

Water in the Shaping and Unmaking of Khmer Identity on the Vietnam-Cambodia Frontier

Philip Taylor

Abstract

This paper attempts an explanation for the persistence of Khmer cultural identifications on the Ca Mau Peninsula of Vietnam. This low-lying peninsula is a unique human environment, where Khmer villages, Buddhist temple festivals and livelihood activities are centred on a network of saline-infested rivers. The presence of Khmer communities along these waterways is noteworthy, for much scholarship suggests that the waterways of the multi-ethnic lower Mekong region tend to be dominated by non-Khmer ethnic groups. The vigorous Khmer presence on the peninsula is even more intriguing given that the peninsula is a migratory and trade oriented region, long under Vietnamese administration and subject to military and environmental upheavals that have challenged Khmer tenure.

The paper suggests that mastery of communal water harvesting allowed Khmers to survive the long saline water season and gave them a secure foothold in this region. Additionally, their collaborative water harvesting practices contributed to cohesion and a common identity among Khmers and helped strengthen the Theravada Buddhist wat as one of the key cultural institutions on the peninsula. However, the development of an extensive irrigation network by the Vietnamese state in the last thirty years has had the opposite effect. Canal developments facilitated intensive agriculture, immigration and the introduction of new cultural models into the peninsula, while creating economic and environmental insecurity for Khmers and undercutting the traditional grounds for collaboration. Such changes cast light on the links between ethnic identifications and the system of fresh water provision in the lower Mekong region.

KEYWORDS: Khmers, Mekong delta, ethnicity, water, temple ponds

INTRODUCTION

A NETWORK OF KHMER villages lines the banks of rivers that run east and west off the Ca Mau Peninsula of Vietnam. The villages number around one hundred and twenty and are thought by their residents to be many centuries old. Life in these settlements revolves around the rivers, which provide water for drinking and crop irrigation, and are used for residence, fishing, transport, trade, and religious activities. Each village is centred on a Theravada Buddhist temple, where are staged rites and seasonal festivities similar to those elsewhere

College of Asia and the Pacific, Australian National University; philip.taylor@anu.edu.au

in the Khmer-speaking world. Although located within Vietnamese territory, residents of these villages speak Khmer and remain conscious of their Khmer cultural heritage.

The existence of this network of villages is intriguing, considering the formidable challenges that Khmers in Vietnamese-administered territories historically have faced. From the eighteenth century onwards, the Khmer presence in the delta was undercut by the Hue-based Nguyen state, which militarily removed its local Khmer rivals, set up tax stations and settlements at river confluences, and established military colonies in the heart of Khmer populated regions (Chandler 2008; Mak Phoeun 1989). The multi-ethnic peoples of the Mekong delta were required by the nineteenth century Nguyen court to adapt their clothing, language, naming conventions, and religious practices to Vietnamese or sinic norms (Choi 2004). Khmers experienced further dislocations in the colonial and post-colonial periods, when environmental and economic development, revolution, wars and nation-building caused great upheavals in the delta's social and cultural landscape (Biggs 2010; Brocheux 1995; Engelbert 1994; McHale 2013).

Nowhere were the challenges greater than on the waterways. Vietnamese state expansion into the Mekong delta was accompanied by a spontaneous occupation of its waterways by migrants from the north who, with the assistance of state authorities, often supplanted pre-existing riverside residents (Barrault 1927: 135–40; Brocheux 1995: 10–15). In the French colonial period, canals became a new vector of displacement. Khmers were systematically rendered landless by canal development, land concession, and commercial policies that favoured French, Vietnamese, and Chinese interests (Brocheux 1995: 38–43, 94–99). During the wars of decolonisation, the rivers of the central delta were the theatre for fierce struggles among a plurality of military forces that resulted in the disintegration of numerous Khmer riverine communities (Taylor 2013).

Some scholars contend that Khmers were able to survive in Vietnam only by abandoning the strategically contested rivers at the heart of the Mekong delta and retreating to the salt marshes and stranded dunes of the coastal fringe, where they were able to regroup and keep their culture alive in relative isolation (Aymonier 1900: 131; Malleret 1946; Robequain 1944). Their strategy of withdrawing to the periphery, in an apparent attempt to avoid being governed (Scott 2009), resonates with the situation in post-Angkorian Cambodia. There, the typical and preferred habitat of Khmers is said to have been at some distance away from major rivers, towns and seacoasts, in upriver hinterland villages characterised by significant insularity and autarchy (Mabbet and Chandler 1995). The population distribution of the Khmers of the lower Mekong also is said to reflect their preference for residing on high and dry land away from the waterline, as distinct from the Vietnamese, whose choice of abode is along the rivers (Delvert 1961: 184; Malleret 1946: 25).

However, the setting of the Khmer villages of the Ca Mau Peninsula contradicts these portrayals of typical Khmer habitats and survival strategies. Surrounded by sea and intersected by numerous rivers, the peninsula is, if anything, more open to waterborne administrative and military penetration than areas to the north of the Bassac and Mekong rivers where Khmers are said to have been displaced or assimilated centuries ago (Choi 2004). In a region that long has been a commercially oriented multicultural frontier zone, their villages stretch along major waterborne trade routes that have been operation in for centuries (Cooke and Li 2004). The environmental, social, and military upheavals experienced on the peninsula during the colonial and post-colonial periods certainly were no less intense than those experienced elsewhere in Indochina (Biggs 2010). The unexpected survival of so many Khmer settlements in such conditions challenges us to come up with better explanations for the flourishing of Khmer communities and identifications in the turbulent multi-ethnic frontier setting that is the lower Mekong.

This article suggests that ecological conditions specific to the peninsula may account for the strength and longevity of these Khmer riverine communities. The peninsula faces a chronic seasonal shortage of fresh water. Low-lying, open to the sea, and heavily affected by tides, it experiences regular long saline incursions and groundwater of permanently poor quality. Although these severe freshwater constraints set a limit to the penetration of state institutions, migrants, and development programs, potentially they also conferred a strong local advantage to those with the ability to survive in freshwater-scarce environments.

The article demonstrates that Khmers had a locally sensitive and decentralised solution to the problem of water scarcity that enabled them to thrive in this region. Precise knowledge of the quality of river water and groundwater, and of soil types, enabled them to adapt a method of rain harvesting widespread in the Khmer and Indic worlds to the particular conditions of the Ca Mau Peninsula. The method by which they harvested this water required a high degree of collaboration between neighbours. The most significant example of co-operation was the pooling of labour by neighbourhoods to provide water for monastic communities. Their labour resulted in a source of water available for use year-round not only by monks, but also the wider lay population. Co-operation in the provision and use of water in these sites promoted bonds of trust and community between those affiliated to the same temple. The location in Theravada temples of such important reservoirs of fresh water helped place these institutions at the centre of dispersed riverside settlements, and facilitated the propagation of Khmer cultural, linguistic, and religious models in a multi-ethnic and socially mobile region.

The importance of these institutions is affirmed when one considers the effects on the Khmers of post-war changes in the hydraulic regime of the peninsula. These changes were, most crucially, the construction of numerous canals to

channel in river water and of dikes to prevent saline incursions. These developments facilitated the intensification of rice growing for export, and the infiltration of immigrants and state institutions into the peninsula. They also rapidly led to the abandonment by the Khmers of collective water-using practices and the decline in the centrality of the *wat* as the principal social, cultural, and religious institution in the riverside settlements. Combined environmental and economic crises on the peninsula ultimately forced many Khmers to abandon their villages. Consequently, the transformation in cultural competencies and identifications among Khmers in this region has been swifter in the last twenty years than perhaps at any other time in their history.

The evidence for this thesis was assembled during visits to the majority of Khmer villages on the peninsula where I interviewed elderly people about water conditions and water collecting practices in the past, and observed contemporary conditions and practices.¹ The article commences with an overview of the patterns of life in Khmer villages along the rivers of the peninsula. I then describe the practices of collective water harvesting and the traditional role of the temple pond in these villages. I conclude by discussing the nature and impact of post-war changes in the local water regime on Khmer residents and on Khmer identifications.

LIFE ON THE RIVERS OF THE CA MAU PENINSULA

Composed of fine-grained alluvial clay discharged from the Mekong River, the Ca Mau Peninsula has been sculpted by oceanic currents into a tapered point that divides the Gulf of Thailand from the South China Sea. The peninsula is flat and low; nowhere is it more than one metre above sea level.² It receives on average over two metres of rain per year (Vo 1998: 27) and is strongly subject to ocean tides. Until recently very little of this landform was permanently above water. The majority of its surface area was covered with rain-filled lakes, swamps and a tangle of tidal rivers. Water accumulating on the peninsula is stained dark with tannins that have leached from the trees of its submerged melaleuca forests. This is a likely reason for the Khmer name for this region, Tuk Khmau, meaning black water.

Numerous rivers drain east and west off the peninsula. One westward flowing system, called Prek Thom (Big River or Cai Lon), has tributaries a hundred kilometres long. It arises in Soc Trang Province and empties its contents into the Gulf

¹Research for this article was conducted between 1999 and 2011. During this time I visited the majority of the Khmer settlements along the rivers of the Ca Mau Peninsula to collect oral histories about social and environmental change. The research was funded for the most part by the Australian Research Council and the Research School of Pacific and Asian Studies, Australian National University.

²The broad depression that covers most of the peninsula is from fifty centimetres to one metre above sea level (Nguyen Huu Chiem 1995: 164).



Figure 1. Saltwater Rivers of the Ca Mau Peninsula.

of Thailand just south of the port city of Rach Gia (Fig. 1). A second river system drains the eastern half of the peninsula. With headwaters some sixty kilometres inland, its multiple tributaries wind through Soc Trang and Bac Lieu provinces before converging at Peam Chan (known in Vietnamese as Co Co River) and flowing into the sea at Vinh Chau. These and numerous smaller rivers also open the peninsula to the sea. Their downstream reaches are permanently salty and during the dry season, when saline incursions are at their most extensive, the upstream reaches run brackish for several months.

The salt-prone rivers of the Ca Mau Peninsula are the basis for an ecologically unique Khmer settlement zone. Khmer people in Vietnam also live in mountainous areas along the Vietnam-Cambodia border and the Gulf of Thailand; amidst a band of sand dunes on the east coast of the delta; and along fresh-water rivers at the heart of the delta. The saltwater river zone is large and spans five provinces (Hau Giang, Soc Trang, Bac Lieu, Ca Mau and Kien Giang). Yet it is sparsely populated, with just one quarter of Vietnam's total actively-identifying Khmer population. Approximately one hundred and twenty *wats* line the rivers of this region, the majority of them concentrated downstream, to the west in Kien Giang, and to the east in Soc Trang.

Rivers have long provided the basis for settlement in this region. According to local Khmer folklore, some sites on the peninsula were seats of the Angkorian kingdom.³ Locals believe that the temples nearest the mouth of the Prek Thom on the western peninsula were established first in a six hundred year-old process of Khmer colonisation of this local river system.⁴ Numerous temples along the rivers of the eastern half of the peninsula are thought by their local representatives to have been founded in excess of four hundred years ago. Placenames along these river systems record visitations by Khmer kings, a Khmer queen, the Siamese navy, the Lao army, Chinese traders and the existence of ancient entrepôts.

The Khmer population is distributed along the banks of the smaller tributaries that feed into the main river estuaries. Formed by deposits of clay (*dei et*), the riverbanks were once the only points in this region to remain above water year-round. According to elderly residents, this originally is what made residence possible. However, the natural height advantage the banks provide is marginal, mostly only a few centimetres above the high water level. Thus, considerable effort has been devoted to supplementing the banks and rendering them more secure for human residence. Most houses are made using materials procured from the waterways. They stand on a platform of clay that has been dredged from the rivers by hand, heaped upon the banks and stamped flat. The walls and rooves are of water coconut palm fronds that have been taken from the river and suspended on a frame of paperbark poles that have been harvested from the swamps. Forecourts are created by piling river silt behind a retaining wall of logs. Houses front the river. Fields are to the rear.

Before much of the peninsula was cleared for rice fields in the early twentieth century, it was heavily forested and livelihoods were based substantially on harvesting and processing forest resources. Hardwoods and wild fruit trees grew upstream where the water was freshest. Paperbark trees, bamboo and water coconut palms grew in the brackish mid-reaches. Rushes and mangroves were prevalent near the coast.⁵ These forest resources are still exploited for boat building, house construction, mat and trap making, and charcoal production. Honey

³An ancient stone structure in Can Den, Vinh Thuan District, Kien Giang is considered to be the site where the king in the time of Angkor governed and received the local population. Senior Khmer monks in the vicinity call it Prasat Thnol Mui Roi, meaning, I was told, 'royal site to which one hundred paths lead'. Across the peninsula, just to the west of Bac Lieu town, is a tower dated to AD 892 called Prasat Preah Theat (Malleret 1943: 12). Stories told by local Khmers link this tower to the travels of the Khmer king.

⁴Wat Lang Cat in present-day Rach Gia city is believed by its resident monks to have been founded in the early 1400s. Ten *wats* in Chau Thanh and Go Quao districts are said by their respective elderly caretakers to have been founded before 1700. Just three *wats* in the upstream reaches of Long My district of Hau Giang and Ngan Dua district of Bac Lieu were, according to local memory, founded before 1700.

⁵Because of the clay soils and saline incursions, the area is not ideal for cultivating fruit trees, even now that canals channel freshwater directly from the Mekong. In the middle reaches of the basin, where the water can be brackish in the dry season, shallow-root crops like pineapples and sugar

was collected from the hives of wild bees and the hives boiled to extract wax. The Khmer name for the river basin that defines the western part of the peninsula, Kramuon Sor, meaning white wax, likely derives from the wax trade.⁶ In addition, once vast flocks of wild birds were hunted with nets, slingshots, and later guns.

Aquatic life thrives in the saline-freshwater interface of this region and to this day a great variety of netting and trapping methods is used to harvest it. Plunge nets are suspended from a bamboo frame above the surface of a waterway and are levered into the water to scoop up passing fish. Nets strung along the edges of a waterway create a fish channel that becomes a trap when the tide subsides. Woven bamboo traps of various kinds are lowered to the bed of the river for catching fish, shrimp, crabs and eels. People forage along the banks of waterways, and through flooded fields and swamps, spearing rats, and collecting snails, frogs and freshwater crabs. Most households raise ducks, which are fed on a rich diet of aquatic animals and vegetation. Large flocks of ducks roam the waterways and flooded fields and at night are penned in nets. The exploitation of aquatic resources is a localised activity that usually takes place close to home. In some areas, however, residents utilise their boats to undertake extended fishing journeys along the waterways.

Until the late 1970s, the region yielded one rice crop per year. Seasonal rice *srau r'dau*, was sown after the early rains had flushed out the saline water and was harvested half a year later, after the floods subsided. Water buffaloes, *krobei*, were critical in putting this waterlogged region under rice cultivation. The buffalo is well adapted to sodden conditions: its wide hooves allow it to move through the mud more easily than a cow. In the past, the size of a buffalo herd was a common means of determining if a family was well-off. The greater the number of buffaloes one used, the more rice one could grow. If one owned a large herd of buffaloes, one could rent them to others.

With life and work centred on waterways, the boat is at the heart of Khmer livelihoods and sociality in this region. Almost every Khmer household has a private jetty and a small rowboat. These boats are used for visiting the fields, inspecting nets, herding ducks, fishing in the streams and collecting in the swamps. They are used to travel from the home to the *wat*, the school and the market. In the past they were used to ferry home water from communal rain-water storage ponds in the dry season. They continue to be used to transport silt scooped from the riverbed to the river's edge where it is used to create platforms for residences and gardens. As the main routes of communication the waterways are full of boats, although almost none of the large long distance passenger and cargo vessels that ply the waterways is owned by Khmer people.

cane are grown. Conditions are more favourable for fruit trees in the upper reaches of this river system, around Hau Giang.

⁶The trade in honey and in rush mats was also significant enough to be noted in a map of economic activities in Indochina compiled in the early twentieth century (*Carte Economique De L'Indochine*. Hanoi: Service Geographique 1937).

Whereas transport modernisation elsewhere has entailed the sealing of roads and motorisation of land-based wheeled vehicles, here, it has meant the extension of canals and mechanisation of boats. Most ubiquitous is the longtailed motorboat, *tuuk masin*, that can seat up to four passengers and is also used for transporting goods. Becoming popular first in the early 1990s, today nearly every Khmer farming family owns one. The boats are garaged in their own huts of water coconut leaves to prevent the hull from filling with rainwater. The boat's propeller unit is also used as an agricultural accessory to pump water from the flooded fields. Like the buffalo, which allows fields to be tilled while they are still soggy, the propeller pump has allowed farmers to drain their rice fields in preparation for planting up to a month before the water would naturally ebb away, and has made possible the introduction of the spring rice crop and new short yield rice varieties.

Boats were also used in the construction of Theravada *wats*. These buildings occupy the highest land in this inundated region and are built on silt dredged from the rivers. As elderly men in Wat Khlaing Ong (Suvánarangi), Kien Giang explained:

“*Wats* are always on higher ground. This is not just about the choice of a site on naturally elevated land. The main reason is that the community gets together to build up a platform on which to build the *wat*. People would scoop up silt out of the river bed into their boats and use their boats to ferry it to a site selected for the *wat*. A retaining wall of logs, now cement, was hammered into the ground to form a perimeter first, and then the silt from the river was piled inside, creating a platform higher than the surrounding land. This allowed the *wat* to be built above the water level. Stilts elevated the key *wat* building even higher.”

Each *wat* is located beside a waterway, usually at a major confluence. Until recently, the only way the majority of laypeople could access them was by boat. The *wats* each have a boat landing and a boat that belongs to the *wat*. In the past, monks used to undertake the alms round by rowboat, travelling from one household jetty to the next to receive alms. Although monks in Theravada orders are not permitted by the monastic rules to drive motor vehicles, this restriction is said not to apply to water borne transport. Hence one can often see monks steering motorboats along the waterways. *Wats* in this region each have their own ceremonial racing boat, *tuuk ngo*, which are raced against each other annually.

Wats traditionally were social and ritual centres of the Khmer agrarian communities of the black water river region. The *wats* each had schools, which were, until very recently, the only schools in many a Khmer settlement. In them, local children learnt basic Khmer literacy and maths at the very least, and some *wats* offered advanced Khmer literacy, Pali, and Buddhism. Temples were sites for important life cycle rituals, such as ordinations that earned merit and prestige

for a monk and his parents at critical life junctures; and meditation retreats for women who had reached social seniority.

The temples are sites for an intensive round of seasonal festivals that commence with Chol Chnam Thmei, the Khmer New Year, in April, just prior to the onset of the rainy season. Ceremonies are held at the commencement and cessation of the three month monastic retreat of Vossa that coincides with the annual rains. The most effervescent of these festivals is the Ok Omboc boat racing festival, held in November, when the flooded rivers are at their highest and the water in them is at its freshest. During this festival, temple communities throughout the saltwater river region gather at two main locations to compete against each other.⁷ These festivals took place traditionally to ritually manage the transitions between the extended wet and dry seasons, moments of great significance for Khmer agrarian communities (Poree-Maspero 1962). They also marked the annual oscillation between fresh and salt water seasons, which were particularly consequential for the Khmer residents of this saline-prone region.

SURVIVING THE BRACKISH WATER SEASON

In times past, for the greater part of the year, freshwater was abundant across the Ca Mau Peninsula. The monsoon rains began in May and it continued raining until November. Over this time, rainwater steadily accumulated on the flatlands and filled the river channels. For up to nine months, residents in this region had no lack of options for obtaining water. Rivers supplied the bulk of the water for domestic purposes such as showering, washing clothes, cooking, and drinking. The location of houses along river banks provided residents with easy access to this abundant source of water. Water was taken from swamps that had been flushed by the rains, and from the flooded fields. It usually was drunk directly without being boiled.

For part of each year, however, riverside dwellers faced a critical shortage of freshwater. Once the rains and floods came to an end, river levels dropped. Rivers turned brackish as seawater surged up their channels and penetrated the marshes and submerged forests of the region. Saline levels in the rivers reached their highest point around May, when the rains recommenced. The saltwater season was longest and most intense in the downstream settlements, whose residents experienced periods of fresh water scarcity lasting up to six months. Even upstream communities in the interior of the peninsula struggled through a period lasting three or more months when the river water became too brackish to drink. No alternative natural water sources existed. Water retained in the ground was undrinkable owing to the high acidity and salinity of the soil. Pools

⁷These races are still held in Go Quao town in Kien Giang and in Soc Trang City.

of water remaining in the flatlands in the dry season acquired a sour and salty taste as the salts and acid in the soil seeped into the surface water.⁸

The shortage of water during the dry season meant that people were obliged to seek out alternative sources of water. One of these methods, still practiced throughout the saltwater region, was the use of clay urns to collect and store rainwater. The abbot of Wat Serey Ta Mon in Vinh Bien, Soc Trang told me that in the past, the water in the local river was undrinkable for around six months each year because of his settlement's proximity to the sea. During the dry season, people drank rainwater captured and stored in clay urns. The urns were purchased, because the local clay was unsuited for making clay pots.

The clay urns were used for a variety of purposes. If a family owned several, they were used to store water of different grades. Speaking of the situation in Giong Rieng in the mid 1980s, one monk recalled that people in his village stored rainwater in urns around the house. People also collected river water in the urns and used to drop a block of alum into the water to settle the sediments. Some urns were used for drinking water, some for bathing and some for washing clothes.

These urns could be more than a metre high and wide. Two or three would be enough to meet the drinking needs of a small family through the dry season. However, urns of that size were very expensive for an average family, because they could not be made locally, they had to be bought. Only a wealthy family could afford two or three urns; a poor family such as his owned just one. Another monk who was listening to us speak observed that the main problem in his own village was that there had been no one selling such urns, such was the low demand for them, despite the severe water scarcity in his village.

An alternative was to build an above-ground water reservoir. Elderly men at Wat Khlaing Ong recalled:

“A very small minority of Khmer people, only the most wealthy, might build up a special rainwater reservoir to last them year-round. Before cement was available they would mound up high and thick walls of clay to catch and retain rainwater above the groundwater layer. The walls prevented incursions of turbid surface water (*tuk lo'ho*) during the inundated season. By this method, a wealthy family would have water to last year round and sometimes a surplus which they might even sell to others.”

The rarity of these above-ground rainwater reservoirs was illustrated by a 68 year-old layman affiliated to Wat Kro Nhum, Go Quao. He said that in the French era his family had been the wealthiest in his village. But not even they had the resources to build one. Once, his parents had been obliged to travel over

⁸Mensvoort and colleagues provide a graphic map of the distribution of soil and water conditions throughout the Mekong delta (1993: 323).

twenty kilometres from home to obtain water from a large rainwater reservoir in Rach Gia town.

A more common dry season approach was to gather water from upstream. When the water in downstream settlements became brackish, people would travel to a site along the river system where the water was still fresh. They would paddle by boat, taking along jars or drums for ferrying the water home. Often these journeys would take a full day. However, access to water gathered in this way was restrictive. Few families had boats capable of storing significant quantities of water. And at the peak of the brackish water season, some Khmer villages on the peninsula could be up to five days by boat from the nearest fresh-water source.

An alternative was to buy water from traders who collected freshwater from the central delta and distributed it to the saline affected settlements of the peninsula. Elderly men in Wat Khlaing Ong recalled the situation in the 1960s:

“People would come along the rivers in the dry season selling fresh water by boat. The boats carrying drinking water were called *tuuk noam tuk*. The traders were for the most part ethnic Vietnamese. When pressed, Khmer people might be forced to buy water from them.”

The sale of water was dominated by large cargo boat owners. A retired ethnic Viet boat captain in Phu Loc town, Soc Trang told me that in the 1960s large scale water traders congregated in Bun Tao, a major water collection point for the entire province of Soc Trang⁹: “There were big boats, tankers, collecting water from there for sale to downstream communities. The practice was politely called [in Vietnamese] ‘water exchange’ *doi nuoc*, not selling water. In reality, water was exchanged for money.”

Khmer involvement in this trade was limited. Khmer people lacked boats of the size needed to engage in trade of this kind themselves. Elderly men in Wat Khlaing Ong estimated that of the larger cargo boats plying the rivers in these parts, even to this day, perhaps only one in one thousand would be owned by a Khmer person. And indeed, owing to a severe lack of cash throughout the year, it was rare for Khmer people to purchase drinking water from river water traders.

These alternative sources of freshwater helped many people to make it through the dry season. However, there were significant obstacles to accessing them. These barriers included distance and the high cost of the water, plus a lack of access to technical resources for obtaining or storing the water, such as jars, cement or boats. Such obstacles meant that these various alternative means of procuring water in the dry season were out of reach for the majority of people. Such individuals were obliged to meet their water needs by other means.

⁹Bun Tao is in Long Hung commune of Nga Bay district, Soc Trang.

COMMUNAL WATER HARVESTING

Most Khmer people in this region relied on ponds (*andon*, *sras*) as a dry season water source.¹⁰ These features, sometimes known as tanks or wells, are found throughout monsoonal Asia. They are an indispensable water source in a region affected by a common lengthy arid season. In much of South Asia, and also Cambodia, their construction and maintenance have been sponsored by the state for both irrigation and ritual functions, although many have been constructed by residents of a hamlet or cluster of neighbouring houses to serve purely local needs (Leach 1961; Mabbett and Chandler 1995; Mosse 1997). A Chinese traveller who visited Angkor in the thirteenth century observed that groups of several households commonly drew their water for drinking from a shared pond (Zhou Dagan 1992). In the mid-twentieth century this mode of water collection was ubiquitous in the Cambodian countryside (Delvert 1994) and it remains widespread to this day.

The ponds of the Ca Mau Peninsula have several unique characteristics. They were rarely lined with stone, since stones are rare in this alluvial delta. Dug into the soil, a few metres wide and deep, the ponds stored enough drinking water to get people through the dry season months. They were built by locals for local needs; their upkeep was in no cases sponsored by the state. They were not connected together in a network and nor were they used for irrigation, since the floodplain carried enough water for a long crop season. Nowhere were they used to harvest groundwater. They functioned exclusively as a rainwater harvesting and storage technique. Never were they connected to rivers. They were indeed rigorously kept separate from rivers, a critical distinction in a region where rivers ran salty for several months a year.

Khmers living in these parts conceive of rivers as salt water conduits. Their mouths are apertures that allow ocean water to enter. Their channels are a passage along which sea water travels, bringing salt water deep into the interior during the dry season. Comments by the abbot of Wat Serey Polthi Prek Ta Ang in Soc Trang can be cited as representative of this view. The stream running past the temple bears the name of the first man to live in this settlement:

“In the past, the Ta Ang River ran salty for six months a year. The salt water enters from Bac Lieu and flows along the big river (*prek thom*), past Tumposok to this point [a good 40 kilometres]. During that time, you could not drink the water in the river: it was too salty.”

¹⁰*Andon* is the generic term for pond. A *sras* is a pond located in a temple. However, the two terms are often used interchangeably in this region, as commentary on these water features by elderly Khmer people amply demonstrates.

According to this perspective, freshwater was to be found only in areas situated well away from rivers. I spoke to an elderly man in Wat Bung Chom, Soc Trang. The temple's name means 'rising from the swamp':

“When the *wat* was established seventy-three years ago, the area was low and frequently inundated. Before 1975, and the digging of canals, there was always fresh water, since there were no rivers here allowing salt water to penetrate.”

This view of rivers informs the siting of ponds. The best place to dig a pond is at some distance away from the river. This was the case in Wat O Chum on Prek Chek (Nipa Palm River), Nga Nam. This temple is situated midway across the peninsula, some one hundred kilometres upstream from the sea. Elderly laymen informed me that in their youth, the water in this river ran brackish for three months each year:

“During those months, people drew their water from the *andon* – a large oval pond dug into the clay, about fifteen metres long and seven metres wide. The pond in the grounds of this temple was dug about forty metres away from the river on slightly raised ground.”

This pond was located away from the river not to prevent floodwaters from spilling into it, for, as the laymen noted, the floods were not particularly serious. Their main concern was that when the river water turned saline, the salt from the river channel would seep through the soil into the pond. Despite this precaution, during the three months of salt water incursion, lasting until just after the Khmer New Year, the water in the pond turned salty (*pray*) and sour (*choo*): “But we had to drink it. It was all there was.”

The further a pond was situated from the river, the better. The abbot of Wat Ta Ang told me that one thousand families affiliated to his temple live along the Ta Ang River and the canal into which it flows:

“During the dry and salty water season, people drank water stored in ponds dug into the ground out in the fields. The ponds had to be situated a good distance away from the river, otherwise saltwater in the river channel would percolate through the earth and contaminate the drinking water. Depending on location, these might be up to 500 metres away from the river bank.”

Elderly residents emphasised that the water in these ponds is harvested rainwater; it does not come from the ground. They described the groundwater as undrinkable, owing to the acid sulphates in the soil. How then is it that the pond water is not contaminated by the surrounding groundwater? The answer was provided by the abbot of Wat Umpu Year, situated on a river of the same

name. He said his *wat* was first constructed in 1668. There are 800 families affiliated to it, residing in several hamlets:

“Here, the soil is of clay (*dei et*). If you dig into the earth, the water does not seep into the hole like it does along the old coastal dunes where the soil is sandy. If any water does seep in, it is acidic.”

The abbot’s comment points to the critical role played by clay in pond function throughout this region. Because clay particles are fine and flat, they pack tightly together, making such soils a poor medium for water. The impermeable soil restricts the infiltration of poor quality groundwater, making it possible to harvest rainwater in this region. In brief, these Khmer residents conceive of a pond as a giant clay pot. The clay walls of the pond keep the rainwater in. They also keep the groundwater out.

Precise knowledge of soil conditions was necessary in order for such ponds to operate effectively. As elderly men in Wat Khlaing Ong, Kien Giang noted:

“Ponds could not be dug everywhere. The earth here is ninety percent clay mixed with some sand (*dei k’sat*) and black earth (*dei khmau*), so at least groundwater does not seep into ponds as quickly as in the coastal areas where the soil is sandier.”

This knowledge was especially important in parts of the peninsula that are very high in acid sulphates. In such areas ponds could be located only where the soil was high in clay content. Huu Hinh, former abbot of Wat Krobei Kleac (White Buffalo temple), Ca Mau, recalled:

“Every one of the *wats* in Ca Mau is on a river. Each of them has a pond. These ponds had clay walls. They were dug into clay, which was present in only a few locations. There was clay along the banks of the big river and in a few other places. Elsewhere, the soil is a mixture of ordinary mud – black field soil – and clay. Without clay, which is impermeable, you could not maintain the quality of freshness of the water in the pond. The groundwater in these parts is sour, *choo*, year round.”

Collaboration in the digging of ponds was required in part because the clay soil was hard to dig. This was the explanation given by a group of elderly men in Wat Klaing Muon, Kien Giang:

“In the past, people drew water from ponds. The ponds were three to four metres deep and had fresh water year-round. There were ponds in the *wat*, in household compounds, and in each *phum* [neighbourhood cluster]. Here, the soil is of clay and the earth is really hard to dig. People co-operated to dig the ponds. There could be up to 70–80 households per pond. Each *phum* had its own pond.”

Elders in neighbouring Wat Khlaing Ong offered a number of additional reasons for the practice of collaborative water harvesting. The weak structure of the soil meant that one could not dig narrow wells – the earthen walls would collapse. Creating a pond wide enough to be sustainable was a major undertaking, which is why neighbours collaborated to dig ponds. Another factor promoting communal water use is that water and soil conditions are uneven making it impossible to situate ponds in some locations. Thus the members of a hamlet would collaborate to dig a pond in the most favourable location and all would come to that site to draw water. Finally, strong seasonal fluctuations in pond water quality also had the effect of promoting water sharing over a wide geographical area. As local ponds progressively turned sour during the dry season, people would go further afield, searching for drinkable water. The elders recalled:

“In the 1950s, Khmer people here would go to our ponds to fetch water by hand. We would scoop it up and bring it home by boat. By the fourth month, the Khmer New Year, water was very scarce. Even ponds with good fresh water would dry up during this time of year. People would have to travel further away from home to fetch water: to ponds in villages where the population was low and the demand on the water was not so great. Things were hard then. Really you had to go a long way to find water to ferry home and, even so, the quality of the best water you could find at that time of the year was quite poor: it was brackish. But there was nothing else to drink. Bear in mind that this was just for drinking; for all other water uses one had to use the river water.”

THE TEMPLE POND AS A SOURCE OF COMMUNITY

The most significant communal water source for Khmer residents of the peninsula lay within the grounds of their temples. Each Khmer temple in this region had at least one large pond, and usually two, plus a variety of other water holding devices. These water sources were constructed by members of the community and were for the use of community members.

A large proportion of the male members of any given Khmer village would spend several years living permanently in the temple as novices and ordained monks. They would consume communal food and gain an education from local monks and Achars. They would also utilise the collective water sources of the temple. These had been created by previous generations of monks and community members for the use of the monastic community. The ponds located in temples were large. They served all the dry season water needs of a substantial monastic community.

A seventy-five year old monk in Wat Tomlaithon Khlaing Muon, Kien Giang recalled:

“The *sras* in the temple grounds is ten metres deep. When as a youth I ordained in this *wat*, me and my fellow monks drank from it. We didn’t boil the water – just scooped it up and drank it. We showered with *sras* water as well as using it to wash clothes and dishes.”

Laypeople affiliated to a temple would consume water from its pond when they visited for social and ritual purposes. They would sip water or tea or share a meal during their visit, making use of the temple’s water reserves. Elderly male members of the temple management committee would be present at the temple most mornings to socialise and attend to temple business, while women would be on hand to prepare meals for the monks. Laymen would be present undertaking perennial construction or renovation projects. Achars would teach classes to the monks and village children. Eight vow laypersons, the majority of them elderly women, gathered in the temple four days each month to meditate. The temple was the site of major life cycle ceremonies, such as ordinations, meditation retreats, cremations, and death anniversaries. All villagers would gather at their temple to celebrate annual festivals that lasted in some cases several days. These included the three biggest festivals, Khmer New Year, Bon Donta and Ok Omboc, as well as the rainy season retreat commencement and cessation ceremonies, and Kathun. These festivals each included the sharing of at least one communal meal and most also had a fair-ground set up with many stalls offering snacks and drinks.

The temple ponds were also used by laypersons who resided in close proximity to the temples to obtain water for their household needs during the dry season. Pon,¹¹ a layperson affiliated to Wat Kvai To Tung, east of Minh Luong, Kien Giang described water gathering practices in his youth:

“The temple in the village where I grew up had a *sras*. The temple is on a stream. Most of the year, the water in the stream was fresh. Salt water intruded for about two months each year. The villagers, about 300 families in all, came to draw water from the *sras* during these months. I did this every day when I was young. My house was five hundred metres from the temple. I would travel to the temple each day by wooden rowboat and scoop up water from the *sras* using plastic buckets and row home with them.”

The temple pond was a focal point for water gathering during the dry season because usually it was the largest water source in a settlement. For instance, in Wat Kro Nhum, Go Quao, a sixty-eight year old layman recalled:

“Laypersons would come to the *wat* to draw water from the *sras* in the dry season. The *sras* in this *wat* was about ten metres deep and six to

¹¹Personal names in this article are pseudonyms.

seven metres in diameter. It was the biggest pond in the settlement. Laypersons lacked the resources individually to dig *andons* of comparable size, although they did have their own small *andons*.”

In some localities, the temple pond was the only communal water source. The abbot of Wat Ghositaram, a large *wat* on the Bac Lieu River, whose water was salty year round, recalled:

“Formerly there were two large ponds here in Wat Ghositaram. Each was 0.5 hectares in size. They were the only ponds in this hamlet. They were sunk into clay. Everyone in Cu Lao hamlet came to draw water from them. People relied on them and buffaloes too.”

So important were temples as water sources of last resort that even people not affiliated to a *wat* would come to draw water from their pond in the dry season. Ethnic Chinese, Vietnamese and Cham people from the nearby market hamlet of Minh Luong would come to fetch water from the *sras* in Wat Khlaing Ong during the dry season. The *sras* sometimes would dry up towards Khmer New Year, owing to overuse, forcing local people to look for water in another community.

A great deal of effort and care went into creating and maintaining these communal water resources. Temple ponds generally were the deepest ponds in a Khmer settlement. They could be dug deep because labour from the entire village was mobilised to dig them. Additionally, the ponds were recessed into land that had been heightened over the years by laypersons who brought silt from the rivers to deposit in the grounds. The location of ponds on this raised platform of earth contributed to better water quality in two ways. Elders in Wat Khlaing Ong told me the pond in their temple was less contaminated with saline ground water than ponds in other parts of their settlement because, although situated right next to the river, it was sitting above the natural groundwater level. This also meant that the *sras* was high enough to prevent brackish surface water pouring into it during the high water season.

As an important communal water reserve, the temple pond was carefully positioned and protected from contamination by surface water. Pon recalled:

“During the dry months, people drew water from the *sras* in my temple. The *sras* was round in shape, six metres deep and four metres in diameter. Its site was carefully chosen. It was dug into clay about ten metres away from the nearest stream so that it could not be contaminated by salt water. Measures were also taken to prevent incursion of surface water during the rainy season, when the stream overflowed its banks. The dirt excavated from the *sras* was piled up into a rampart encircling the pond which prevented any surface water spilling into it.”

Temple pond water was clean because efforts were made to carefully protect it. A monk from Giong Rieng recalled that sometimes people would stretch fishing nets across the surface of their pond to prevent refuse or organic matter falling into the water and contaminating it. Showering and washing stations were set up at some distance from the pond. Bathing in its water was not allowed. Elderly *achars* in the riverside Wat of O Chum, Nga Nam described the regime in place in their youth:

“The purity of the water in the temple’s *andon* was fiercely guarded. People scooped water from the pond into containers located away from the pond to use for various purposes. Laypeople also watered their buffaloes from the temple pond during the dry months but we carted the water to drinking troughs placed well away from the pond so that the buffalos would not foul the pond water.”

As a carefully maintained water source of last resort, temple ponds did more than enable people to survive in the saltwater river region. They also acted to constitute bonds of community among those who relied upon them. Like the monkhood, the monastic school, the worship hall and the temple racing boat, the temple pond played a critical role in consolidating a sense of common identity among the people residing in this multi-cultural, migratory frontier region. As a crucial material resource whose users went beyond the monastic community to include both the extra-monastic and non-Khmer populations, the temple pond did much to make the Khmer monastery a central and prestigious institution for all whom lived on the Ca Mau Peninsula.

As the comment by one local indicates, communal water is sacralised; it is a spiritual resource:

“Drinking water from the same source created a spirit of unity, of community, among villages. Those who drink water from the same source have the same water flowing in the blood in their veins. They are made of the same substance. The water from the *sras* is like the milk that flows from a mother’s breasts. All who share it are brothers and sisters, like those raised from the breasts of the same mother. And digging it together, people make merit together. All share in the merit from digging it.”

CHANGES IN THE WATER REGIME

The conception of the Mekong delta as a place of freshwater scarcity is one shared by successive regimes in Vietnam. Scientific studies vindicate Khmer conceptions of this problem (Anderson 1978; Mensvoort *et al.* 1993; White 2002). However, no report I have seen shows any awareness of the water gathering practices of the indigenous people of this region. Indeed, the Khmer experience has

been sidelined by a series of governments posing questions about the development of the delta that essentially discount the Khmer presence: how is one to populate the delta, unleash its economic potential and increase its agricultural productivity? Writing of western Cochinchina in the late colonial period, French human geographer Pierre Gourou observed that chronic water scarcity seriously impeded this region's economic potential. His statement of the problem neglected the longstanding presence of Khmers in this region and displayed no awareness of their water harvesting techniques:

“One of the most serious problems presented in the exploitation of this new, low-lying land is the provision of fresh water; in the dry season the inhabitants, who have available neither springs, wells, nor stream water – for wells and streams are salty – are threatened with death by thirst” (Gourou 1940: 65).

Since the end of the Vietnam War in 1975, the official solution to the problem articulated by this geographer has been to massively modify the water regime in the delta, unleashing changes to the environment whose impacts on the Khmer have been wide-reaching. The centrepiece was the construction of a grid of canals that drained the swamps in the low-lying northern half of the peninsula and brought water from the Bassac River deep into its southern half. The rural population was mobilised *en masse* to dig the canals. For several years this task, generally undertaken without the aid of machines, absorbed the bulk of citizens' obligatory annual labour contributions. The canals brought fresh water to areas believed to be falling short of their true agricultural potential: acid sulphate-infested swamplands and coastal wetlands dominated by seawater. Completing this transition, the peninsula was enclosed with dikes and sluices that retained freshwater into the dry season and prevented saline incursions (Biggs *et al.* 2009).

The extension of the delta's distributary network greatly increased the superficiality and duration of freshwater conditions in Khmer-populated areas of the peninsula. The date of the transition in the quality of water in the waterways is clearly remembered by elderly Khmer people throughout this region. It began in some localities in the late 1970s and continued into the 1980s as more canals were dug. People in many localities reported that by the mid-1980s they were able to drink from the rivers several months into the dry season and in some localities the water was fresh throughout the year. By the early 1990s, saltwater no longer penetrated the upstream river reaches, and the brackish water season was greatly attenuated in the coastal areas.

One effect of these changes in the water regime on the peninsula is that people ceased using ponds for water. They were no longer necessary, since the nearby river or canal now ran fresh year-round. Many ponds were left to deteriorate. Their banks eroded and a riot of vegetation colonised their surface. The

majority of temple ponds were filled in with earth to create more space in the grounds of the *wat* for the construction of new buildings. Some temple ponds continued to be used for washing and showering, however, the conception of pond water itself began to change. People reported that the water in ponds was dirty, tainted with an earth smell (*phlieu*) and prone to waterborne diseases. Some Khmer people told me with embarrassment that the practice of drinking pond water is what had made the skin of Khmer people black; clothes washed in pond water never could be whitened.

A second impact of the extension of canals into the saltwater river region was to make possible the cultivation of additional crops of rice. Formerly just one rice crop per year was grown, during the rainy season, whose growth season, from planting to harvest, lasted six months or more. In the arid and saltwater seasons the fields lay fallow. By the mid-1980s, most Khmer people had switched to two crops of rice per year. As more canals were dug and new short-season rice varieties became available in the early 1990s, a few localities switched to three rice crops per year. In addition, the availability of fresh water made possible the planting of a variety of shallow root crops such as pineapples and sugar cane, in regions where previously fruit would not grow.

A third effect was increased immigration. People from North Vietnam had begun settling in the upper Ca Mau Peninsula under the French and Republican regimes, when many parts of the vast swampy depression that covered the upper peninsula were drained with canals. Beginning in the late 1970s, the new socialist government sought to raise rice production in the region by building additional irrigation canals to channel freshwater from the Bassac River. A new wave of Vietnamese migrants started settling in the saltwater river region, setting up residence along the ever-tightening grid of canals. A seventy year-old Khmer man in Khlaing Ong, Kien Giang noted the change:

“In my childhood, there were very few Viet people in Minh Luong, or Chau Thanh. At the most two in one hundred people would have been Viet at that time. This area was entirely Khmer. Once canals were dug to bring in fresh water Kinh people started settling there and growing rice in greater numbers, until now they outnumber the Khmers.”

Invariably such changes brought Khmer people of this region into close interaction with the Vietnamese settlers and with the Vietnamese government, which was striving to develop these areas with agricultural extensification and intensification programs, the building of schools, the promotion of export agriculture and stimulation of the market economy.

An unusually positive rendition of these changes was delivered to me by a senior Khmer monk, who had grown up in the province of Soc Trang knowing no Vietnamese. Like many Khmer Krom of his generation, he had been educated in a local Khmer temple and then had studied further in Cambodia. He attended

high school in Kompong Cham in the 1950s, ironically where he first had met Vietnamese people in great numbers. After 1975 he returned to Vietnam and was cultivated by the party, rising quickly to become by the 1980s one of the region's most senior Khmer representatives:

“In my youth, the water in this river was salty. Water was really scarce. Now, thanks to the Party, there are five or ten times as many canals in Soc Trang as in my youth. At My Phuoc, near Tumposok, sluice gates were erected to keep out the saltwater and canals were dug to bring fresh water in. These have allowed the growing of rice and have made Vietnam the world's second largest exporter of rice. Everything has been planned so that the best crops can be grown at the best place and time for maximum productivity. The canal digging has been part of the 135 poverty alleviation program, which also provided roads, schools, health clinics, electricity, fresh water and sanitation to poor rural areas. You have to admire socialism. I went to the USSR for a month as a delegate to the World Buddhist Congress and there was nothing I saw there that I did not like.”

Such positive reactions are not confined to politically high-ranking Khmer people alone. However, my findings suggest that the majority of Khmer people have their doubts about the new approach to water. Much of the criticism focuses on the negative consequences flowing from the intensive production of new rice varieties.

One frequent complaint is that returns on the cost and effort put into growing high yield rice varieties are very poor. Far more time is expended on maintenance tasks such as dike repair, ploughing, weeding, fertilising, and spraying than formerly was required to grow the traditional rain-fed rice varieties. Farmers also have to employ labour teams to help them at each planting and harvesting time. Meanwhile, the price of fertiliser and pesticides, without which the new rice types will not grow, is also very high. Many years the price of rice is so low that the farmers see no profit for the money invested in growing it. After borrowing money to pay for fertiliser, pesticides and labour a great many farmers find themselves in debt at the end of the growing season. Finally, farmers speak dismissively about the poor taste and nutritional quality of the new rice.

The new rice varieties have been accompanied by a sharp increase in pesticide use. As remarked by an elderly farmer affiliated with Wat Kompong Krobei, in Kien Giang:

“The *than nong* rice variety yields are unprecedented, but the producers see no profit. The more rice you produce, the more food you grow for the pests to eat. The pests include snails, hoppers and crawling bugs. We spray great quantities of pesticide on the rice and the pests eat that too” [He laughed grimly.]

This comment points to another negative effect of the changes in the water regime in this region, the pollution of the environment by overuse of chemical pesticides. Concerns about these problems are rife among Khmers throughout the peninsula. A particularly powerful and urgent statement of this problem was issued by a young Khmer man from An Bien district, Kien Giang:

“The water in the streams and fields is polluted with pesticides. The most toxic is the poison used to kill the Taiwanese Golden Snail. It is so toxic that it rots away the hands and feet of farmers who work in fields that have been sprayed with this pesticide. Look at the hands and feet of any farmer in Kien Giang and you will see that they have been ruined. The pesticide has killed off most of the crabs, snails, eels, fish and rats that Khmer people survived on traditionally as an important protein source.

But people still eat the animals that have survived the pesticide. People will eat fish and eels that have died of pesticide poisoning, saying it is a shame to leave an animal that could be eaten. All they may do is to remove the intestines and soak the dead animal in water, thinking this will rid the body of the harmful contaminants. And people still wash vegetables and cook with the water out of the streams and rivers, ingesting a great deal of poison that way.

As a result, people are tired, sleep a lot, lack energy for working and are unable to concentrate. Children grow up stunted and malnourished. In the past, it used to be always observed how tall and strong and healthy the Khmer people in Vietnam were. But now, our average height is much less; Khmer people are as a rule now short, thin and weak. A twenty year old is so stunted he or she looks like a pre-pubescent child. This is a result of the scarcity of protein, and eating food contaminated with pesticides. It probably has also damaged the genes of Khmer people permanently, making it unlikely that we can recover.”

In addition, water in the rivers of the peninsula again has become undrinkable. For a brief period, beginning with the introduction of canals in the 1980s, fresh-water was widely available and drinkable throughout the year. Lasting no more than a decade in some places, this period ended definitively in the late 1990s when chemical pollutants from intensive rice agriculture spread throughout the waterways. Today, water drawn from the rivers and canals of this region is regarded as too dangerous and dirty to drink. In some respects we see here a reversion to an older view of the waterways as places whose water was suspect. However, the present situation is more dire than in the past for the spread of chemical pollutants has rendered perennially undrinkable what once was an important seasonal water source.

How have Khmer people coped with this recent sharp decrease in available drinking water? Most have been unable to return to the practice of the past, of utilising communal ponds to capture and store rainwater. As noted, most temple ponds were abandoned or filled in when river water quality improved. Those ponds that remained could not be put back in use as drinking sources because chemical pollutants seeping in from the rivers and fields have contaminated their water. Pond water now is regarded as toxic as well as being stigmatised as dirty and culturally backward.

An alternative has been to exploit the deep lying freshwater aquifer. This body of water runs at a depth of up to several hundred metres below the earth's surface (White 2002). Its depth makes exploitation expensive and places it beyond the reach of most household and village economies. In the 1950s and 1960s, the government drew from the aquifer for municipal water supplies in several localities (Anderson 1978). Provincial governments have been relying on this water source more and more to obtain water for the state water distribution network. This source has become increasingly important as the quality of surface water has sharply deteriorated. Although primarily utilised in municipal areas, state-supplied water from the aquifer increasingly is available also in rural areas. Underground PVC water pipes run just below ground through rural settlements and smaller pipes branch off into the *wats* and households.

Khmer people report that this 'government water' (*tuk roat*) can smell or taste like dirt, and some fear it has been tainted or 'heated' in the pumping process but it is deemed superior to pond water. However, aquifer water provided by the state is expensive, since it involves the digging of bores, the storage and purification of water, and laying and maintenance of pipes. The costs are deferred to the consumer and this is beyond what many people can afford. They use the source sparingly and, where and when possible, people rely on alternative sources such as rainwater or their own bores, *snop*.

Owing to the high cost of state supplied water, some have returned to collective water provision. In Wat Kairon, Hau Giang, the *sras* has long gone. It was filled in when water in the adjacent river became fresh year round. Soon after that the river became polluted. So then the state began supplying piped water from the aquifer. Yet no one uses government water because it is too expensive. It costs 2,500 VND per cubic metre, the same price as in the local district capital. Some households have their own bores and use a hand pump to draw up the water. However, it costs two million VND to drill a borehole around 100 metres deep. Therefore, neighbours often share the cost of digging a bore and several households share use of the pump.

UNICEF has funded communal bores in many Khmer communities. The location of these bores in temples provided a new source of water for institutions that formerly had been at the heart of communal water provision practices. In 2003, UNICEF funded a bore dug in Wat O Chum, Soc Trang, more than one hundred metres deep, and also provided a huge cement urn to store the water

in the *wat*. This water is used by the monks for drinking and washing and is also accessed by laypersons living close to the *wat* and by those who visit it during festivals. In other temples, laypeople have raised funds for cement rainwater reservoirs and bores while the *sras* is still used for washing clothes and dishes. However, most settlements now have at least a few bores and the location of these facilities in the midst of neighbourhoods means that there is no longer any need to go to the local *wat* to procure water.

This uncoupling of the *wat* from one of the vital communal functions it used to serve has undermined the social centrality of this institution, while also severing one of the links that bound the local community together. What of the other communal functions of these temples: their role as schools and as sites for life cycle rites, religious ceremonies and calendrical festivals?

Wat schools in this region have all but gone the way of the communal pond, that is, into decrepitude and disuse. The Vietnamese state has promoted the official Vietnamese language school system as an essential prerequisite to education and development. State schools have followed the movement of Vietnamese speaking migrants into areas where Khmer *wats* once offered the only schooling. Khmer people in Vietnam have been disparaged for their unawareness, their lack of education, and the autarchic, backward looking and fatalistic nature of their ties to their *wats*. With the rise of Vietnamese as the lingua franca of local government and markets, Khmer youths have come to consider Khmer literacy superfluous to their requirements and have embraced state schooling with enthusiasm. Advanced knowledge of Pali and Khmer is considered irrelevant in a society dominated by Vietnamese cultural models.

Ordinations similarly have diminished as Khmer youth instead increasingly go through the official life cycle ritual of elementary state schooling. Plus the intensive labour demands and the high debt burdens of modern commercial rice farming mean youths are not as free to ordain as they once were and are under greater pressure than in the past to earn additional income for their families. In many parts of this region the number of monks in a given temple is so low that no longer is the traditional alms round conducted. Seasonal festivals held in *wats* remain well attended, however, the traditional calendar is now out-of-synch with the contemporary agricultural cycle of up to three rice crops a year. Consequently, the traditional significance of these agrarian festivals, as venues for the community to ritually mark annual oscillations between wet and dry seasons, between freshwater and saltwater seasons, has diminished.

At such times, Khmer temples are increasingly attended only by the very young and the very old, for a great number of those of working age have left the countryside for the city. One result of the economic burdens imposed by modern three-crop rice farming is that many families have been forced to sell off all their farmland to repay debts and have switched to labouring for wages. Many youths have abandoned farming altogether and have left their villages for the city where work is easier and more highly paid. The poisoning of

natural water resources, termination of communal water provision methods, and high cost of state supplied water also have made it unviable for these descendants of longstanding Khmer riverside dwellers to remain in this region. Living and working in the city, consuming state supplied water, and speaking only Vietnamese, these exiles from the black water river region can be considered environmental refugees.

CONCLUSION

Khmer communities have been present along the seasonally salty rivers of the Ca Mau Peninsula for at least hundreds of years. How has settlement been possible given the long seasonal droughts and saline incursions that occur in this region each year? The findings reported here reveal that, until very recently, Khmer people living in this region utilised ponds and other water sources located in their temples to tide through the arid and brackish water seasons. During annual periods of freshwater scarcity they made recourse to rainwater that was harvested, stored and consumed collectively. Drawing upon local knowledge of natural conditions, this specialised adaptation to seasonal fluctuations in water quality made residence possible in a region that was otherwise uninhabitable.

The location within their grounds of freshwater reserves of last resort meant that Theravada Buddhist temples were vital institutions for the population of this area of saltwater rivers. Bringing dispersed riverside residents together in the collection, maintenance and use of a scarce vital resource, the temples had a role to play in the forging of communal sentiments in a mobile and trade-oriented region. The quasi-monopoly over freshwater held by Theravada Buddhist temples helps to explain the tenacity of Theravada Buddhist identifications among the residents of these parts. Simultaneously, the *wats* taught Khmer literacy, promoted a Khmer cultural world view, and celebrated culturally distinctive life cycle rites and seasonal rituals. This concentration of resources within these institutions contributed to the consolidation of Khmer social, cultural and religious identities among the people of the peninsula who shared such resources.

The bringing of year-round freshwater to the Ca Mau Peninsula along a new system of waterways quickly made obsolete the network of local ponds that Khmer people had relied upon to tide through the brackish water season. The contamination of these waterways in equally quick succession almost immediately removed access to this new source of water but it also prevented the Khmer from reverting to the time-tested method of harvesting and storing rain in ponds. The tapping of the aquifer and universalisation of bores meant that the *wat* no longer functioned as a central institution for communal water provision. Changes associated with the new freshwater regime in the Ca Mau Peninsula, such as immigration, the promotion of Vietnamese state institutions, and the new economy of

intensive export oriented rice production further undercut the social, cultural, and religious centrality of the Khmer *wat*. Ordinations and interest in Khmer literacy learning rapidly dropped. As people abandoned farming and migrated away in response to economic and environmental stress, communities broke up and the Khmer presence along the banks of the saltwater rivers of the peninsula was further eroded.

These findings may help to explain a conundrum in the historical development of the Mekong delta writ large. Khmer communities within lowland Vietnam today are found largely only south of the Mekong River. However, until possibly as late as the nineteenth century, Khmer communities were present north of this river. Historians have proposed a number of explanations as to why these northern Khmer communities disappeared. The first emphasised the displacement of Khmers living along the waterways north of the Mekong by Vietnamese settler colonists who, with the support of Vietnamese state institutions, such as the army, the legal system and the military settler-colony, were able to seize control of the formerly Khmer-populated riverbanks of the north-eastern Mekong delta (Aymonier 1900; Barrault 1927; Brocheux 1995). The second explanation emphasised the Vietnamese court's policies of assimilation, which were pursued most vigorously in the first half of the nineteenth century the effect of which was not so much to drive away Khmers from these parts as to transform their cultural practices and identifications to Vietnamese court-approved cultural identifications (Chandler 2008; Choi 2004). The tenacity of Khmer identifications in the Mekong delta in the face of such pressures has been explained variously as the result of Khmer people's flight from the waterways and relocation to strategically marginal areas; their militant resistance to assimilation; and the protection afforded to them by non-Vietnamese occupying regimes.

Such explanations have merit, although they fail to explain why it was Khmer riverside communities to the north of the Mekong River in Vietnam that disappeared, while those to its south maintained a vigorous presence until the French colonial period or later. The findings here suggest that a combination of indigenous knowledge and collective water harvesting practices were critical factors in sustaining large and vibrant Khmer riverside communities in the southern region. Without such resources, people would have found it difficult to live in a region subject annually to prolonged adverse water conditions. The innovative, localised, and communal nature of the Khmer approach to obtaining water in the dry and brackish seasons enabled a large number of people to thrive in this region. It made the Theravada *wat* the central social institution in such parts; at the same time it promoted Khmer linguistic and religious identifications and reinforced communal solidarity among the local population. However, the region around and to the north of the Mekong, was not subject to such adverse water conditions, instead enjoying freshwater year-round in its rivers and streams. The speculative hypothesis I would conclude with, therefore, is

that Khmer residents of the northern region's freshwater rivers were not obliged to co-operate so tightly around the endemic problem of water scarcity, which made them more vulnerable to dispersal, division, and assimilation. Concomitantly, new migrants faced fewer ecological obstacles in colonising its rivers and were not obliged to learn from, or share water with, the indigenous inhabitants among whom they settled and eventually displaced.

References

- Anderson, Henry. 1978. *Hydrogeological Reconnaissance of the Mekong Delta in South Vietnam and Cambodia*. Washington: US Government Printing Office.
- Aymonier, Etienne. 1900. *Le Cambodge* (Vol 1). Paris: Ernest Leroux.
- Barrault (Capitaine de L'Infanterie Coloniale). 1927. "Les Cambodgiens de Cochinchine" *Extreme Asie Revue Indochinoise Illustree* August 1927 (Nouvelle serie No. 14) pp. 67–74, 135–146.
- Biggs, David. 2010. *Quagmire: Nation Building and Nature in the Mekong Delta*. Seattle: University of Washington Press.
- Biggs, David, Fiona Miller, Chu Thai Hoanh and Francois Molle. 2009. The delta machine: water management in the Vietnamese Mekong Delta in historical and contemporary perspectives. In Francois Molle, Tira Foran and Mira Kakonen (eds.), *Contested Waterscapes in the Mekong Region: Hydropower, livelihoods, and governance*, pp. 203–226. London: Earthscan.
- Brocheux, Pierre. 1995. *The Mekong Delta: Ecology, Economy and Revolution, 1860–1960*. Madison WI: Center for Southeast Asian Studies, University of Wisconsin-Madison.
- Chandler, David. 2008. *A History of Cambodia* (Fourth Edition). Chiang Mai: Silkworm Books.
- Choi, Byung Wook. 2004. *Southern Vietnam Under the Reign of Minh Mang (1820–1841)*, Ithaca: Cornell SEAP.
- Cooke, Nola and Li, Tana. 2004. *Water Frontier: Commerce and the Chinese in the Lower Mekong Region, 1750–1880*. Boulder, Col: Rowman and Littlefield.
- Delvert, Jean, 1994 [1961]. *Le Paysan Cambodgien*. Paris: L'Harmattan.
- Engelbert, Thomas. 1994. The Khmer in Southern Vietnam: Cambodians or Vietnamese? In Ingrid Wessel (ed.), *Nationalism and Ethnicity in Southeast Asia*, pp. 176–85. Berlin: Humbolt University.
- Gourou, Pierre. 1940. *L'Utilisation du Sol en Indochine Francaise*. Paris: Centre D'Etudes de Politique Etrangere.
- Leach, Edmund. 1961. *Pul Eliya: A Village in Ceylon. A Study of Land Tenure and Kinship*. Cambridge: Cambridge University Press.
- Mabbett, Ian and Chandler, David. 1995. *The Khmers*. Oxford: Blackwell.
- Mak Phoeun. 1989. La frontier entre le Cambodge et Vietnam du XVIIe siecle a l'instauration du protectorat francais. In Lafont (ed.), *Les Frontieres du Vietnam: Histoire des Frontiers de la Peninsule Indochinoise*, pp. 136–155. Paris: L'Harmattan.
- Malleret, Louis. 1943. Cochinchine, terre inconnue. *Bulletin de la Societe des Etudes Indochinoises* 18(3), 9–21.
- Malleret, Louis. 1946. La minorite Cambodgienne de Cochinchine. *Bulletin de la Societe des Etudes Indochinoises* 21, 19–34.

- McHale, Shawn. 2013. Ethnicity, violence, and Khmer-Vietnamese relations: the significance of the lower Mekong delta, 1757–1954. *The Journal of Asian Studies* 72(2), 367–90.
- Mensvoort, M.E.F. van, Nguyen Van Nhan, Tran Kim Tinh and Le Quang Tri, 1993. Coarse land evaluation of the acid sulphate soil areas in the Mekong delta based on farmers' experience. In D.L Dent and M.E.F van Mensvoort (eds.), *Selected papers of the Ho Chi Minh City symposium on acid sulphate soils. Publication 53*, pp. 321–329. Ho Chi Min: International Institute for Land Reclamation and Improvement.
- Mosse, David. 1997. Ecological zones and the culture of collective action: the history and social organisation of a south Indian tank irrigation system. *South Indian Studies* 3, 1–88.
- Nguyen, Huu Chiem. 1995. Geo-pedological study of the Mekong delta. *Southeast Asian Studies* 31(2), 158–186.
- Poree-Maspero, Eveline. 1962. *Etude Sur Les Rites Agraires Des Cambodgiens*. Paris: Mouton.
- Robequain, Charles. 1944. *The Economic Development of French Indo-China*. Oxford: Oxford University Press.
- Scott, James. 2009. *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia*. New Haven: Yale University Press.
- Taylor, Philip. 2013. Losing the waterways: the displacement of Khmer communities from the freshwater rivers of the Mekong delta, 1945–2010. *Modern Asian Studies* 47(2), 500–541.
- Vo Tong Xuan and Shigeo Matsui (eds.). 1998. *The Development of Farming Systems in the Mekong Delta of Vietnam*. Ho Chi Minh City: HCMC Publishing House.
- White, Ian. 2002. *Water Management in the Mekong Delta: Changes, Conflicts and Opportunities*. Paris: UNESCO.
- Zhou, Dagan. 1992. *The Customs of Cambodia*. Bangkok: Siam Society.