

WATER CULTURE IN SOUTH ASIA
Bangladesh Perspectives

Suzanne Hanchett, Tofazzel Hossain
Monju,
Kazi Rozana Akhter, Shireen Akhter,
and Anwar Islam

Development Resources Press

DRP Pasadena, California

First published 2014

Development Resources Press
P.O. Box 94859, Pasadena CA 91109, USA
postmaster@devresbooks.com

© 2014 Suzanne Hanchett

All rights reserved. No part of this book may be reprinted or reproduced or utilized in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information or retrieval system, without permission in writing from the publisher, except for brief quotations embodied in critical articles or reviews.

Library of Congress Control Number:
2014913568

Water Culture in South Asia: Bangladesh Perspectives/by Suzanne Hanchett, Tofazzel Hossain Monju, Kazi Rozana Akhter, Shireen Akhter, Anwar Islam
Includes bibliography and index.

1. Water—Social Aspects. 2. Water resources development. 3. Water—Folklore. 4. Environmental health. 5. Arsenic in drinking water. 6. South Asia water traditions. 7. Medical anthropology.

ISBN 978-0-9906337 (Smashwords edition)

Cover photo credit: Shireen Akhter

Contents

Preface

Transcription of Bengali Words

1. Introduction
2. Water in South Asian Traditions
3. Bengali Water Lore
4. Perceptions of Water
5. Water in the Community, the Home, and the Life Cycle
6. The Arsenic Problem: Institutional Efforts and People's Responses
7. Water's Powers: A Schematic Overview
8. Conclusions

Index

Glossary

Bibliography

Appendix 1. Principal Study Locations

Appendix 2. Water Vocabulary

Appendix 3. Lyrics of a Bengali Rain-making Song

About the Authors

Maps

1-1. Bengali Language Area of South Asia
25

[1-2. Principal Bangladesh Study Locations](#)

[6-1. Arsenic levels in Bangladesh ground water](#)

[6-2. Arsenic in ground water of West Bengal,](#)

Tables

[5-1. Domestic Water Sources](#)

[5-2. Annual Calendar of Water Availability and Use](#)

[7-1. Water's Powers, Qualities, and Meanings](#)

Figures

[5-1. Drinking Water Collection by Men or Women in Five Towns](#)

[5-2. Water Point Cleaning Duties](#)

[5-3. Drinking Water Storage Responsibility](#)

Case Studies

[5-1. Fatema's Daily Water Use Diary](#)

[5-2. Shahana's Daily Water Routine](#)

[5-3. Domestic Water Management in Noakhali District](#)

[6-1. One Family's Mixed Practice](#)

[6-2. Setting Aside Status Concerns to Get Arsenic Free Water](#)

[6-3a-b. Consuming Arsenic-contaminated Water to Protect Social Status](#)

Preface

This book idea came out of more than 12 years of team research on Bangladesh water projects. We conducted extensive fieldwork, as a group and as individuals, in the course of conducting baseline studies, midterm and final evaluation studies, and program monitoring for several nonprofit and international organizations throughout Bangladesh and briefly in West Bengal, India. Our principal employers or clients have been UNICEF, CARE Bangladesh, DFID, DGIS, DHV Consultants, Danida, the World Bank, WaterAid Bangladesh, the Government of Bangladesh Arsenic Policy Support Unit, the Noakhali Char Development Sector Project, and the NGO Progoti.

Most of these studies brought us into the homes of rural villagers, who kindly took the time to discuss their concerns and their thoughts about water and its meanings – and their reactions to the serious problem of arsenic in their drinking water. We also drew on our life experiences, friendships with our own neighbors, and our knowledge of South Asian cultural history. As our experience expanded and our focus sharpened, we began to understand that our research offered a unique opportunity to explore the intimate sphere of domestic water management and its broad group of cultural meanings. We felt we had something important to share with more technically-oriented colleagues.

In 2009 UNICEF Bangladesh provided us with funding to do some short-term, systematic

research on water culture in two Bangladesh districts, Pabna and Comilla. This support enabled us to organize a series of new interviews that helped us to follow up on key findings and insights. We greatly appreciate the encouragement of our UNICEF program officer at the time, Dr. Richard Johnston, to pursue our research interest. Without that support, this book would not have been possible. Jan Willem Rosenboom, formerly with UNICEF, also has been most helpful with information about the arsenic problem.

An important resource for this research work has been our long-term partnership with the Dhaka survey research firm, Pathways Consulting Services Ltd., Mohidul Hoque Khan, CEO. Pathways not only strengthened our studies with survey research and statistical analysis but also generously offered office space for years on end. Eventually, because of the support of Pathways, our studies combined qualitative and quantitative research methods in ways that our client organizations found quite useful.

Several individuals have contributed to this book in significant ways. Dr. H.K.S. Arefeen has been a constant friend and intellectual sounding board. Dr. Barbara Johnston also has encouraged our research efforts over a period of several years. Pathways staff members Eitu Khan and Monirul Islam organized all survey work and also trained many junior staff, some of whom went on to collect qualitative information used in this study. Johurul Islam, Ms. Munni, and Ms. Roksana were especially helpful. Our colleague from a 1997-1998 baseline study, Mr.

Nurul Absar, retired from the Planning Department, strengthened our early work and collected some interesting material presented in this book. Dr. Md. Faruquee helped us with information on the arsenic problem. Ms. Laila Rahman, with whom we worked on a general review of Bangladesh water and sanitation in 2000, took a number of the photographs that are used here to illustrate our points.

We use ethnographic and other rural studies to supplement our own findings. We especially acknowledge the valuable insights of Dr. Najma Rizvi, Thérèse Blanchet, Dr. Farhana Sultana, Dr. Mahbuba Nasreen, Dr. Sushila Zeitlyn and Farzana Islam, Dr. Mahmuda Islam, Dr. Jean Ellickson, Dr. Kaosar Afsana, and Dr. Irène Kränzlin, Dr. Clarence Maloney, Dr. K.M.A. Aziz, Dr. Allan Smith, and Dipankar Chakraborty.

Several people have helped with manuscript review and editing. We especially thank Dr. Stanley Regelson, Dr. David Groenfeldt, Dr. David Rudner, Barbara Hansen, Rob Bignell, and Louise Lacey for their assistance.

All of our families were helpful and supportive when we needed to be away from home for long periods of rural fieldwork. We appreciate and thank them from the bottom of our hearts.

Transcription of Bengali Words

Vowels	Bengali Script	Trans-literation	Pronunciation & Examples
Short-a	অ	a (or o)	Awe
Long-a	আ	aa (or ā)*	The a in father
Short-i	ই	i	The i in bit
Long-i	ঈ	ii (or ī)*	The ee in feet
Short-u	উ	u	The u in put
Long-u	ঊ	uu (or ū)*	The u in rude
Short-e	এ	e	The e in bet
Long-e	ঐ	ee (or ē)*	The a in favor
Short-o	ও	o	The o in boat
Long-o	ঔ	oo, ou (or ō)*	The o in photo
Nasalized vowel: ~	ঁ	~ (Example: ã)	(No English equivalent)
ch	চ	ch	
sh	শ ষ স	sh	
Aspirated consonant:		-h	Th, th, Dh, dh, chh, ph, bh
Retroflex-t/th	ট ঠ	T	<i>brishTi</i> ('rain')
Retroflex-d/dh	ড ঢ	D	Dhaka
Retroflex-n	ণ	N (or ñ)*	
Retroflex-r	ড়	R (or ṛ)	<i>baaRi</i> ("homestead")
ng	ং	ŋ, ng (or ñ)*	<i>gangaa</i> (Ganges River, or the Hindu goddess)

*Alternate transliterations are used in some citations and conventional spellings.

1. Introduction

This book concerns the cultural frameworks that surround water development projects. Such frameworks are embodied in practices whose importance is not always recognized by the scientists in charge of the projects. But they do influence outcomes. We view people in developing countries as having their own points of view and their own ways of life – as people who recognize many aspects of their environment and the ways it sustains human communities.

Water is the same chemical compound, H_2O , anywhere it is found, but ideas about water differ from one world region to another. Understanding cultural beliefs and feelings can help scientists, engineers, health specialists, and other development professionals to create sustainable change.

Such understanding does not come easily, however. Epistemological and other differences pose daunting challenges to communication. When a scientist or engineer encounters indigenous or folk views and devises easy explanations for them, confusion and even conflict may result. Professional training rarely, if ever, prepares him or her to integrate non-scientific approaches into development projects.

Contemporary scientific theory and knowledge are relatively new. Fundamental concepts have become established mostly during the past 100 to 250 years. Chemistry and bacteriology, for example, have undergone continual revolutions during this period. In the 1770s, Lavoisier developed a radically new system of chemistry by establishing a simple definition of a chemical

element. The germ theory of disease was verified by Louis Pasteur and others only in the 19th century. The people that development professionals try to help, on the other hand, may be using ancient ideas such as humoral theories of medicine, purity and pollution, or totemism.

A fascination with water is universal among human communities. Not only is it essential to life, but water also has properties that inspire metaphorical and poetic thought. Water's absorptive properties inspire hope that it can remove spiritual problems or sin as well as ordinary dirt. Water's flow is compared to human growth and the movement from one generation to another. Water bodies and rivers can define environments and identities. One scholar, Veronica Strang, finds that "the meanings poured into water have proved highly consistent over time..." She refers to humanity's "highly complex relationship with water," a relationship "in which physical, sensory and cognitive experiences articulate with cultural meanings and values." (Strang 2004:3)

Australian Aborigines have well-documented mythological traditions connecting them to water bodies, animals, or other features of the natural environment, which in some groups are claimed as totemic ancestors. Monica Morgan, a member of an Aboriginal group in the Murray Darling river basin of southeastern Australia, describes her people's feeling about their place and its water, as, "We have always been, and will always be, the First People of this land. We belong to it, and the water that flows through our country is as the blood that flows through our veins. Our bodies are formed from the country and remain tied to its rhythms..." (Morgan 2012:454-55)

The geographer Jamie Linton argues persuasively for the need to see water as more than a commodity. Some scientists and business people view water, he says,

“...as just another ‘resource’ – something to be captured or tamed, put in containers or otherwise diverted from its natural path, and transported far away to be used and sold for money.... To First Nations People, however, water is seen very differently. A creek, which to a non-native person may be seen simply in terms of flow rates and acre-feet per year, may have a special name and spiritual significance. It may be a private bathing place for special ceremonies or initiation rites, or in some cases be owned by a particular individual or family. It not only physically and spiritually cleanses people, but it also cleanses the earth and eventually, the sea to which it inevitably flows, if left alone.” (Linton 2006, citing a 1992 talk by Chief Cathy Francis of Canada)

In Bangladesh, villagers have their own cultural approaches to almost all aspects of life, water included. Many Bengali-speaking people in Bangladesh and India, for example, believe that their civilization is based on water bodies and rivers and that people who live next to rivers and water bodies have unique opportunities to be prosperous. Water language, concepts and symbols have a central place in this way of life. According to some of the people we have met, “Another name for water is life.” Culturally-based water knowledge and practice have helped people to understand and cope with their environments over the centuries. The old ideas have been tested and trusted for their practical utility. They also reflect and connect with

the social and moral principles at the heart of social life. New ideas often are welcomed and generally discussed as possible ways to improve local health and well-being, but the well-established, older views still are trusted to a large extent.

The right to water now has been enshrined in two United Nations declarations. The first declaration was made in 2002, and in 2010 the rights statement was expanded to include “safe and clean drinking water and sanitation,” deemed essential to a satisfactory quality of life.¹ As important as these declarations are, however, they do not ensure that all people will have such access.²

Water is a prominent topic of discussion in the United Nations “post-2015” deliberation process, the goal of which is to define international standards to guide future development efforts. A new set of “sustainable development goals” (SDG) is likely to replace the currently used Millennium Development

1. The right to water was formalized in General Comment No. 15, by the UN Committee on Economic, Social and Cultural Rights. This Comment provided a rights emphasis for the 2005-2015 UN International Decade for Action on “Water for Life.” The second step was made in July 2010, when the UN General Assembly adopted a resolution that “recognized the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights.” (A/RES/64/292 of 28 July 2010). Shortly thereafter, in September 2010, the UN Human Rights Council further confirmed that it was legally binding on states to respect, protect, and fulfill the right (A/HRC/15/L.14 of 24 September 2010).

². While these rights declarations do not entirely solve the world’s domestic water supply problems, “These major policy shifts have been heralded... as a move ... toward addressing global water inequalities.” (Sultana and Loftus 2012:1) These declarations, however, are so broad that they can be used to justify privatization and commodification of water resources by moneyed interests that deprive ordinary people of vital water resources. So there is a quest underway for new frameworks or paradigms that can supplement the UN declarations and preserve access to water needed to sustain human life.

Goals (MDG) in 2015. Several concerned organizations including the United Nations Water organization (UN-Water) are arguing that the SDG's should include one new goal dedicated entirely to "securing sustainable water for all." (UN Water 2014, Leone 2014)³

International and regional water development activities are almost all organized by scientifically oriented professionals. However, there are fundamental differences between scientific thinking and the indigenous or folk views typical among the people whose water is being "developed." Physical and biological science is based on the assumption that the empirical method and hypothesis testing – guided by evolving theory – is the best way to build valid knowledge about any subject. Scientific thinking needs to be narrowly focused on well-defined data units. Indigenous or folk thinking, on the other hand, tends to be more holistic. While indigenous knowledge specialists have experimented and produced useful inventions (herbal remedies, for example) over the millennia, their knowledge usually is constructed in ways that differ from the scientific type. For example, indigenous knowledge typically makes connections between physical and moral phenomena, between the spiritual and human worlds, and/or between social action and individual physiology.⁴

³ This deliberation process is going on at the time of this book's publication. In July 2014 a stand-alone Sustainable Development Goal (number 6 out of 17) was proposed to the United Nations General Assembly to "Ensure availability and sustainable management of water and sanitation for all."

⁴. A detailed discussion of the differences between indigenous and scientific knowledge can be found in the book, *Indigenous Peoples and the Collaborative Stewardship of Nature*, by Anne Ross *et al.* (2011).

Doing fieldwork on behalf of development agencies since the early 1990s, we often are in the position of telling the professionals how their efforts affect local life and how effectively people understand (or misunderstand) project messages. We have lived inside the science vs. folk knowledge gap for more than ten years. We find development professionals mostly sympathetic and well-meaning, but they may balk when pressed to understand the culturally-based views of the people they are trying to help. Processes of communication need to change in ways that respect the identities and histories of intended program beneficiaries. We will suggest ways that scientists and engineers can make use of a cultural context to create sustainable development projects, whether in Bangladesh or elsewhere.

Among scientists and engineers, there is a common tendency is to regard folk beliefs as based in religion, as signs of poor education, or simply as superstitions needing correction. The scientist's powerful position in the typical development project supports his or her sense of entitlement to this view. An understanding of the culture concept, however, will increase chances of development success.

Culture: A Working Definition

“Culture” is a frequently mentioned but often misunderstood concept. Every human being (including the scientist) that has grown up with social connections and learned a language has a cultural orientation of some sort.

We use this definition: Culture is the body of principles, rules and values that guide human

choices. These are not always conscious. They are basic to a person's identity and to social and emotional life. They endow human actions with perceived meaning. They validate social arrangements. Culture "is learned and acquired by individuals, but has a transgenerational quality beyond the lifetime of individuals." (Rosman and Rubel 1981:6) Cultural principles explain how the world works, which responsibilities go with which social roles, what the signs of health or illness are, and generally why certain ways of doing things are better than others. There is a sense that one's own cultural principles are normal, natural and right. Other people's cultures and languages, however, tend to feel uncomfortable and unnatural.

People with a common cultural framework speak the same language, both literally and figuratively. With language come semantics, gestures, stories, proverbs and other meaningful verbal, non-verbal and artistic communication or expression techniques that integrate, explain, or justify connections among the spiritual, moral and physical aspects of life.

Symbolic actions and discourse – all based on cultural principles – are at the heart of day-to-day social life and the definition or redefinition of core values. Language, discourse, and symbols – these cultural elements are human beings' tools for continually producing, reproducing and negotiating every aspect of community life. They also provide a framework for environmental adaptation.

There is considerable variety in the ways that people interpret and act upon their common cultural heritage. Culture is a set of *principles* or *assumptions*, a world view or way of thinking, not merely a set of customs or practices. People are

creative in their use of cultural parameters, so there is always variation in actual practice among those who share a cultural framework. People can and do disagree on how their common cultural principles apply in specific situations, but the principles themselves are taken for granted. While common and strong, culture is not rigid. Culture can and does change, though slowly. Furthermore, people can and do use more than one cultural framework, as when they travel back and forth between different countries or ethnic communities.

Studying cultural phenomena is done in various ways, but it always involves considerable observation, conversation and empathy. The goal is to understand people's approach to life and their assumptions about what various acts or events mean. Interpretation depends in part on observing behavior and thinking patterns. Symbolism and language are crucial to cultural analysis.

The Relevance of Culture to Water Resource Management and Domestic Supply Programs

We agree with Brugnach and Ingram, who argue that, "Failing to address the biological and cultural diversity associated with water problems is no longer suitable. Instead, a cross-cultural approach that encompasses diversity is needed." (Brugnach and Ingram 2012:61)

There are different kinds of development activities involving water. One type is concerned with the management of water resources in large regions such as watersheds, river basins, wetlands, and lands over aquifers. Another type relates to domestic supply – that is, ensuring access to safe

water for cooking, personal hygiene, and other home-centered purposes. A special focus within domestic supply is known as WASH, or Water, Sanitation and Hygiene. Cultural issues figure differently in these different types of water-related development activities.

Cultural Diversity and Large-Scale Water Projects

Water is urgently important to environmental sustainability, and culturally diverse populations often depend on the same sources. If the flow of a river is blocked to irrigate the fields or dammed to support hydro-electric power needs of one region, for example, populations downstream are deprived of water. Human needs compete and often conflict. Ecological balance is at stake. Cultural issues have received considerable attention in these kinds of projects. Hundreds of large-scale water projects by now have confronted the need for culturally diverse groups of stakeholders to negotiate and compromise. Indigenous peoples in Australia, North America, South America, and elsewhere have struggled mightily to protect treaty rights and their access to water in their home territories against infringement or usurpation by more dominant groups.

Procedures exist to negotiate among economic, social/cultural, and environmental needs in such large-scale water resource management situations. Prominent among them are Integrated Water

Resource Management (IWRM)⁵ and Environmental Flow Analysis.⁶ These processes are complex and political, not mere technical exercises. They are widely used and respected by now, and they increasingly include consideration of needs of diverse cultural groups. The Ramsar Convention to protect wetlands is another example of an integrated approach to large-scale water resources management. In 2002, the Standing Committee of the Ramsar Convention adopted a resolution regarding its designation of Wetlands of International Importance: that “incorporating cultural values in the management of wetlands” would be its policy henceforth. (Papayannis and Pritchard 2010)

Although these procedures are widely accepted by now, the literature on water resources management includes many complaints about discrimination and inequality in negotiations. One quote sums up the epistemological and power problem from the marginalized group’s point of view: “Indigenous knowledge, where it differs from

5. IWRM is “a process which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.” (Global Water Partnership 2000, quoted in Matthews 2012:358)

6. Environmental Flow Analysis (EFA) includes more than 200 different assessment methods. The general purpose is to determine the minimum flow required to sustain a healthy river system. “The role of EFA is to relate these hydrologic characteristics to physical and ecological responses, and thereby inform restoration of the socially valued benefits of biodiverse and resilient fresh-water ecosystems through participatory decision-making informed by sound science.” (Arthington 2012 & Poff et al. 2010) “Environmental flows describe the quantity, timing, and quality of water flows needed to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems.” (Brisbane Declaration 2007, quoted by Arthington 2012)

science, is regarded as inferior.” (Ross *et al.* 2011:273)

Despite the persistence of such problems, there are by now a number of cases in which indigenous people have managed to establish themselves as co-managers of water and other resources in their territories with some degree of dignity and respect. An agreement in the Murray Darling river basin of southeastern Australia is one example. A coalition of indigenous groups negotiated a Memorandum of Understanding in 2007 with a governmental commission that specifies that “...Cultural... and social values should be given equal status with economic values when policy and management decisions are made.” (Darling 2012:457) Native American tribes and First Nations also have forged successful co-management agreements that enable them [to] exercise significant autonomy over their lands and waters.⁷

The formal purpose of such negotiations is to set up planning processes and devise policies that level the playing field. If it works well, the process will represent and respect interests of marginalized and indigenous groups. Respect for cultural diversity is all-important. Power differences always are involved. (Hiwasaki 2012:527) Details of culturally based belief and practice are less important than respecting the rights of marginalized groups.

⁷. A recent example of this trend is Haida Gwaii in British Columbia, Canada, where cultural rights, livelihoods, and stewardship have been strongly linked to sustainable watershed and “marinescape” management as well as biodiversity conservation through new environmental governance arrangements. (Thornton 2012:135)

Cultural Factors in Domestic Supply and WASH

Details of cultural heritage figure differently in projects that are concerned with domestic water supply and WASH. Access of diverse cultural and social groups to safe water is an important issue, as it is in large-scale works. But cultural views of water need more attention in this domain, because home-based ways of using water have serious health implications. Sanitation practices, especially management of feces, affect water safety. Domestic supply activities, therefore, need to be linked to WASH services.

People manage their personal habits, customs and community practices according to their own cultural principles, at least to the extent that circumstances allow. The most relevant cultural materials are language and popular ideas about health and illness. Water's importance in daily routines needs to be explored. Water's customary uses in healing and life-cycle ceremonies also deserve attention. Myth and folklore also may be relevant.

The importance of culture is frequently acknowledged in WASH programs. As one online document points out, "...Respect for, assessment and integration of the cultural context of users such as religious or cultural beliefs, gender or generational differences in water and sanitation programmes are crucial to mitigate failure risks and promote sustainable solutions." (Tratschin n.d.)

This insight has come at a high cost. Failed experiences have forced scientists, engineers, and public health specialists working on domestic supply and WASH projects to rethink their efforts. One project in southern Africa, for example, found

people rejecting water from sand filters, even though such filters seemed completely logical and could help to reduce water-borne diseases. They were cheap, did not use electricity, and could be made from locally available materials. The development agents, however, had failed to recognize the locally perceived importance of drinking only *running* water, not standing water. “They were used to only drink running water because in their experience water in stagnant pools was not doing any good to their health. And because water coming from a sand filter stands for a day while being processed, the users refused to drink it...” (Tratschin n.d.) Similar problems plague the sanitation field. Latrines – though essential to prevent contamination of water sources – may or may not be used to contain human fecal waste, depending on local culture and socially meaningful practices associated with elimination. They may be used for laundry, storage or other household purposes instead.

Bangladesh has had a leadership role in integrating cultural principles into WASH programs. In the early 1990s, for example, CARE Bangladesh and the International Centre for Diarrhoeal Disease, Bangladesh (ICDDR,B) started a ten-year model project eventually called SAFER (Sanitation and Family Education Resource). This project was unusual in focusing entirely on personal communication, rather than on “hardware,” meaning physical equipment. Through a network of NGOs (non-governmental or non-profit organizations) coordinated by CARE, program participants were engaged in problem identification, design, monitoring and program evaluation. It was an intensive effort that included weekly sessions

with NGO staff and frequent checking by CARE managers. The project produced a large number of educational materials – flash cards, games, posters, and so on – that were tailored to the tastes of diverse ethnic and socio-economic groups. These materials were widely disseminated and further adapted by virtually all other WASH practitioners in the country. CARE-SAFER was internationally recognized as a trail-blazer. (Bateman 1995, CARE Bangladesh 2001)

Adjusting Scientific Information to Local Needs

Development projects rarely try to change everything about a place, but they do need to change certain things. They focus on a specific goal, such as reducing the spread of water-borne diseases. Specific objectives arise from this goal: for example, promoting consumption of safe drinking water, hand washing at certain times, or use of sanitary latrines. Folk culture need not change entirely to achieve these objectives, but some aspects definitely need attention. Success depends to a large extent on how well accepted the new, scientific information is – whether people are willing to make the personal and social changes needed to integrate a new idea, practice, or technology into their daily routines. Not knowing details of local culture and/or not respecting it can lead to surprising results, including failure.

The purpose of recognizing folk or indigenous views in water projects (of any type) is not to glorify old traditions or bring back some imagined environmentally ideal past. It is to establish the right of people with diverse histories to have a say over how their resources are managed, and to accept

the fact that diverse points of view – different cultures – do exist. Power differences between development agents and the people they are supposed to help will interfere with communication unless this principle is sincerely accepted. The call is *to accept and respect cultural diversity*. Accepting this principle will require re-thinking the way that development projects are planned and implemented, but it will have long-term benefits.



A critical issue is the failure to include women in
Photo 1-1. A CARE-SAFER self-monitoring group promoting latrine use. Chittagong District, 2001
 (Photo credit: Suzanne Hanchett)

much water-related planning. Most water projects, especially large-scale projects, are implemented by government agencies in Bangladesh and other developing countries. Government officers are mostly educated men. Respecting housewives' views – or even meeting women and speaking with them as equals – will require a significant change in the typical official's approach. Whatever the

obstacles, scientifically trained development agents *must* communicate with women, especially about domestic water supply issues, at all stages of project planning and implementation, if they expect their development work to be effective.



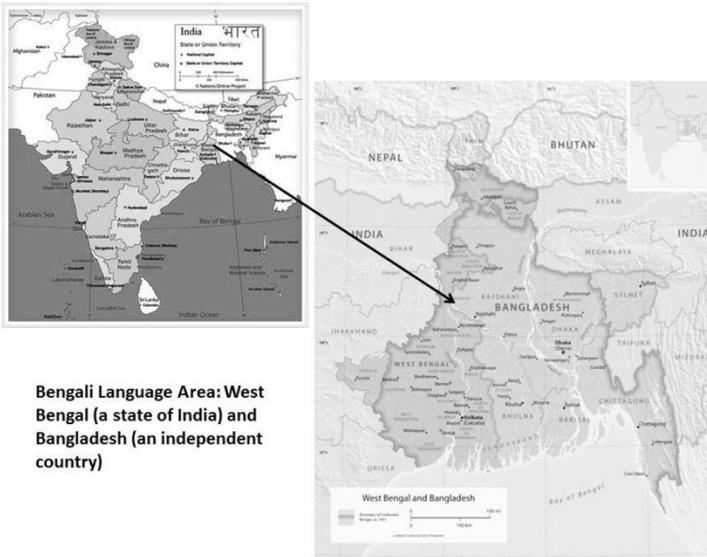
Photo 1-2. Village women sat on the floor at a water resources project meeting in Tangail District, ca. 2004



Photo 1-3. Village men and government representatives at the same meeting sat on chairs at a table
(Photo credits: Suzanne Hanchett)

The Bengali Study Population: History and Environments

Our research focuses on Bengali-speaking communities. Bengali-speaking populations nowadays are concentrated in two countries, India and Bangladesh. Their common origin is the old state of Bengal, an area with one dominant



Bengali Language Area: West Bengal (a state of India) and Bangladesh (an independent country)

Map 1-1. Bengali Language Area of South Asia

(Credits: India Map, Nations Online Project; West Bengal and Bangladesh, Anandaroop Roy Cartography)

language, Bengali. This state was partitioned in 1947 at the end of the British colonial period. The western part became the Indian state of West Bengal, and the eastern part of Bengal became East Pakistan. In 1971, East Pakistan separated from West Pakistan (now Pakistan) after a bloody civil war and became the independent nation of Bangladesh. (Map 1-1)

Political turmoil has led to large population movements during the past century. The first big change was the 1947 partition of India and Pakistan. The second was the 1971 civil war that resulted in the formation of Bangladesh as a new nation. These changes strongly affected some of the areas covered by this study, especially the Comilla District, which is near to the eastern border with India's Tripura State. At partition, Hindus left for India, and Muslims arrived. Some exchanged their properties with others in the new country, and some just fled. This process has, of course, slowed down, but it has not completely ended. The civil war had devastating effects on all areas of the country, as did a series of political upheavals that followed it. While a village or small town may seem long-settled, many of the families are likely to have come from elsewhere within the past generation or two. Social tensions, pressure on resources (including water), and disrupted or new social networks are typical. According to the *Index Mundi*, the population of Bangladesh in 2004 was 89.5% Muslim, 9.6% Hindu, and 0.9% other religions.

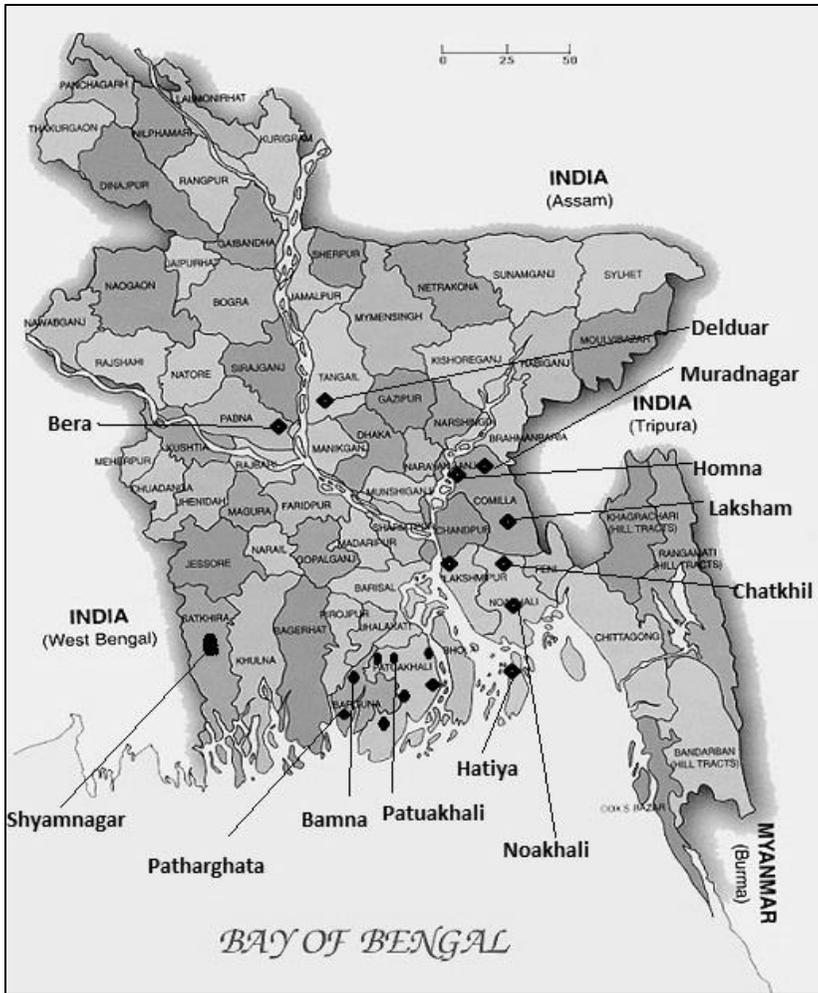
There are eight Bangladesh districts covered by most of this study. (Map 1-2) They represent a distinct set of environmental conditions. Eastern and southeastern districts (Tangail, Comilla, Laksmipur, and Noakhali Districts) are in relatively low floodplain areas, prone to annual flooding three or more feet deep. Other places (Pabna's Bera Subdistrict and parts of Noakhali, Laksmipur, and Comilla Districts) are even more deeply flooded in the rainy season. None of our locations is far from a large river or canal system. The southern districts of Patuakhali and Barguna and the mangrove forests of Satkhira District are located in or near the Bay of

Bengal and strongly affected by tidal flows and cyclones. Villages and towns alike in these southern districts are regularly inundated with tidal waters. Aquifers providing tube well (bore hole well) water for drinking and cooking tend to be very deep (below 350 feet and often as deep as 900 feet) in the coastal belt, so tube wells are more expensive to install and more distantly spaced than in other districts. These southernmost subdistricts face a problem of salinity in their surface and underground water sources. Large and small ponds – sometimes called tanks – are found in all of our locations, and the people make much use of pond water for domestic purposes. The southern environments are fragile and vulnerable to climate change. Some other parts of the country, where we have not conducted research, have different types of environments. They may possibly have some different cultural approaches to water.

Bangladesh's large network of rivers, streams and canals totals at least 15,000 miles (24,140 km.) in length. "They consist of tiny mountain streams, winding seasonal creeks, muddy [canals], some truly magnificent rivers and their tributaries and distributaries," as the geographer Haroun Er Rashid explains. All of them, except those of the far southeastern Chittagong region, belong to one of three major river systems, the Ganges (Padma), the Brahmaputra/Jamuna, and the Meghna-Surma. (Rashid 1991:44) In terms of breadth and total annual volume, the Padma/Ganges-Lower Meghna is the third largest river in the world, smaller only than the Amazon and Congo systems. (Rashid

1978:56) The lives of people we have met are strongly influenced by these huge river systems.⁸

8. Rashid estimates that in an average year 870 million acre-feet of water flows into Bangladesh from India, and there is an additional 203 million acre-feet of rainfall. After deducting evaporation, evapotranspiration and deep percolation, some 953 million acre-feet flows out to sea. One million acre-feet equals 1233.6448 cubic meters. (Rashid 1991:43-44)



Map 1-2. Principal Bangladesh Study Locations
(Details in Appendix 1)

Water Scenarios

The Bangladesh delta's three major rivers enter the country from India and flow into the Bay of Bengal. Wetlands (*bils*) and oxbow lakes (*baors*) are abundant and support large populations of fish and other wildlife. Although agriculture still is the



Photo 1-4. The Atrai River is reduced to a small set of pools during the dry season. Bera Subdistrict, June 2009

(Photo credit: Suzanne Hanchett)

country's primary occupation, ample surface water supports fishing and fish culture industries. Much of the plains area is less than ten meters above sea level.

Distribution of water in this landscape changes dramatically according to the season. Monsoon

rains produce floods, which are mostly benign and good for fisheries and agriculture, but destructive floods, tornadoes, and cyclones also are part of the picture. Cyclone shelters are now found throughout the southern coastal belt districts. Water flow decisions are made in India (to dam or release river water) in ways that create drought or floods in parts of Bangladesh. But Bangladesh has not yet been invited to participate in the meetings where these decisions are made.

Much of the land in Bangladesh is unstable. There is a large population living on sand-bar islands (*chars*) and fragile river banks. These lands are continually destroyed and re-shaped by erosion, especially during the rainy season. Silt accretion forms new lands that extend southward out into the Bay of Bengal, and people rush to settle them, fight over them, and so on.

Over the years, the complex water-related processes of this delta region have inspired huge engineering projects, most of which are intended to protect agricultural production and urban infrastructure. Engineers' efforts, however, sometimes have had unexpectedly negative consequences for fisheries and even agriculture. Man-made flood protection structures, such as river embankments or raised structures (polders) enclosing agricultural fields, are found in all regions. These structures can interfere with drainage and tend to create serious waterlogging problems in the southwest regions. Water control structures are not always used for the intended purposes. People may settle on embankments, for example. Farmers may cut embankments illegally, in order to let water in or out. Stimulating local interest in maintenance of government-constructed infrastructure is a major

concern among development agents involved in water resources management.

We have observed four major trends in the overall water scenarios of the places covered by our field studies. First, there has been a steep decline of open water fisheries and availability of wild fish. Natural fisheries have declined as a result of over-fishing and blockage of water inlets by embankments, poorly planned roads, and newly constructed settlements. Use of chemical pesticides in rice cultivation also has contributed to this trend.

A second trend is increased leasing-out of open water bodies that were once regarded as commons, or resources available for anyone to use. All or most have been freely available for use by professional or traditional fisherfolk and the general public until recently. In recent years, there has been more and more leasing-out of marshland (*biil*) fisheries, and even of fishing rights in sections of rivers and canals. This practice is a source of revenue for local government. The end result is that fishing rights to many water bodies now are privately controlled.⁹ Fishing is an important source of food for poor families, so this change has produced considerable hardship.

One man in Pabna District, a retired union council secretary,¹⁰ explained the situation in his

9. It is often mentioned in lease documents that local fishers will be allowed access to leased-out water bodies (wetlands, ox-bow lakes, and others), usually referred to as *jalmahaal*. In practice, however, local elites fully control these leased areas with support from government officials.

10. The union council (union parishad) is an elected body representing a population of 20,000-30,000. It is the most local level

region: “The Atrai River is a valuable source of bathing and cooking water here, and also fishing,” he told us. “This section of the canal extending out from the river has a large number of fish, and it remains full of water year-round. The whole canal has been leased out by the government for fishing purposes to 22 people, and some parts of the Atrai River also have been leased to rich people for fishing. The general public can use the canal and river for bathing and collecting cooking water, but fishing is not allowed. It is the common story here that most water bodies, especially large ponds, the river, and the canal, are leased out to rich and influential people. ...Only officially registered people (with lease rights) can catch fish.... The elite group... is controlling the resource and selling fish to members of the traditional Fisherman caste!”

This watery version of enclosure of the commons poses a serious threat to poor people’s access to both water and fish. People who own or lease water bodies used for fish culture are restricting others’ access to these formerly open sources in new ways in many parts of Bangladesh. This problem is not limited to Bangladesh, of course. As several authors have discussed by now, ownership of water bodies and privatization of water supplies are reducing access to formerly available sources in many countries.

The commons view of water is described by Bakker (2012:30) as an approach that “asserts its unique qualities: water is a flow resource essential for life and ecosystem health; non-substitutable and

tightly bound to communities and ecosystems through the hydrological cycle.”¹¹ Technology and science can support the privatization trend, or they can adopt a more balanced, long-term view.

A third trend, associated with the decline in natural fisheries, is an increase in commercial fish culture in rural ponds. This lucrative activity has the effect of making ponds unavailable for some domestic uses, especially bathing with soap. But it is still easy to find women gossiping as they do their laundry and dishwashing or bathe their young children at ponds throughout the countryside. Fish culture also makes pond water undrinkable.

The fourth trend is the filling-in of ponds and canals. There is limited land available for living spaces in most regions of Bangladesh, and land values are increasing. As the need for new land rises with the expanding population, filling in these man-made water bodies is one way for

11. Bakker uses a cultural argument in support of the commons view: “Water,” she argues, “has important cultural and spiritual dimensions that are closely articulated with place-based practices.” Bakker’s (2012:30) argument continues, referring to struggles in India and elsewhere over control of groundwater resources: “The real ‘water crisis’ arises from socially produced scarcity, in which a short-term logic of economic growth, twinned with the rise of corporate power (and in particular water multinationals) has ‘converted abundance into scarcity’ (Shiva 2002).



Photo 1-5. Women and children bathing in a pond: A common sight in the study areas (**Photo credit: Shireen Akhter**)

owners to get it. This trend, of course, further reduces the amount of water available for domestic uses.¹²

12. Water resource management in Bangladesh has a positive side. Although some individuals do grab control of water bodies for their own profit, whole villages, and even larger social units often cooperate to develop and maintain water resources. Such coordinated community action can effectively prevent flood or water-logging and enhance irrigation opportunities (Duyne 1998, 2004). A promising approach to rural supply is being promoted by the World Bank: namely, the creation of user-funded, small-scale, piped supply systems that use tube well water drawn from very deep aquifers. This program is managed by the Ministry of Local Government, Rural Development and Cooperatives through a special agency, the Bangladesh Water Supply Programme Project (BWSPP), which is the successor to the terminated Bangladesh Arsenic Mitigation and Water Supply Project (BAMWSP), which closed in 2006.

The Arsenic Problem

The government's official definition of water safety has changed drastically since the late 1990s in Bangladesh. From the 1960s onward, governmental, international and local development organizations had promoted the use of groundwater accessed by hand-pumped tube wells. This campaign eventually succeeded in persuading most of the rural population that "tube well water is safe water," as a common slogan put it. Indeed, it was safe in the sense of being relatively free of pathogens that cause water-borne diseases such as diarrhea, dysentery, cholera, or typhoid – diseases often fatal to young children. The official message changed abruptly, however, around 2000-2001, when high levels of arsenic were found in tube well water of 61 of the 64 Bangladesh districts.¹³

Arsenic is a naturally occurring toxin found in older alluvial soils of this region. It comes mainly from aquifers located 10 to 70 meters (33 to 230 feet) below the earth's surface. It has no color, taste or smell. Even low-level exposure over a long period of time is considered dangerous. Health risks include lung and bladder cancer, neuropathy, and skin lesions possibly leading to cancer. (Smith *et al.* 2000)

In some of the areas where we have conducted our studies 80 percent or more of the tube wells produce water from aquifers which are less than 70 meters below the surface. High levels of arsenic were found, by one survey, in almost 25 percent of

¹³. In neighboring districts of West Bengal, India, the arsenic problem was officially recognized in the 1980s.

the drinking water drawn from tube wells. Tube wells, however, still are widely preferred over the more traditional dug wells and rain-fed ponds as sources of drinking water.



Photo 1-6. Tube well heads were painted red to indicate high arsenic content in the water
(Photo credit: Cindy Geers, 18 District Towns Project)



Photo 1-7. If water was found to “safe” levels of arsenic content, the tube well spout or whole well head was painted green

(Photo credit: Cindy Geers, 18 District Towns Project)

convenient and tasty tube well water might somehow be “poisonous.” Wealthier, more educated people were better informed than those who were poorer and less well educated. In addition to shock, there was some cynicism. (Hanchett *et al.* 2000, 2002, 2006; Asian Development Bank 2003)

Between 1999 and 2003, hundreds of people paid through various arsenic mitigation projects rushed around the country testing tube well water and painting tube well pumps red if the arsenic content of the water exceeded 0.05 milligrams per liter (or 50 parts per billion), the Government of

When the arsenic situation first came to the attention of the general public, it caused excitement at all levels of society, including donors and policy makers. Large amounts of aid money flooded organizations willing to tackle the problem, but solutions were elusive. Newspapers issued frequent reports on the health and social problems of people afflicted with

“arsenicosis,” showing skin discoloration or lesions and neuropathy that could lead to leprosy-like symptoms. The public was generally confused by the news that their

Bangladesh's official limit.¹⁴ If the water was below this limit, the pumps were painted green. (Photos 1-6 and 1-7) Water testers informed the public about the arsenic problem in most (but not all) cases. Screening exams identified some 13,000 people in Bangladesh with skin lesions that possibly indicated arsenic poisoning. The arsenic problem is estimated to affect 29 million Bangladeshis and another 7 million in West Bengal, India. (Ahmed 2003:12,14)

Some arsenic mitigation projects have installed safe water options, such as deeper tube wells, or provided household and community filters, but there is no ongoing governmental program or service in Bangladesh to deal with the problem.

Researching Water Culture

Information for this book was collected while the team or certain team members conducted fieldwork on behalf of several different water projects or water and sanitation programs in Bangladesh. The goals of these programs were generally acceptable to the intended beneficiaries: reduction of diarrheal disease; promotion of latrine use and hand-washing; and removal of arsenic from drinking water. So there were few situations in which cultural norms were violated by project staff. We did identify some important misunderstandings and unexpected outcomes, however.

Our collective fieldwork efforts have gone on for more than 12 years. We are drawing primarily from our field notes on studies done in 18 different subdistricts or towns in eight different districts of Bangladesh between 1997 and 2009, plus a short

¹⁴. The World Health Organization's officially arsenic-safe limit is 0.01mg./L, or 10 parts per billion.

visit to West Bengal in 2004. We also have done some research among ethnic minority groups, but as four authors are native speakers of Bengali, the Bengali language information is where we feel most confident of the validity of our findings. Our research materials are supplemented by literature review and information on other areas from some helpful colleagues.¹⁵ In 2009, UNICEF Bangladesh funded the team to do some systematic data collection on water-culture in Comilla and Pabna Districts. Details are summarized in Appendix 1.

Most of our information has been collected using rapid rural appraisal (RRA) research methods.¹⁶ The typical approach is for two or more researchers to visit a place for a period of one to 14 days. While there, the team develops overview of the local population's size and socioeconomic characteristics and the distribution of settlements, conducts interviews, and makes systematic observations. Daily team meetings are important to ensure information-sharing and fact-checking. Many of our studies have included questionnaire surveys of randomly sampled households, but almost all of the information presented in this book was gathered using qualitative research methods, such as focus group discussions, social mapping, body mapping, key informant interviews, and structured observations. Case studies and situation analysis are also part of a typical RRA study.

16. Professor H.K.S. Arefeen of Dhaka University has been especially helpful, providing supplementary information from his home district, Chandpur.

17. Rapid appraisal research methods are described and discussed in Chambers 1991 and Kumar 1993.

We always met with both men and women, with poor, rich, and middle income people, and with both Hindus and Muslims, if both groups are present in an area. We have attempted to cover places in a broad way, not to neglect remote sections of a visited village.



Photo 1-8. Kazi Rozana Akhter conducting a focus group discussion in 2006 in Muradnagar Subdistrict, Comilla District.

During the years of research covered by this book, we sought out more than 70 key informants knowledgeable in local lore and practices, and we conducted more than 90 focus groups and other less formal group discussions during village visits ranging from two hours to two weeks. The management of water inside the homestead is almost always the responsibility of women, so women's voices prevail here. Approximately a third

of our interviews have included men, so their views and practices are represented as well.

These research methods have both advantages and disadvantages. The main advantage is their efficiency. Group discussions bring out points of community consensus and disagreement on certain issues within a short period of time. Conducting such discussions, we use general questions that will stimulate discussion. Participants are made to understand that we do not expect there to be right or wrong answers. Rather, we are interested to know how people think. Because Bengali villagers generally enjoy discussion and debate, the method brings out plenty of opinions and clarifies points of consensus or disagreement. The advantage is breadth of information, both geographical and social.

A disadvantage of this approach is that it does not provide much information about how cultural principles and social values play out in the daily life of any one place. The presence of visitors tends to put people on their good behavior. They show their best side to the extent that they are able. We have heard many reports of conflict and observed some, too, but the RRA method does not allow for deep exploration of specific situations.

Overview of the Book

Chapter 2 reviews water-related mythology, traditions and folklore in the South Asian subcontinent and ethnographic studies relating to various types of water. Chapter 3 presents Bengali myths, legends and sayings relating to water generally, to rain, and to various kinds of water bodies. Perceptions of water's qualities and some water categories and Bengali terms are discussed in

Chapter 4 (A more complete list of water-related vocabulary can be found in Appendix 2.). Detailed information on management of domestic supply and uses of water in healing and family rituals is in Chapter 5. In Chapter 6, we return to the arsenic problem, efforts to solve it, and culturally based reactions to it. Chapter 7 summarizes some principles of water culture in the study areas.

2. Water in South Asian Traditions

Numerous philosophical and religious movements – Hindu, Buddhist, Jain, Muslim, and others – have participated in the cultural history of South Asia for more than 3000 years. Every region and religion has been affected by multiple influences. And every country, state, and district has its own complex mix of beliefs and practices. Nonetheless, there are numerous common patterns and themes in the traditions of different places and peoples. Although the population of Bangladesh is almost 90 percent Muslim, much popular or folk culture is shared with Hindus, Christians, and Buddhists. A brief review of South Asia’s water-related traditions can shed light on the varied historical sources of some widespread folk customs and cultural precepts.

Early Historical Influences on Water Culture in South Asia

An early civilization along the Indus River in what is now Pakistan developed extensive water-works between the fourth and third millennia BCE (Before the Common Era, sometimes written as BC). The ancient city of Mohenjo Daro had a network of covered drainage channels and rooms with drains in their floors. There also were many large bathing areas, suggesting that water was used for purification. But there are no written records documenting water-related beliefs in the Indus Valley Civilization. Archeologists have found massive stone dams for water storage in multiple locations outside of the cities. Drains and wells existed even in villages. (Fairservis 1979a, 1979b)

Ever since this early period, elaborate water resource management systems have been part of South Asian social, cultural and economic life.¹⁷

¹⁷. In Sri Lanka and throughout southern India, large water storage tanks were built by numerous early kings. In Sri Lanka, water control structures tapped the Kala Oya in the 5th century BCE, diverting river waters to supplement the supply of water to the capital city, Anuradhapura, and its surrounding area. (Disanayaka 2000:16)