Such wells as were specifically located for them were known as *parai-kulam* in south India.[134] Control over their labour followed control over the wells. As for the tillers of the soil, they were denied the right to sink even a *kachcha* well because rights in land accrued as a consequence of sinking wells. If cultivators' hold over their land became secure, it would weaken the control of the land-holding sections over them and thereby their control over the surplus.

The British government went in a tizzy following a judgement of the full bench of the Agra High Court in July 1867 whereby the court upheld the eviction of an occupancy tenant on the ground of his having sunk a *kachcha* well without the prior permission of the landlord.

The case which went through several stages of appeal was finally decided by the full bench of the Agra High Court on 20th July 1867.[135] The landlord's having ejected the tenant for having sunk a *kachcha* well without his prior approval was upheld by the full bench. It was argued that 'the act of digging a well or planting trees may not necessarily imply or assert a proprietary right in the land in which the well is dug or the trees are planted, yet by the general law of these provinces, a ryot even having a right of occupancy being prohibited from doing certain acts, such as planting of trees or digging of a well, without his landlord's consent, makes himself liable to ejectment'.[136] It was further argued that 'the beneficial nature of an act is not a justification of it, if it be a breach of contract'. Further, 'A condition not expressly made between the parties to a contract, may nevertheless be attached to such contract by custom.' It concluded '*The court must recognise the law as it is found to exist, so long as it shall not be superseded by positive law*.' As for the penalty, it concluded, '*the unwritten law of the country must be our guide*. Were we free to legislate upon the subject, it might seem to us equitable to look to the amount of injury actually caused to the landlord by the act complained of, and to grant him relief and compensation, whenever possible, otherwise than by the ejectment of the tenant. But it is not contended or proved that any other penalty than forfeiture of his holding for such a breach of contract is sanctioned by the law of these provinces'.[137] The case was decided with costs. The tenant by sinking the well had challenged the existing social relations of production.

The judgement created furore in the Legislative Council in its meeting held to discuss the Oudh Rent Act. That an act of improvement such as a 'mere hole dug in the ground' could lead to an occupancy tenant to lose his land was baffling for the members of the Legislative Council. They regarded the fact of digging of a *kachcha* well leading to the forfeiture of his occupancy rights as 'truly extraordinary'.[138] They failed to understand the implications of the issue for social relations.

IV

Indeed, primary proprietary rights existed in water. In some areas in the Punjab it was held that 'property exists essentially in water'.[139] The land-holdings were known by its water, and the estates irrigated by wells, were defined by the nature of their wells.[140] In fact, superior rights in land accrued as a consequence of rights in water.[141]

It is evident from the judgement of the Agra High Court that the act of sinking a well was deemed an assertion of proprietary rights in land. In fact, superior rights in land and/or its produce accrued as a consequence of sinking and/or repairing wells. Although the tillers of the soil did not have the right to repair and sink wells, yet there is ample evidence to show that they did repair/sink wells. Presumably they did it with the permission of the *malik* or the ruler of the day. Under whatever circumstances the hereditary cultivator sank/repaired a well, the fact of his having done so gave him some rights in the land which were qualitatively different from and were superior to his right to hereditary cultivation. Not only were such cultivators allowed to remain in 'undisturbed enjoyment of their holdings', it was understood that by allowing a cultivator to sink a well at his own cost, the proprietors 'tacitly permitted him (cultivator) to get a title to cultivation even against themselves'.[142] Sinking a well could make him a joint proprietor of the land in which the well was sunk.[143] All kinds of exceptions to the existing rules and usages were permitted where a cultivator had sunk a well.[144] With the sinking of a well the cultivator apparently became a proprietor.[145] It is noteworthy that those hereditary cultivators who had repaired/sunk a well invariably went beyond seeking the occupancy rights in the Punjab when the British made their first regular land settlement in the early 1850s; they sought *malkiyat* rights. Even when the entire question of occupancy rights in the Punjab was reopened by Edward Prinsep,[146] and he reversed three-fourths of the occupancy tenancies from the earlier settlements, 1,253 occupancy tenants were raised to the superior status of proprietorship.[147] This was done with mutual consent from both

sides owing to the tenants having repaired/sunk wells. After repairing wells, even some untouchables acquired superior rights under Prinsep's settlement. Under Maharaja Ranjit Singh new tenures such as *chakdar, siledar, taraddakar, adhlapidar, kasurkhawar* developed arising out of sinking and repairing wells in the lands belonging to others. These tenures gave them rights in land and/or its produce.[148] The nomenclature of these tenures is derived from the well itself; *chak* is the wooden frame at the bottom of the well and the *siledar* is derived from the word for brickwork of a *pucca* well.[149] There were nuanced differences between and within these tenures depending upon the circumstances and conditions under which a particular well was sunk, but all these tenures were inheritable and alienable.[150] It would be worth examining whether such tenures developed in other regions too where the state towards the end of the eighteenth century was attempting to get the trading communities, as in the Punjab, to invest money in repairing and sinking wells.[151] It is quite remarkable that even after the landlords had acquired indefeasible proprietary rights in land under the British, they were apprehensive that by sinking wells cultivators would acquire superior rights in land. They put up stiff resistance to the attempts by the British government to give hereditary tenants right to sink wells. In the Punjab, they were not agreeable to tenants being given the right to sink wells unless they 'put the proprietors' name on the title-brick or sign a written agreement with the proprietor to prevent the possibility of the latter ever losing his right of property'.[152] As late as 1911 in the United Provinces they were demolishing the masonary wells constructed by the tenants[153] notwithstanding the fact that the tenants had been granted that right by the British government.

V

Tight control over the right to sink and repair wells was an essential component of the social relations defining access to means of production with the aim of controlling and meticulously regulating the release of the productive forces.[154] This introduced a fundamental contradiction between the interests of the ruling

powers to enhance their resources and simultaneously uphold the social relations which controlled and regulated the release of productive forces. The nature of the state in the last resort would be defined by its policy on water rights.

With the centrality of irrigation and of water rights in agrarian production and generation of surplus, it is not surprising that water was an essential component in the system of revenue assessment and classification of cultivable land under the Mughals, a part of which the Mughals had inherited from their predecessors. Akbar's classification of cultivable land into, *polaj, parauti, chachar,* and *banjar* was based upon continuity or intermittence in cultivation; the *polaj* land was under continuous cultivation with successive crops and was never allowed to remain follow while *parauti* was left out of cultivation for sometime so that it could recover its strength.[155] The *chachar* land was that land that had remained follow for three or four years while the *banjar* had remained uncultivated for five or more years.[156] Water/irrigation was the basic criterion underlying this classification based upon the periodicity of cultivation. For the *chachar* and *banjar* categories excessive rains and inundation are explicitly given as causes for the land falling out of cultivation both in the river belts and the submontane regions. It is apparent that these two categories of land are dealing with inundation (*sailabi*) and rain-based (*barani*) cultivation; both *sailabi* and *barani* were unirrigated lands. As distinct from the *chachar* and the *banjar* categories, the *polaj* and *parauti* were under continuous/nearly continuous cultivation and continuity and stability in agriculture was in direct proportion to human intervention in water. It may be safely inferred that irrigation underlay basic classification of cultivated lands for calculating 'proportionate dues of sovereignty' under Akbar. Within the irrigated territories, that is, the *polaj* and the *parauti*, there were soil related subcategories.[157] The Mughals had inherited these categories from their predecessors, the Sur dynasty.

Indeed, water as an independent and parallel component to land in calculating 'the dues of sovereignty' has been explicitly

enunciated in the *Ain VII* on *Khazandar*. We may quote Abul Fazl for that :

> And because the conditions of the royal state and prerogative vary in different countries, and soils are diverse in character, some producing abundantly with little labour, and others the reverse, and as inequalities exist also through the remoteness or vicinity of water and cultivated tracts, the administration of each state must take these circumstances into consideration and fix its demands accordingly.[158]

That water and irrigation formed an integral part of the system of revenue assessment is apparent, but how they were factored in assessment awaits research. It is a distinct possibility that administrative / fiscal units / rates could have revolved around specificities of water/irrigation. It may not be out of place here to mention that the two divisions of Birun-i-Panjnad (outside of the rivers) in the *Subah* Lahore[159] make sense only in relation to water related factors. Separated by a large physical distance, with one located to the west of the river Indus and the other to the east of the Satluj, these two divisions could not have formed one administrative unit;[160] their nomenclature suggests that they represented one category in relation to running surface waters of the Indus system of rivers of the *Subah* of Lahore. Under Ranjit Singh the well was taken as a unit of revenue-yielding capacity of the land that it cultivated. There are numerous documents extant from Ranjit Singh's period which refer to grants of wells of varying values as *dharmarth* or for other purposes.[161]

Indeed, irrigation, through its implications for agrarian production and generation of surplus, had wide and multi-dimensional ramifications for the socio-political structures, politics and polity of any region/state. Even a brief study of irrigation on the river Ghaggai in the first half of the nineteenth century reveals that there were disputed claims by different villages, zamindars and chiefs over waters of different streams and torrents, over right to construct *bandhs* or embankments at different points on the river and/or to make cuts/channels at different points.[162] There were rights even over the superfluous

water and winter freshets. These rights were both defined and contested and they generated tremendous social tensions between villages and chiefs and invariably led to violence and even loss of life. Disputed claims and their resolutions reveal arena of social tensions and conflict and the nature and role of different institutions and levels of authority within that. Dynamics of larger political situations had direct bearing on these contestations and their resolutions; fluid political situations accentuated contestations leading to emergence of newer rights, while larger and more stable political entities invariably intervened to determine, regulate and also change these rights. History of each region and sub-region awaits study with water as an essential component in it.

At the higher political level, the politics of revenue assignments to the ruling elite would be influenced by the level of development of irrigational facilities or their absence; assignees with less developed irrigational facilities are known to have paid a great deal of attention to developing irrigation works in their assignments. In fact, the state itself would have had a great stake in creating and improving irrigation facilities.

It were not only the Delhi-centric big and powerful states that devoted attention to canal-making; this was the accepted norm every where within the subcontinent. Several centuries prior to Akbar and from a different part of the subcontinent, is a Tamil poet's advice to a Pandya king on the subject of canal-making.

> Oh! great king, if you crave wealth in the next world
> and yearn to vanquish other kings who protect this world
> and thus to become the greatest among them
> hearing songs of praise to your glory,
> listen to me to learn what deeds guarantee these rewards.
> Those who give food give life to living beings
> who cannot live without water.
> Food is first for all living things, made of food,
> and because food is but soil and water mingled together,
> those who bring water into fields
> create living beings and life in this world.

Even kings with vast domains strive in vain, when their land is dry
and fields sown with seeds look only to the sky for rain.
So Pandya king who makes dreadful war, do not mistake my words:
quickly expand watery places that are built to bring streams to your land!
For those who control water reap rewards
and those who fail cannot endure.[163]

Akbar's preamble to the *sanad* quoted above is reminiscent of the Tamil poet's advice to a Pandya king given several centuries earlier. It is remarkable how the two concur in their concerns; both show people-centric concerns, but in the last resort the interests of the rulers/state underpin their views on bringing 'streams' to the fields. While one views 'control over water' essential for survival of political powers, the other eyes 'hundred fold' increase in agrarian production and consequent increase in the imperial revenues. Indeed, rulers have always been deeply involved in large scale irrigational activities and structures, systems and rules concerning their use have been in place for centuries before Akbar. As long back as Kautiliya's time, the Head of the Department of the Settlement of the Countryside was meant to 'cause irrigation works to be built with natural water sources or with water to be brought in from elsewhere'.[164] There were rules governing any one walking out of the joint building of an irrigation work and[165] there were different water-rates for different kinds of irrigation facilities.[166] Not only was the administration supposed to keep record of water-works, but their regular inspection was also mandated.[167] Indeed, there are specific regulations given in The *Arthasastra* regarding control over ownership of irrigation works, usage of water, damage to the works or to the fields through which they pass, nature of revenue obligations for those making irrigational works, rules concerning renting, mortgaging and sale of these facilities and punishment for violation of those rules.[168] If from *Arthasastra* we get insight into the systems, structures and rules concerning irrigation, from *Kaushiksutra* we get a glimpse of the rituals and ceremonies connected with the opening of a canal. When 'a canal was opened gold plate was laid at the mouth of the channel… and a frog was

tied...'[169] Indeed, information is forthcoming from all genres of sources, regions and times. It is squarely staring us in the face to be picked up, studied and integrated within the discourse of the history of the Indian subcontinent.

The centrality of irrigation both for the state and the society is writ large on the face of Indian history, but what is not so apparent is the nature of water rights. In fact, the nature of rights of access to water is hidden from the view; there was inequitable access to water in the pre-colonial times and this was an essential component of social relations.

Endnotes

[1] The rivers emanating from the Himalayas were prone to frequent changes in their courses and, therefore, the riverine belt of these rivers accordingly remained susceptible to fluctuations.

[2] See, Tripta Wahi, 'Water Resources and the Agricultural Landscape: Pre-Colonial Punjab', *Five Punjabi Centuries*, Indu Banga, ed. Delhi, Manohar Publishers, 1997, pp. 280–82.

[3] *Ibid*., p. 282.

[4] It covered ten degrees of longitude and seven degrees of latitude, namely from 69.2°E to 79°E and from 27.4°N to 34.2°N.

[5] For a large-scale prevalence of canal irrigation in some other regions, see, Irfan Habib, *The Agrarian System of Mughal India 1556–1707*, Second Revised Edition, New Delhi, OUP 1999, pp. 33, 38–39 and James Heitzman, *Gifts of Power : Lordship in an Early Indian State,* New Delhi, OUP 1997, pp. 37–47. It is well known that there was extensive irrigation from canals in Kashmir. See Francois Bernier, *Travels in the Mogul Empire* Archibald Constable tr,, a revised and improved edition based upon Irivine Brock's translation, Delhi, OUP 1972, pp. 396–97, 399, see also p. 454 for channels in Sindh.

[6] *Memoirs of Zehir-ed-Din Muhammed Babur,* written by himself, translated by John Leyden and William Erkine, Lucas King, ed. London, Longman 1921, II, pp. 205–6.

[7] For flows of the Indus rivers, see, 'The Indus and its Tributaries', *Mountains and Rivers (21st International Geographic Congress India, 1968 Inde)* B.C. Law, ed. Calcutta, National Committee for Geography, 1968, pp. 351–52; see also, Tripta Wahi, *op.cit*., pp. 268–69.

[8] For such a confusion, see, for instance, H.C. Verma, *Harvesting Water and Rationalizaton of Agriculture in North Medieval India, 13–16 Centuries,* Delhi, Anamika Publishers, 2001, p. 23.

[9] 'Canals of the Mooltan District', *Selections from the Public Correspondence of the Board of Administration for the Affairs of the Punjab*, Lahore 1852, I, pp. 1–13.

[10] See, 'The Indus and its Tributaries', *op.cit*. pp. 351–52 and Tripta Wahi, *op.*cit. pp. 268–69.

[11] J.D. Cunningham, 'Report of the Irrigation of the Gugur and the Sursootee', *Selections from the Public Correspondence of the Administration for the Affairs of the Punjab*, 1854–55, II, No.XXIV, pp. 383–469.

[12] F.W.R. Fryer, *First Regular Settlement of The Dera Ghazi Khan District in the Derajat Division (1869–1874)*, Lahore 1876, nos. 163–67, pp. 59–60. See also, B.R. Grover, 'The Extension of the Irrigation System and the Administration of the Canal Works in the Punjab during the Mughal Age, 1556–1707 A.D.,' *Land Rights, Landed Hierarchy and Village Community During the Mughal Age, Collected Works of Professor B.R. Grover*, ed. Amrita Grover and et., Delhi 2005, I, pp. 218–19, 225.

[13] Shams Siraj Afif, *Tarikh-i-Firuz Shahi*, the *Tughluq Kalin Bharat*, R.A.A. Rizvi, tr. Delhi 2008, (reprint), II, pp. 74–75. Yahya ibn Sirhindi, *Tarikh-i-Mubarak Shahi*, *ibid*., p.199.

[14] Foreign-Political Department, 31st December 1847, Nos. 2351–52, p. 88, No. 5, NAI, New Delhi.

[15] Sujan Rai Bhandari, *Khulasat-ut-Tawarikh*, Punjabi translation, Patiala 2000, p. 36; B.R. Grover, *op.cit*, pp. 227–91. Abha Singh 'Irrigating Haryana', *Medieval India,* Irfan Habib, ed. Delhi, OUP, 1992, pp. 57–58.

[16] *Loc.cit*.

[17] Sujan Rai Bhandari, *op. cit*., p. 82.

[18] Irfan Habib, *op.cit*., p. 36. Grover, *op. cit*., p. 219.

[19] Foreign-Political Deptt., 4th–11th August, 1849, Prog. No. 87, 'Canals in the Rachna Doab', No.18., NAI, New Delhi; see also, Grover, *ibid*., p. 220.

[20] R. Napier's 'Report on the Shah Nahr or Hasli Canal', *ibid*., pp. 39–48.

[21] Foreign-Political Dept., 21st February 1851, Nos.148–69, NAI, New Delhi.

[22] Abul Fazl, *Ain-i-Akbari*, tr. M. Blochman, The Asiatic Society, 2010 (reprint), II, *Ain I*, p. 39.

[23] *Loc.cit*.

[24] Lieut. Yule, 'A Canal Act of Emperor Akbar with some notes and

remarks on the History of the Western Jumna Canal', *Journal of the Asiatic Society of Bengal*, Calcutta 1846, Vol. XV, pp. 214–25.

[25] See, for instance, Fryer, op.cit., p. 59, no. 165; Edward O'Brien, *Land Revenue Settlement of the Muzaffargarh District,* Lahore 1882, pp. 13–17, S.S. Thorburn, *First Regular Settlement of the Bannu District*, Lahore 1879, pp. 94–98.

[26] Foreign-Political Deptt., 4th–11th Aug., 1849, R.P. Napier's, 'Report on the Shah Nahr or Husli Canal', No. 90, NAI, New Delhi.

[27] Abha Singh, *op.cit*., p. 59.

[28] Lieut. Yule, *op.cit*., pp. 214–17.

[29] Sirhindi, *Tarikh-i-Mubarakshahi, op.cit*., pp. 201–2.

[30] Yule, *op.cit*., pp. 216–17.

[31] From all sources cited regarding Firuz Shah's canals, this is the picture that emerges on the point under discussion.

[32] Afif, *op.cit*., pp. 112–14. Sirhindi, *op.cit.,* p. 206. Due to a huge increase in the number of slaves, the department of slaves (Diwan-i-Bandagan) was separated from the Diwan-i-Vizarat, of which it was originally a part. See, R.C. Jauhri, *Firoz Tughluq* (1351–1388), pp.126–27.

[33] Foreign-Political Deptt., 4th–17th August, 1849, No. 88, 'Canals in the Baree Doab', para 6, NAI, New Delhi.

[34] Foreign-Political Deptt., 28th February 1851, pp. 1–3, Annexure: 'Detailed Statement of the Canals'. In 1850, four out of ten canals of the Dera Ghazi Khan district required new 'mouths'.

[35] 'Mooltan Canals' *op.cit*., p. 3

[36] *Ibid*., pp. 3–4.

[37] Foreign-Political Deptt., 4th–11th Aug., 1849, 'Canals of the Baree Doab'. Letter from Secretary to the Board of Administration to H.M. Elliot, Secretary to the Govt. of India, 'note', NAI, New Delhi.

[38] Yule, *op.cit*., p. 222.

[39] *Loc.cit*.

[40] J.S. Grewal and Indu Banga, *Civil and Military Affairs of Maharaja Ranjit Singh,* Amritsar 1987, document no. 109.

[41] B.N. Goswamy and J.S. Grewal, *The Mughal and Sikh Rulers and the Vaishnavas of Pindori: A Historical Interpretation of 52 Persian Documents*, Simla 1969, Document No.III, pp. 94–95.

[42] *Ain-i-Akbari, op.cit*., II, *ain* IV, p. 45.

[43] Yule, *op.cit*., p. 25.

[44] See, for instance, 'Mooltan Canals', *op.cit*., p. 4.

[45] Yule, *op.cit*., p. 217; *Ain-i-Akbari*, *op.cit*., II, p. 45.

[46] Afif, *op.cit*., pp.75–76.

[47] *Ibid*., p. 76.

[48] See, for instance, Thorburn, *op.cit*., pp. 98–101.

[49] Stability in agriculture was in direct proportion to human intervention in water. See, Tripta Wahi, *op.cit*., p. 282.

[50] Afif, *op.cit*., pp. 74–75.

[51] *Ibid*., p. 75.

[52] *Loc.cit*.

[53] *Loc-cit*.

[54] Sujan Rai Bhandari, *op.cit*., p. 82.

[55] *Loc.cit*. See also Bute Shah, *Punjab di Geographical Tawarikh (Geographical Description of The Punjab,* in Panjabi), translated from the Persian of Bute Shah by Munshi Bahlol in 1850, reprint, Chandigarh 2007, p. 113.

[56] *Loc.cit*.

[57] Foreign-Political, 31st Dec., 1847, Nos. 2351–52, 'Regarding the Revenues obtained at present by irrigation', pp. 42–43.

[58] Yule, *op.cit*., p. 217.

[59] Afif, *op.cit*., p. 75. See also *Futuhat-i-Firuz Shahi, op.cit*., p. 334.

[60] It may be noted that Dhatrat finds a mention in the context of the increased revenues from the region. See, Afif, *ibid*., p. 75.

[61] 'Mooltan Canals', *op.cit*. See also 'Dera Ghazi Khan Canals'.

[62] *Ibid*., Annexure.

[63] Yule, 'A Canal Act of Akbar', *op.cit*., pp. 213–14. Italics mine.

[64] *Ibid*., pp. 214–15.

[65] *Ibid*., p. 214.

[66] *Ibid*., p. 222, fn.3.

[66A] The portion on the wells is substantially a reproduction of my article 'Rights to Sink and Repair Wells and Accruing Rights in Land and its Produce', *Proceedings Indian History Congress*, 72nd Session, Patiala, December 2011, pp. 378–391.

[67] Notably B.D. Chattopadhyaya, *The Making of Early Medieval India*, Delhi 1997 and *Aspects of Rural Settlements and Rural Society in Early Medieval India*, 1990 and David Ludden, particularly his article 'Patronage and Irrigation in Tamil Nadu : A Long-term View'. *IESHR*, XVI, No.3, pp. 347–65. James Heitzman, *op.cit.,* T.M. Srinivasan's *Irrigation and Water Supply : South India, 200 BC–1600 AD,* Madras, South Asia Books, 1991, is a monumental work on irrigation, but it is not much within the discourse of the agrarian system.

[68] Even when 'brain-storming' was done to go deeper into the agrarian system, it took into consideration three basic elements : 'land, labour and lord'. Water as a parallel component to land in the agrarian system escaped their notice. See, *Land Control and Social Structure in Indian History*, Robert Eric Frykenberg (ed.), pp. viii, xx. Water rights as a distinct entity have escaped even the notice of historians who have otherwise included irrigation as an important component in agrarian production and power structures and relations.

[69] 'Rights of Tenants To Sink Wells', *Selections from the Records of the Office of the Financial Commissioner, Punjab*, 1874, pp. 236–240.

[70] A few examples would suffice. G. Ousley and Capt. W.G. Davies, *Report on the Revised Settlement of the Shah Poor District in the Rawulpindi Division*, Lahore 1866, pp. 111–12, no. 283 for shares in wells; S.S. Thorburn, *op.cit.,* pp. 95–97. See also J.H. Morris, *Report on the Revised Settlement of the Mooltan Division*, pp. 3, 5–6; 'Mozzuffurghur Settlement', *Selections from the Public Correspondence of the Administration, for the Affairs of the Punjab*, Vol. I, no. 2, Lahore 1853, p. 21.

[71] See, for instance, 'Mozzuffurghur Settlement', *ibid*., p. 21. Similarly all settlements recorded property in wells.

[72] See, for Instance, J.H. Morris, *Report on the Revised Settlement of Goojaranwalah District in the Lahore Division*, 1860, p. 54, no. 82.

[73] Srinivasan, *op.cit.*, p. 163.

[74] B.N. Goswamy and J.S. Grewal, *op.cit.*

[75] These documents are numbers: I, II, IV, V, XXVII, XLIV, XLIX.

[76] Document No. XLIX.

[77] *Ibid.*, p. 78.

[78] Italics mine. *Ibid.*, p. 86.

[79] *Loc.cit.*

[80] *Ibid.*, p. 103.

[81] *Ibid.*, p. 111.

[82] *Ibid.*, p. 240.

[83] *Ibid.*, p. 312.

[84] *Loc.cit.*

[85] Tripta Wahi, 'Nature of Land Rights in the Pre-Colonial Punjab : A Study of the Tenancy Documents', *The Panjab Past and Present*, Vol. XXXVI, Part II, October 2005, pp. 2, 7–8.

[86] Tarapada Mukherjee and Irfan Habib, 'Land Rights in the Reign of Akbar : The Evidence of the sale-deeds of Vrindaband and Aritha', *PIHC*, Gorakhpur Session 1989–90, document nos. 9–10, p. 247.

[87] *Ibid.*, p. 248.

[88] *Ibid.*, document no. 6, p. 246.

[89] B.R. Grover, *op.cit.*, p. 234, fn. 9.

[90] Srinivasan, *op.cit.*, p. 182. See also p. 163 for the sale of land with trees, well and tank.

[91] *Insha-i-Mahru, Tughluq Kalin Bharat,* Vol. II, S.A.A. Rizvi, (tr.) document no. 4, p. 376.

[92] *Loc.cit.*

[93] *Ibid.*, document no. 5, p. 376.

[94] *Annual Report on the Working of the Rajputana Museum, Ajmer, for*

the year ending 31st March 1939, no. 4 of the 'inscriptions inscribed', p. 4. Henceforth this series would be referred to as *ARWRM*.

[95] 'Irrigation in Early Medieval Rajasthan', *JESHO*, Vol. XVI, Parts II-III, pp. 307–08.

[96] See, for instance, Srinivasan, *op.cit.*, pp. 101, 153, 163, 177–8, 183. In fact, the whole work is based primarily on inscriptions connected with irrigation.

[97] *Annual Report of the Sardar Museum and Sumer Public Library, Jodhpur for the year ending 30th September 1925*, p. 2. This inscriptions was fixed in a well.

[98] T.V. Mahalingam, *Inscriptions of the Pallavas*, Delhi, ICHR, 1988, No. 89, Tandantottam Plates of Nandi Varman II, p. 305, No.121, Velurpalaiyam Plates of Nandi Varman III, p. 379. See also Srinivasan, *op.cit.*, pp. 177–78.

[99] *Epigraphica Indo-Moslemica* (EIM), 1911–12 ed. J. Horovitz, (ed.), no. XXIII, p. 25.

[100] *EIM*, 1937–38, G. Yazdani, (ed.), pp. 5–6.

[101] *Ibid.*, p. 5.

[102] *EIM*, 1917–18, No. 2, pp. 17–18.

[103] *EIM*, 1919–20, Horovitz, (ed.) pp. 8–9.

[104] *EIM*, 1937–38, pp. 22–26.

[105] *ARWRM Ajmer* for the year ending 31st March 1935, Delhi 1936, 'Inscriptions copied', No. XIV. See also inscription No. XV.

[106] *ARWRM Ajmer*, year ending 31st March 1937, 'Inscription Copied, Nos. XVII, XVIII, pp. 6–7.

[107] Srinivasan, *op.cit.*, p. 178.

[108] B.D. Chattopadhyaya, *op.cit.*, pp. 312, 315.

[109] *ARWRM Ajmer*, year ending 31st March 1935. Inscriptions copied: No. X, pp. 4–5.

[110] *Ibid.*, no. XII, pp. 5–6.

[111] Mahalingam, *op.cit.*, inscription Nos. 89 and 121. pp. 305, 379. See also Srinivasan, *op.cit.*, pp. 177, 194.

[112] Srinivasan, *op.cit*., pp. 152–53, 177–78.

[113] *Ibid*., pp. 152–53.

[114] Mahalingam, *op.cit.*, p. 448.

[115] Srinivasan, *op.cit*., p. 152.

[116] *Ibid*., Glossary, p. 232.

[117] Dasharatha Sharma (ed.), *Rajasthan through the Ages*, Bikaner 1966, I, p. 330 (d).

[118] B.D. Chattopadhyaya, *op.cit*., pp. 309, 311 and 314.

[119] J.S. Grewal and Indu Banga, *op.cit.,* document no. 58, p. 110.

[120] R.K. Saxena, *Peasant and the State : A Study of 18th Century Rajputana*, Jaipur, Panchsheel Prakashan, 1999, p. 291.

[121] Literally meaning from head to foot; a dress of honour; an installation fee paid for permission to sink a well. Indu Banga, *Agrarian System of the Sikhs*, Delhi 1978, 'Glossary', p. 210; Charles A. Roe, *Customary Law of the Multan District,* Lahore 1883, pp. lxxxii-iii.

[122] V. Venkayya, 'Irrigation in Southern India in Ancient Times', *Archeological Survey of India Annual Report 1903–04* (reprint New Delhi 2002), p. 210.

[123] In the Chaj Doab in the Punjab, the British officer L. Bowring received numerous applications for permission to repair wells. *Foreign Miscellaneous H.M. Elliot Revenue etc. of the Punjab 1849*, No. 352, p. 53, National Archives of India, New Delhi.

[124] One has just to read Srinivasan's book or even Venkayya's article to see how tightly controlled irrigation was.

[125] A *kachcha* well as distinct from a *pucca* well which has a wooden frame at the bottom, known as the *chak* in the Punjab, on which a bricked cylindrical wall is raised.

[126] Debate in the Legislative Council following the judgement of the Agra High Court in July 1867: *Home: Gazette of India Supplement: July to December 1868*, pp. 722–23.

[127] E.B. Steedman, *Report on the Revised Settlement of the Jhang District* (1874–1880), pp. 75–76.

[128] Tripta Wahi, 'Nature of Land Rights in the Pre-Colonial Punjab',

op.cit., p. 11.

[129] Frykenberg, *op.cit*., Introduction, p. xiv.

[130] *Papers connected with the Question of Tenant Rights in the Punjab: Selections from the Records of the Government of the Punjab*, Lahore 1869, pp. 94–95, 107, 276. Henceforth abbreviated as *Tenancy Documents*. See also Tripta Wahi, 'Nature of Land Rights', *op.cit*., p. 11.

[131] T. Gordon Walker, *Punjab Customary Law, Vol. V, The Customary Law of the Ludhiana District*, Calcutta 1886, p. 91, no.182.

[132] *Tenancy Documents*, Anjuman's Comments, No. 5, p. 569. See also T. Wahi, 'Nature of Land Rights', *op.cit*., p. 11.

[133] *Tenancy Documents*, no.1, p. 132.

[134] Srinivasan, *op.cit*., pp. 177–8, f.n. 111, p. 194.

[135] 'Right of Tenants to Sink Wells', *op.cit*., p. 395.

[136] *Loc.cit.*

[137] *Ibid*., pp. 397–98.

[138] *Home : Gazette of India Supplement: July to December 1868*, Oudh Rent Bill, discussion in the Legislative Council on the judgement, pp. 720–31.

[139] *Tenancy Document*., p. 286.

[140] 'Mozzoffurghur Settlement', *op.cit*., p. 15.

[141] Tripta Wahi, 'Land Rights', p. 11.

[142] *Ibid*., pp. 9–13.

[143] *Tenancy Documents*, see, for instance, p. 570; Tripta Wahi, 'Nature of Land Rights', *op.cit*., pp. 11–15.

[144] *Ibid*., see, for instance, exception no.1, p. 133, no.14, p. 133, no. 32, p. 136.

[145] *Ibid*. Byj Nath's reply, p. 96.

[146] T. Wahi, 'Nature of Land Rights', *op.cit*., pp. 5–6.

[147] *Loc.cit*.

[148] J.H. Morris, *Report on the Revised Settlement of the Mooltan*

District, Lahore 1856–7, pp. 6–8, 28, Appendix H.No.7; A.R. Roe, *Report on the Revised Settlement of the Multan District of the Punjab*, pp. 40–41, Henry Monckton, *Report on the Revised Settlement of the Jhung District*, p. 4, nos. 27–28; see also Indu Banga, 'Ecology and Land Rights in the Punjab', *op.cit*., pp. 64–65.

[149] *Loc.cit*.

[150] Charles A. Roe, *Customary Law of the Multan District Regarding Inheritance, the Enjoyment of Property, Land Tenures and Alluvion and Diluvision,* Lahore 1883, pp. lxxxii–ix; see also, Indu Banga, *ibid.,* pp. 64–65.

[151] See, Dilbagh Singh, *The State Landlords and Peasants: Rajasthan in the 18th Century,* Delhi, Manohar 1990, p. 53; R.K. Saxena, *op.cit*., p. 11.

[152] *Tenancy Documents*, pp. 72, 81, 95.

[153] Irfan Habib, *A People's History of India 28: Indian Economy, 1858–1914*, Tulika Books, 2006, p. 51.

[154] Tripta Wahi, 'Land Rights in the Pre-Colonial Punjab', *op.cit*., pp. 7–8, 13.

[155] Ain XI, 'Land and its Classification and the Proportionate Dues of Sovereignty', *Ain-i-Akbari*, II, p. 68.

[156] *Loc.cit*. See also, B.R. Grover, 'Classification of Agrarian Land Under Cultivation', *op.cit*., pp.241–42.

[157] *Loc.cit*.

[158] *Ibid., ain VII* on *Khazandar,* pp. 58–59.

[159] Irfan Habib, *An Atlas of the Mughal Empire*, Delhi, OUP, 1982, Punjab; Political 1595, Sheet No. 4A.

[160] *Ibid*., Notes on Sheet No. 4A, p. 8.

[161] J.S. Grewal and Indu Banga, *op.cit*., See, for instance, document nos. 123, 124, 144, 183, 197, 199, 238, 244, 262, 274, 287, 372. All have varying values or contexts. Document no. 287 besides giving the total value, mentions the value of the well for *kharif* and *rabi* crops separately.

[162] See, Tripta Wahi, 'Socio-Political Structures in Interaction with a Seasonal River : A Case Study of the Ghaggar in the Mid-Nineteenth

Century', *Proceedings of the Punjab History Conference*, 39th Session, 2007, pp.291–95. See also J.D. Cunningham, *op.cit*.

[163] *Purananuru*, No.18, lines 13–30, quoted, David Ludden, *An Agrarian History of South Asia*, *The New Cambridge History of India*, IV, Cambridge, CUP 1999, p.78.

[164] *The Kautiliya Arthasastra,* Part II, R.P. Kangle (tr.), Bombay, Motilal Banarsidas Publ. 1963, p. 64, 2.1.20, p, 209, 2.34.8.

[165] *Ibid*., p. 64, 2.1.20.

[166] *Ibid*., p. 173, 2.24.18.

[167] *Ibid*., p. 210, 2.35.3, p. 217, 2.36.45.

[168] *Ibid*., pp. 249, 253, 255–56.

[169] Quoted, K.L. Rao, *'India's Water Wealth : Its Assessment, Uses and Projections*, New Delhi, Orient Longman, 1975, p.114.