

Water management traditions in rural India: Valuing the unvalued

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Abstract

Achieving effective and efficient management of water as the key to human survival and development has emerged as an urgent global concern. The realization of the limited availability of water in space and time under conditions of ever-increasing pressures has caused designing of 'modern' water management initiatives that are globally manufactured but implementable in local communities, India being no exception. It is perhaps universally assumed that water management, as an integrated system based upon local knowledge & practices, is either 'non-existent' or 'irrational', 'narrowly pragmatic' and 'in the process of disappearance'. If water is a basic resource necessary for sustaining all human activities, its provision in the desired quantity and quality and at the right time and place through a workable local water management system must be regarded as an omnipresent phenomenon. How is water management traditionally organized in rural Indian localities so that the community's needs are met through generations? What implications do such systems based in local situated knowledge & practices hold for the global water management context?

The paper seeks answers to these questions through an ethnographic study in rural India. It concludes that traditional water management system in rural Indian localities is pragmatic, rational and functional even in contemporary times. As found in central and central-eastern parts of the country, the system may be resolved into human and non-human components, the latter further lying within two different analytical domains, namely, the 'ideational' and the 'operational'. Traditional knowledge informs each of these domains that is translated as practice in day-to-day life. The paper argues that the study of such systems is important not only for the sake of enhancing the understanding of traditional resource management systems as situated knowledge systems and situated action locales, but also for appreciating their practical value in designing of more workable, socio-culturally viable, community-based solutions to the resource management problems encountered in recent times.

Key words: Community, globalization, indigenous water management system, institution, situated knowledge, situated action, socio-cultural matrix, water.

1. Introduction

Water is the key to development and sustenance of all communities. Under conditions of increasing stress on this essential renewable but scarce natural resource, effective and efficient management of water is emerging as an urgent contemporary issue. The realisation of its limited availability in space and time has necessitated the designing of new globally viable water management regimes aiming at striking a balance between the use of water as a basis for livelihood and its protection to help ensure its sustainability through present to future generations (Agarwal et al., 2000).

India is no exception to this emergent global trend and over the last couple of decades, new water management interventions are being designed and implemented throughout the country in anticipation of improved water management practices (RGNDWM, 2000). Broadly speaking, these interventions enunciate water management regimes based on participatory approaches where involvement of all stakeholders in universally defined water management structures is the key strategy. There is much emphasis on involvement of water users in decision-making processes; strengthening of local institutions; incorporation of traditional knowledge, skills, practices, etc.

However, these participatory approaches invite criticism as being ‘alien’ and ‘top-down’ in origin, plagued by the assumption that the communities to which the local users belong lack any operational water management system or if there are any, these are “irrational, “narrowly pragmatic” or “in the process of disappearance” (Wolfe et al., 1992). If water is a basic resource necessary for sustaining human activities, its provision in the desired quantity and quality and at the right time and place must be seen as a constant human endeavour in all communities, whether traditional or modern. The question of existence and the form of traditional ‘localized’ water management arrangements appear to have been little valued in the modern ‘globalized’ water development and management context.

Indeed, a majority of the local communities in India where water management takes place are rural in nature, organised in villages that are also the smallest viable social units in the rural milieu. How is water management traditionally organised in the rural Indian localities so that the needs of the community are met through generations? What implications do such systems based in local situated knowledge & practices hold for the global water management context? Answers to these questions are sought in the paper through an anthropological study primarily based in a village in the central-eastern state of Bihar, corroborated by findings from other villages in the area as also in the central state of Madhya Pradesh. The data in the

study has been procured through intensive residential fieldwork in these areas. Fieldwork techniques such as participant observation, key informant interviews, both unstructured and structured, with open-ended questions and case studies were used for procuring the primary data. A number of secondary sources were also referred for procuring information on other relevant studies.

2. Water management traditions in rural Indian localities

The water management traditions in rural India can be seen as organised within small-scale village communities. These traditions embody a blend of knowledge and action as a means to fulfil the water-related needs of the members through management of the resource and the sources through which it is harnessed. The elements of the system may be classified as falling within two basic realms, namely, the 'ideational' construct and the 'operational' aspects¹. The ensuing account of traditional water management system prevailing in villages of India is based upon an analytical framework consisting of these integral aspects.

The system may be resolved into the human and non-human components. The human component comprises the community of practitioners that includes the water users and the managers of the system. These practitioners in the village identify themselves as stratified into different caste groups and much of their dynamics guided by the principle of 'social dominance'². The dominant caste generally leads in regulating water management affairs. The social mapping of Indian villages is generally such that the highest castes tend to reside in the heart of the village settlement, while others are arranged towards the periphery in decreasing order of their position, so that those placed lowest generally reside on the village outskirts.

Caste and social dominance principles influence the various non-human elements in a complex manner. These generally govern the beliefs and practices about rights and responsibilities, powers and privileges with respect to the different water management activities. The non-human elements in the traditional water management system are described below.

¹ Originally concepts proposed by the author for describing domains underlying the identity of a social group (Singh, 2000).

² The principle of social dominance closely follows that of caste. A caste with numerical preponderance, occupying a comparatively higher position in the local ritual hierarchy, possessing a greater share of the

2.1 Water and water needs: The ideational construct

In the rural localities, irrespective of the existing social diversities, water is regarded as a gift of nature made available to mankind for fulfilling the basic needs for survival. Most of these needs are believed to be common to all and therefore water is seen as a common resource over which universality of rights basic for life should prevail and every user must have access to water for fulfilling all relevant needs.

The water-related needs are identified at two levels: those pertaining to ‘this worldly’ survival (secular) and those meant for spiritual purposes (sacred), these perceptions exhibiting variation across the different caste groups in the local community. Certain secular needs such as drinking, cooking, washing, cleaning and bathing are common to all while those pertaining to certain productive purposes are caste-specific. For instance, the landowning agricultural castes, notably the dominant (also land-owning) castes (in this case Rajput), require water for irrigation while others like potters (Kumhar), washermen (Dhobi) and cattle herders (Ahir) require it for their own specialized economies.

Sacred needs are further identified as ‘collective’ and ‘individual’. The former, to be fulfilled on certain special ritual occasions that are to be observed publicly, are largely associated with upper castes, notably Brahmin and Rajput while the latter, which may be fulfilled on a day-to-day basis at the domestic level, may be common to a larger group. However, even individual sacred needs that are to be fulfilled at a sacred site (such as temple) are largely the privilege of the upper castes.

Associated with the perceptions regarding water needs, different attributes are associated with appropriate nature of the water. For instance, for the purposes of drinking and cooking, different attributes generally considered are colour, odour, taste and freshness. Good quality water for these purposes is generally expected to be colourless, odourless, sweet and fresh and these qualities, in turn, are seen as closely related to the local concepts of purity, health and hygiene. Similarly, purity is an important attribute associated with waters used for sacred purposes and one of the ways of maintaining it is through association of the water source itself with the supernatural and protecting it from potential sources of pollution. The perceptions about water quality actually overlap indigenous knowledge in this regard.

The values underlying the WMS also attach a positive value to the act of sharing and creating water sources for others, such as constructing tanks and wells, as also providing water to the

village land and also having greater contacts with the outside world is generally regarded as ‘dominant’ in the community (also see Srinivas, 1959).

needy in general that are traditionally regarded as virtuous acts. Thus, sharing one's water sources with the neighbours and allowing the 'have-nots' with access to water is seen as an act of generosity. In southern India, it is noted that establishment of tanks is traditionally considered as one of the '*saptasantanas*' (seven kinds of wealth) (Raman, 2002).

Water is seen as a renewable yet scarce resource to be handled with care so that quality and quantity are not degenerated. The underlying quantity-related principle in utilizing water resources in the village lies in exploiting nature for serving human interests but not to the extent of depleting them forever. The quality-related perception is functionally supported by the concepts of purity and pollution of water through human actions, part of which in turn derives from the caste-based norms and the day-to-day cultural practices concerning water use. It is generally believed that with respect to water and water sources meant for the upper castes, use by a lower caste individual might cause pollution that in turn is supernaturally punishable for the latter.

The rights of access enjoyed by the community members with respect to different water sources is traditionally governed by the beliefs and values associated with the caste principle. Two important concepts generally referred are purity and pollution. Water is believed to be a medium that transmits pollution when in contact with a person who himself is in a 'state of pollution'. Hence, the upper and lower castes, are expected to maintain distinctness of water sources as the lower castes, especially the 'harijans'³, are believed to have the potential of transmitting pollution by sharing water sources.

2.2 Organizing the fulfilment of water needs

Fulfillment of water needs is accomplished through harnessing of the naturally available water resources. Ordinarily, the water resources available within the physical boundaries of the village are regarded as village resources, the village itself being largely visualized as a micro-watershed. The resources are further classified into categories such as surface water, ground water, rain water etc., further identified via their sources such as river water, lake/pond water, well water and others. In fact while a number of sources such as may be naturally occurring such as river and lake, others like pond, tank and well are created to harvest the different kinds of water reserves. The local villagers have a storehouse of water-related knowledge about their area, which is used in identifying sites and other ground features before creating new water sources.

³ The officially recognised name used for denoting those castes who occupy the lowest rungs of local caste hierarchy and traditionally believed to be unclean.

They also possess substantial knowledge about the technologies suitable to their locales in terms of resource availability (both water and the resources required for harnessing it), sustainability of the resources, and the skills required. The technology related to developing a water source is generally simple and depends upon use of manual skills. In case of wells and ponds, it primarily involves digging up to an appropriate depth, the latter defined by the local knowledge about water availability and quality. In case of well, the walls may be lined with brick or stone slabs. Similarly, the technology used in collecting and using water from these sources is also simple, though it may involve the installation of additional technology at the source. For example, in case of well, water is generally collected using a rope and a bucket (or other kinds of water containers), with or without a simple pulley. In case of ponds and tanks, water is directly filled into the water container, the use of a specific end of the pond for this purpose being common in some areas (called 'ghat'). At this end, steps may be constructed using concrete or stone, in consideration of hygiene and safety as important. Knowledge and skills concerning organising the fulfilment of water needs is essentially caste-specific. The efficiency of operation of a traditional water source is believed to be high in the sense that a number of users can simultaneously draw water and the process itself involves lesser time and perhaps energy. All such knowledge is recorded and transmitted through oral tradition and learnt through observation and hands-on experience.

Based on the perceptions about the water needs, the various water sources are subject to a 'social' classification. Most basically these are differentiated into 'sacred' and 'secular'. The former, generally located within the village settlement or on the outskirts, are ascribed a sacred value and used primarily for fulfilment of 'sacred' needs. The latter are ascribed a mundane, utilitarian value associated with the fulfilment of ordinary, day-to-day secular needs of the users, being further classifiable into 'domestic' or 'productive' categories. Such sources are generally distributed within or near the village settlement (particularly in case of water sources used for domestic purposes) or on the outskirts or in fields (in case of water sources used for irrigation, drinking by animals, etc.). Water from these sources may also be used for sacred purposes at individual level.

From the ownership and management point of view, the water sources considered for this study are classified as 'public' sources⁴. These are either situated on a communal piece of

⁴ The other category of water sources is locally identified as 'private' that are individually owned and located within private premises in such a way that access and control is limited only to the owners. It is to be noted

land (e.g., a communal well) or otherwise itself regarded as a common property (e.g., a stream or a natural pond). Conversely it is also seen that such a source is individually owned but located at a publicly convenient site where other members of the community have equal rights of access. The group of community members who actually have ownership and/or access to a public source depends primarily upon caste and differs in accordance with their social affiliations.

2.3 Institutionalising the management of water resources

Since water is a common need for all members of the community and water itself is conceived as a common pool resource, collective responsibility for managing it rests with the community that in turn is conceivable as organised at two levels-“user community” and “user groups”. The former encompasses the entire village community while the latter largely overlap with the resident castes in the village. The institutional framework involves definition of authority relationship that specify ‘who’ decides ‘what’ in relation to ‘whom’. These decisions pertain to (i) ‘collective choice situations’ that may involve decisions about planning, development and management of the resources and sources, (ii) ‘entry’ and ‘exit’ rules that concern exclusion of potential beneficiaries and seek to regulate access and use of the village water resources and sources, (iii) ‘operational rules’ that regulate the use and day-to-day maintenance of the water sources.

Collective choice situations: These situations are deeply influenced by the social organizational principles in operation in Indian villages - notably caste and social dynamics⁵. Planning and development of water sources generally begins with an assessment of water needs or expression of a common need by the intended users. The process of collective choice making involves mutual discussions and consensus decisions on part of these members under the leadership of senior men of dominant caste who constitute an informal group. Leadership with respect to water management in the village studied village is handled by that group of senior Rajput men who are also the larger land owners in the village. In fact in this village, the Rajput population is so numerous that they actually reside in a number of smaller contiguous localities (locally called ‘mahallas’). On most occasions, the senior men from each of these sections actually exercise decision-making authority for governance of their own water resources. Two important criteria defining seniority are social status and age. There is no

that the ideational construct associated with water and water needs applies even to this category of water sources, promoting the virtues of benevolence and goodwill.

⁵ Indian villages are known to follow caste-based residential patterns with individual or contiguous castes residing in separate localities that may be arranged in accordance with position in local ritual hierarchy.

formal council or group that undertakes these tasks in a regular, routine and pre-determined manner, with formalized meetings and records. Normally these members meet informally as and when the occasion demands.

The decisions are undertaken with consideration of factors drawn from traditional knowledge base about local water resources, possible seasonal variations in their availability, etc. Social considerations also constitute an important factor. Thus, a source intended for the upper/dominant castes is located not only at a site that is physically convenient but also largely in use by these castes alone. Conversely, a source intended for the lower castes would be placed within their own localities or nearby where access of the former is limited.

Collective decision-making with regard to harnessing of water resources also concerns issues of resource mobilization and division of labor for the purpose. Different social groups (castes) may be allocated different roles in the process, with some of the serving castes being traditionally skilled in tasks related to creation of water sources, for instance, traditional specialization of Nonia caste in digging in this and other villages of Bihar.

Decisions about management of water resources and sources in the village tend to revolve around issues such as rejuvenation and upkeep of water sources, upkeep of water quality and quantity, etc. These decisions are also made through consensus at joint meetings, though individual users may express the need for the same.

Rejuvenation and upkeep of water is a periodic activity that is also a direct responsibility of the user group. These activities generally involve physical tasks of desilting, cleaning, repairing and deepening of the source. Control over the necessary resources is exercised by the dominant caste, who also allot the physical work to members of those castes who are traditionally regarded as skilled for the purpose. In case of the water sources used by the lower castes such decisions may also be taken by the users themselves.

Decisions concerning management of water resources/sources may also sometimes relate to those about the use pattern, including rules about extent of extraction of users. These in turn generally relate to the need of upkeep of water quality and quantity, physical degradation of water quality being as important as 'social' pollution.

The very fact that leadership in water management issues is exercised by the senior group from the dominant caste itself is an important factor in ensuring compliance with the decisions, the perceived sanctity of adhering to the caste rules being the other significant factor. The social

importance of the dominant caste and the acceptance of their authority are rooted in the fact that they are the original village founders, as reported in every village under study.

‘Entry’ and ‘exit’ rules: These are rather simple in again following the principle of caste. Members belonging to a particular caste or group of contiguous castes are generally allowed access to a common public water source. Access to sacred sources is more or less reserved for the upper castes such as Brahmins, Rajput and Bhumihar. The entry and exit rules are strictly adhered to and any infringement is generally unexpected primarily because of the supernatural sanctions associated with such infringement. In fact, the people recall no such cases but opine that such an incident can lead to open conflict or supernatural wrath on the violators. However, it was also recorded that in situations of water scarcity in the village, access to a well in an upper caste locality may sometimes be allowed for users from other castes, though the former may still enjoy the first preference.

Operational rules: These pertain to use of the different water resources and sources in the village and relate to the perceptions and beliefs about water, water needs and potential water users. These largely revolve around the classification of water sources partly enumerated earlier and are more in the nature of customs, norms and cultural practices than as ‘rules’.

The domestic sources that are used for routine household activities, are further classified as ‘drinking’ and ‘non-drinking’. While water from the former is to be used for drinking and cooking, that of the latter is primarily usable for washing, cleaning and bathing. Water from the drinking water sources may also be usable for additional needs such as individual-based sacred use and therapeutic, depending upon the presence of the requisite water qualities necessary for such usage. In accordance with the social considerations regarding the user groups, these domestic sources are differentially distributed across the localities in the village. Well is a common drinking water source while pond and tank are commonly associated with non-drinking purposes, depending upon the water qualities deliverable by them. Use of a drinking water source for purposes that may pollute the resource is taken to be forbidden. The productive water sources are regarded as usable for productive purposes such as irrigation, watering and bathing of livestock, fishing, etc. Common productive water sources in the villages under study are pond, tank and well. In several instances, sacred sources are regarded as usable for productive or even drinking purposes such as usage of village sacred tank for irrigation and of the sacred well for drinking but only by the upper castes in Bihar, such usage also reported in southern India (CPREEC, 2002).

Among the other cultural practices aimed at ensuring upkeep of the water quality are that a drinking water well must be approached barefoot. The footwear must be removed at a safe distance since it is believed to bring dirt and therefore make the water impure. Similarly, only properly cleaned vessels are to be lowered in the well. Where multi-purpose sources are in use, washing and bathing is supposed to be performed at a distance so that wastewater does not spill over or drain into the source. Such practices are inculcated in children through the process of socialization early in life. The operational rules are also generally adhered to by the users. Adherence is ensured more through an overall sense of spirituality that governs the caste system tenets than through peer group monitoring.

3. Conclusions

Since water is basic to life, the history of survival of local communities in rural India bears a testimony to the existence of “innovative approaches” and “sustainable practices” in water management. These are indigenously designed in history and passed on through generations as informal organizations, intricately enmeshed in the overall socio-cultural matrix. It can be further contested that these are by no means ‘narrowly pragmatic’ or ‘irrational’ nor are they in the process of disappearing. The findings illustrate that these traditions are extremely complex, consisting of a series of cognitive layers, in this case embodied in the ‘ideational’ and ‘operational’ domains of the water management system. These layers, also identifiable as components of the resources management system, are intricately woven into the overall socio-cultural matrix of these communities and may not be meaningful in isolation.

The components of the system presented in the paper reflect the perception of its practitioners who identify 3 distinct levels. They believe that the ‘ideational’ domain, consisting of the beliefs, values and perceptions concerning water and water needs actually guides the formation of cognitive processes that further helps design action within the other two domains. The ‘organisational’ domain lays down ‘how’ the water resources can be harnessed, being more materialistically directed but drawing its rationale from the former. The ‘institutional’ domain encompasses the procedural details, the working principles and the structural form that enables the former to take shape. The latter are essentially based upon internal social arrangements. The organisational and institutional domains together constitute the ‘operational’ realm of the system and knowledge as the basis of action underlies every domain.

By way of generalization, it may be said that resources management systems in small-scale local communities is essentially a reflection of “situatedness” where the exact contents of the system may be expected to vary from one community to another. In other words, ‘contextualization’ and ‘specificity’ are the key concepts in such situations. However, further empirical studies in indigenous (water) resources management regimes are needed to demonstrate the universality of the emergent model from this study.

However, assuming that such a model could hold good in case of many traditional water management regimes, it may be argued further that the water management regimes designed within the contemporary water policy context, though professing ‘co-management’ between the state and user communities, are actually based upon principles of ‘globalization’ and ‘universalization’. These new resource management regimes are drafted globally and follow a paternalistic, ‘top-down’ approach but are meant to be implemented at the local level, India being no exception. Several new programmes professing ‘community participation’, community-based management even community-based demand-driven approach have been designed and implemented in the country for achieving sustainable water management but their effectiveness in terms of acceptability and expected outcomes is questionable. It can be argued that if there are vibrant and effective options that make sense to the practitioners, by virtue of being part of the situated knowledge and action handed down through generations, grafting of externally designed institutions may not be viable. The new institutional interventions are divorced from the socio-cultural basis of the traditional system and propose nothing more than an additional component of involvement and participation of the local stakeholders.

The findings regarding the ground realities of indigenous water management systems underline the need to rethink on the globally perceived notions about such arrangements in local communities. Water is probably the only natural resource to touch upon all aspects of human civilization – from agricultural to individual development to the cultural and religious values embedded in society (Matsuura, 2002 cited in Castelein and Otte, 2002). Due to its fundamental role in society’s life, water may also be said to imply strong cultural dimension (WWC, 2003). The centrality of water in human life has made it arguable that the ways in which it is conceived and valued, understood and managed, used or abused, worshipped or desecrated, are influenced by the cultures (WWC, 2003).

In the light of the global perspective on water management and the prevailing policy context, the findings of the paper underline the need to revise the stereotypes about

indigenous water management regimes. In contemporary rural India these are realistic existing systems as ‘situated realities of knowledge as well as action’ because knowledge cannot be divorced from action. It does not exist either in a world of its own or as stuff in individual minds but as an aspect of socio-cultural practice. It inheres in these practices and in the tools and artefacts used in these practices (Sierhuis and Clancey, 1997, Bereiter, 2002). Therefore, if at all new ‘co-management’ regimes are to be designed as effective means of combating the present water crisis in the country, then, there is a need to rethink the strategy of global creation these globally and local transposition. These must be built upon the valuing and understanding of the situated realities of the practitioners for whom these are designed and by whom these are to be implemented for their own benefit.

References

- Agarwal, A., delos Angeles, M. S., Bhatia, R., Che´ret, I., Davila-Poblete, S., Falkenmark, M., Villareal, F. G., Jonch-Clausen, T., Kadi, M. A., Kindler, J., Rees, J., Roberts, P., Solanes, M. and Wright, A. 2000. *Integrated Water Resources Management*. TAC Background Papers, No. 4. Stockholm: Global Water Partnership.
- Bereiter, C. 2002. *Education and mind in the knowledge age*. NJ: Lawrence Erlbaum Associates.
- CPREEC. 2002. *Sacred tanks of South India*. Chennai: CPREEC.
- Matsuura, K. 2002. UNESCO’s message to World Water Day 2002. Cited in Castelein, S. and Otte, A. 2002. Editorial note. In *Conflict and cooperation related to international water resources: Historical perspectives*. Selected papers of the International Water History Association’s Conference on “The role of water in history and development”, Bergen, Norway 10-12 Aug 2001. IHP-VI, TDH No. 62. Paris: UNESCO.
- Raman, K. V. 2002. Sacred tanks of Tamil Nadu. In *Sacred tanks of South India*. Chennai: CPREEC.
- RGNDWM, 2000. Guidelines for implementation of rural water supply program. Department of drinking water supply, Ministry of rural development, New Delhi.
- Singh, N. 2000. Understanding Identity and its Integration: A study of the Mundas of Chotanagpur. Ph.D. thesis (unpublished). Delhi: Department of Anthropology, University of Delhi.
- Sierhuis, M. & Clancey, W. J. 1997. Knowledge, practice, activities and people. URL: <http://ksi.cpsc.ucalgary.ca/AIKM97/sierhuis/sierhuis.html>. Accessed on 04-05-21.
- Srinivas, M. N. 1959. The dominant caste in Rampura. *American Anthropologist* 61: 1-16.
- Wolfe, J., Bechard, C., Cizek, P. and Cole, D. 1992. *Indigenous and western knowledge and resources management systems*. School of Rural Planning and Development. Guelph, ON: University of Guelph.
- World Water Council. 2003. *The Third World Water Forum: Final Report*. Tokyo: Secretariat of the Third World Water Forum.