



Difficult travels: Delta plans don't land in the Chao Phraya delta

Daniel Hogendoorn^{a,*}, Arjen Zegwaard^b, Arthur Petersen^a

^a Department of Science, Technology, Engineering and Public Policy (STeAPP), University College London (UCL), United Kingdom

^b Amsterdam Institute for Social Science Research, University of Amsterdam, Netherlands



ARTICLE INFO

Keywords:
Worldviews

ABSTRACT

Bangladesh, Myanmar, Vietnam and Thailand have large river deltas. The first three deltas have international commitments for so-called delta plans: large-scale national efforts to reshape deltas in light of future economic growth and climate change. Thailand's Chao Phraya delta has no such commitments. Why is this the case? This article proposes that Thailand's absence of a colonial past has retained a differently ordered institutional capacity and that Delta plans embed assumptions that fit poorly with a Thai worldview. The article relies on literature and adds original research collected on three separate field visits to Thailand.

1. Four impressive deltas in South and Southeast Asia

The Himalayas and their Eastern extending mountain ranges give birth to major rivers in Bangladesh, Myanmar, Thailand, and Vietnam. Some end in impressive deltas. In Bangladesh, the Ganges, the Brahmaputra, and the Meghna make the country into one large delta, its distributaries woven into the Bay of Bengal. In Myanmar, the untamed meandering branches of the Ayeryawaddy traverse rural lands to meet the Bay of Bengal and the Andaman Sea. In Vietnam, the Mekong flows through the Nine Dragon heads into the South Chinese Sea. And in Thailand, the Chao Phraya, carved left and right by man-made canals, enters the Gulf of Thailand passing through the capital Bangkok.¹

Delta plans—or plans to formulate delta plans—exist for three out of these four countries. Such Delta plans root in Dutch experience. Bangladesh, Myanmar, and Vietnam all have ongoing delta planning

processes involving the Dutch government, Dutch knowledge institutes and Dutch engineering companies, preceded by efforts to create demand by the Dutch government and its water industry, building on existing, longstanding relations.² In Vietnam, the Dutch contributed to the Mekong delta plan (Zegwaard, 2016). In Bangladesh, the Dutch have worked on a variety of efforts, including the Bangladesh 2100 delta plan. And in Myanmar, the Dutch government, research institutes and private sector operators have fostered their ties with the World Bank and the Burmese government in the capital Nay Pyi Taw to contribute to a delta strategy for the Ayeryawaddy.³

And in Thailand? The Chao Phraya delta (located in the Bangkok and Samut Prakan provinces) has all the threats of a delta, from flooding, salinization, land subsidence, erosion, droughts, to vulnerability to climate change and population increase.⁴ Yet the Chao Phraya has no delta plan, despite the efforts of the Dutch.⁵ The embassy

* Corresponding author.

E-mail address: d.hogendoorn@ucl.ac.uk (D. Hogendoorn).

¹ The scholar Yoshikazu Takaya documented the Chao Phraya delta with great care. His introduction to *Agricultural Development of the Tropical Delta: Study of the Chao Phraya Delta* (1987) concludes with a nice thought. When the Indian subcontinent 'crashed' into Asia, mountain ranges rose and cracks appeared. Those cracks give us the paths of the main rivers of South and Southeast Asia. Takaya speculates that the Chao Phraya river was once much longer. The contemporary short path is a remnant from a more majestic river (Takaya, 1987). A mud brown, species rich river, running from a hilly north to the flat plains towards the Gulf of Thailand.

² Interview Deltares, March 2017

³ Interview World Bank, November 2017

⁴ A major 2011 flood in Bangkok, for example, spurred the development of an integrated city-wide masterplan (cut short by a 2014 military coup). Our interviews suggest that Bangkok, and not the *delta* is the relevant object for planning. This in contrast, for instance, to the Ayeryawaddy delta, which is an administrative unit of Myanmar from British times onwards, where British institutions were fostered to integrate Myanmar's Ayeryawaddy delta into the global economy (Adas, 2011).

⁵ Interviews with Dutch experts suggest that both the Dutch government and Dutch engineering companies have struggled to sell water expertise to Thai governments (interviews Dutch Embassy Thailand and Arcadis Thailand, October 2016, March/April 2017). The Dutch had their hopes of selling knowledge for large scale projects in Thailand after losing a tender to Koreans in 2011. In 2017, the Dutch Government has stopped supporting the Dutch embassy in Thailand for limited export of water knowledge. A water mission of Dutch experts failed to set up business contracts. (interviews Embassy October 2016; Arcadis October 2016 & November 2017; interview KWater March 2017).

organized water missions and engineering companies and knowledge institutes lobbied Thai governmental actors.⁶ At the turn of the 20th century, the Dutch irrigation engineer Homan van der Heide devised a plan for the Chao Phraya delta and became the first director of the Royal Irrigation Department (ten Brummelhuis, 2005), and in the 1950s, the Dutch participated in World Bank-funded consortia for dam constructions (Sangkhamanee, 2018). And so, like in neighboring countries, ties and precedent existed.

Our question for this article is: what explains this lack of a Dutch delta plan in Thailand, and what does this say about knowledge- and policy-transfer?

Explanations readily suggest themselves. First, the absence of a delta plan in Thailand might be coincidental: Bangladesh, Myanmar, and Vietnam do have a delta plan; Thailand does not. And that is all there is to it. Other types of plans, techniques, tools and skills do ‘travel’ to Thailand: the 20th century brought infrastructure, banking, telecommunications; the 21st makes Bangkok a global hub in knowledge exchange (Baldwin, 2017). Our fieldwork reveals that in water and climate governance as well, Thailand is well connected. A random outcome is then our null hypothesis and the rest of this article consists of arguments weighing against it. Importantly, in using historical accounts explaining present outcomes, causality will not be settled, and we have no such pretension. After all, history does not repeat, and there are never enough comparable cases to show non-spurious regularities. Nevertheless, reasoning can improve by exploring different possible explanations. The article relies on literature and adds original research collected on three separate field visits to Thailand.⁷

A second reason (and a building block in this article) is that Thailand retained independence in history. But independence by itself explains little and should not be an impediment, and moreover, it fails to explain why Thailand does take in other travelling knowledge. A third reason—one we also subscribe to but argue is incomplete—is that Thailand lacks the political or economic incentives of its neighbors. Indeed, for a Thai-Dutch engineer aiding the Dutch embassy to promote the Dutch water agenda, the case is clear (and we ‘shouldn’t overthink it’): ‘it’s really, really simple: we don’t give money, as we do in Myanmar. Why would the Thai government accept?’⁸ To be sure, Bangladesh has long been a ‘donor darling’. In Myanmar, cyclone Nargis in the delta opened the country to foreign aid in 2008. And when Thailand was a developing country, it could receive World Bank loans conditional on ‘structural adjustment’. And today, Thailand, still classified as a developing country, is an upper-middle-income economy, providing its own technical assistance to neighboring countries.

Nevertheless, the economic explanation can only partially explain.⁹ Incentives explain how reluctance—a threshold—is overcome. It does not explain what constitutes the threshold. What could inhibit Delta plans to travel?¹⁰

⁶ Interview Dutch embassy in Thailand and Arcadis Bangkok in October 2016; follow up personal correspondence with water expert at Arcadis, April 2017.

⁷ This research consisted of interviews with Thai water management practitioners in Bangkok and Ayutthaya, in October 2016, January 2017, and March–April 2017. Separate interviews were held in the Netherlands with Dutch delta planners and with practitioners in Myanmar and Vietnam. From the interviews vignettes are generated to provide support for the argument.

⁸ Personal correspondence with water expert, April 2017.

⁹ Economic incentive also fails to explain why Bangkok-centered Korean plans did travel after the 2011 disaster, consisting of tangible present fixes in infrastructure (Interview K-Water, April 2017), despite the disaster flooding most of the basin and delta.

¹⁰ We do not imply that travel to the other Southeast Asian countries is easy. Many of the same problems arise that arise in Thailand. And there are idiosyncratic difficulties as well. In Myanmar, for example, the government in the capital Nay Pi Taw has had little capacity to make even the basic planning arrangements that are needed according to the World Bank. The closing of the

First, in Thailand, a continuous institutional development produced distinct policy-making practices. And second, we posit that delta plans are incongruent with these practices at the level of worldviews. Next, we thus describe a *longue durée* history of some Thai institutional elements. Then, we explore a worldview behind delta plans and explore points of incongruence with the proposed Thai worldview.

2. Historically settled institutional elements within the Chao Phraya delta

All Southeast Asian ‘first-millennium polities share close historical links with the region’s contemporary nation-states’, most of all in Thailand (Stark, 2006). Where does the germ of Thai institutions start and what are its distinctive elements? Takaya (1973) views Thai institutions as a series of best responses to river-related problems in the Chao Phraya river system, its history dividing into three periods: the city polis starting in the mountainous North in early Medieval times, then migrating South to the overwhelming floods of the river basin during the Kingdom of Ayutthaya, and then finally settling down in the previously inhospitable delta, transformed, under the guidance of the Bangkok Kings, into a rice bowl serving the city (Takaya, 1973).¹¹ Aside from responses to ecological challenges, we argue technocratic cultures would also have had to develop alongside Buddhism, the city-state, and kingship.

Buddhism, and with it writing systems and concepts of political organization, entered Southeast Asia via interregional trade networks. Buddhism arrived first in Myanmar and moved to Thailand with the Mon people, who settled the Dvaravati system of chiefdoms, a direct precursor to contemporary Thai kingship. Buddhism was not the only religious influence on institutions: the first century A.D. saw Hindu migrants enter, replacing a kin-ordered system with a hierarchical political-economic system (Murphy and Stark, 2016). Later, the ‘Chinese’ Tai people¹² replaced the Mon,¹³ while the Dvaravati chiefdom became the Lavo kingdom, retaining a Buddhist cosmology and hierarchical political arrangement.¹⁴ Indian traders and monks then brought Pali and Sanskrit scripts, facilitating the diffusion of Buddhist views. Today, above 90 per cent of the people of Thailand, Cambodia and Myanmar are practicing Theravada Buddhists.¹⁵ Unlike Cambodia and Myanmar, Thailand continues fitting Buddhism to otherwise secular, but self-reformed political institutions.

2.1. City-states

Life in Southeast Asia was organized around city-states, ruled by Kings (Dellios, 2003; Embree, 1950). Cities—and Kings—ruled across territories with decaying, sometimes overlapping radiuses of influence, measured by tributes paid¹⁶ (Winichakul, 1994, Aryan,

(footnote continued)

country’s technical universities at the end of the Cold War means that delta plans have had little data to support projections. Interview World Bank, November 2017.

¹¹ The most prominent water governance institution, the Royal Irrigation Department, indeed was a continuation of the Ayutthaya ministries for irrigation and flood management, dating back to the 14th century (Takaya, 1987).

¹² Coming from Guangxi province in China (8th–10th century CE).

¹³ Also replacing the Brahmic language and script. The current dominant language in the Chao Phraya is still the tonal language Thai, or Siamese. The Siamese language is a member of the Tai group and the Tai-Kadai language family.

¹⁴ Historical sources and genetic evidence do not suffice to determine how continuous the two kingdoms were.

¹⁵ Most young men, for example, spend time in a monastery to improve their chances of marriage.

¹⁶ In the Mandala political system power was indivisible. The King was an absolute monarch. Delegating power to others implied a loss of power. Power

2004¹⁷). Ayutthaya, in what is now Thailand, was a prominent city, continuing the Lavo political order for another four centuries.¹⁸ Ayutthaya sat at the North end of the Chao Phraya delta on a strategic point of the river for controlled trade and entry, attaining global significance. The city absorbed foreign ideas through a permeable yet resisting elite-barrier (Evers, 1987). Foreigners were numerous, as chronicles on trade, taxes, and marriages indicate, though trade with Westerners was tightly controlled (Baker et al., 2005). Ayutthaya's Kings oversaw the digging of canals for transport and flood and drought management. The city's civil servants were sophisticated administrators with high literacy rates (Khanittanan, 2001).

Then the Burmese sacked Ayutthaya in 1767. The city ruined, the Royal seat moved South to a trading post in the delta, now incorporated into Bangkok. The new Buddhist Kingdom of Siam remained city based, transferring its elite administered mode of managing foreign trade (and ideas), and transforming the Chao Phraya delta to suit the King-ruled, trade-oriented city of Bangkok (Takaya, 1973). Today, infrastructural mega-plans on governing water in the delta organize around the city, from the King's dyke to a master plan cut short by the 2014 political coup, to a large system of drainage tunnels.

2.2. Kingship

History brought Buddhist and Hindu influence to present-day Thai kingship. Buddhist kingship emphasizes keeping the peace between people; Hindu kingship emphasizes maintaining the order of things (Xing, 2011; Aryan, 2004). Yet kingship is attached to the waters as well. Ayutthaya Kings depended on the river and so did Bangkok's Kings. Canal-building projects in transforming the delta were a royal enterprise, for which Kings sometimes enlisted Western engineers and investors (Takaya 1987).¹⁹ King Rama IX (1927–2016) (or Bhumibol Adulyadej) ascended the throne in 1947 and reigned until his passing alongside Thailand's economic development. Like his predecessors, the Rama IX enjoys a semi-religious reverence.²⁰ Portraits still adorn public spaces and buildings and his persona is associated with the rise of the Thai nation-state. Hence, although Thailand vacillates between democratic and autocratic systems of governing, the King remains an institutional force of stability²¹ including in governing water. The King,

(footnote continued)

was framed as a zero sum game, stimulating the formation of relevant norms in such games. This institutionalized frame made for strong Kings and intense power struggles, a settled dynamic which we see to this day and will play a role in our argument. Within the Southeast Asian city-state system, power did decay in a radius, when moving away from the polis or by being inaccessible. Decay of power meant that cities had overlapping spheres of influence. Areas could pay tribute to different cities at once.

¹⁷ Aryan: 'It can be asserted that, in the pre-modern time or before the 20th century, the Kingdom was not a single political organization under a unified authority. In fact, it comprised of the most powerful township, the capital, and a number of other major and minor townships with varying degrees of autonomy. In times of peace each township ran its own affairs and paid tribute: minor townships paid tribute to major ones and all did so to the most powerful. Because of geographical barriers and communication difficulty, the capital could exercise the direct rule only over an area within a radius of, say, two days of traveling.' (Aryan, 2004, p.2)

¹⁸ Brought there by the legendary U Thong. U Thong was long thought to be a family member of Chinese merchants.

¹⁹ Even today, royal traditions persist of choreographed displays of ceremonial riverboats, paying homage to the linkage between royalty and the Chao Phraya river.

²⁰ Lèse-majesté laws prevent public criticism by imposing long jail sentences.

²¹ Rama IX was a skilled navigator amidst this turmoil; the election commissioner Gothan Aryan said: 'King Bhumibol assured the continuity of monarchy by maintaining it above the competition between elite within the military and bureaucracy and between them and non-bureaucrat elite. The King cooperated with the winning sides and finally when democratic force seems to

for example, stimulated the building of hydro dams and flood management infrastructure along the Chao Phraya river. Propaganda material emphasized the active presence of a King with rolled-up sleeves and mud-stained boots bringing in the Northern, non-deltaic territories into the nation-state.²² Within Thailand's national development, water governance around the Chao Phraya river system was a focus area. Rama IX had an estimated fortune of 28 billion dollars. Rama IX used part of this money to stimulate water management projects from a Buddhist-inspired worldview (Handley, 2006), on which more later.

2.3. Independence from imperialism

Siam was never part of a European empire. It evaded the fate of its neighbors, who experienced imposed institutional reforms and post-colonial reactions. As a result, currents of Buddhism, the city-state, and kingship persist within the institutional fabric, despite Thailand also being a secular nation-state, ruled by alternating democratic and autocratic regimes.²³

The rest of South and Southeast Asia experienced Western Powers translating foreign religious, scientific and classical liberal ideas into institutions (Bayly 2002). After 1757, the British dominated Bengal. From 1824, the British ruled the Burmese. From 1858 on, the French settled 'Indochine' (Laos, Cambodia and Vietnam).²⁴ In Bangladesh, Vietnam and Myanmar,²⁵ educational and administrative institutions were reformed to fit with the colonizing country's interests and normative agendas, while sui generis elements such as kingship, religious practices and patronage networks were either abolished or disturbed and altered (Bayly 2002). In Bangladesh, Islam was kept outside governing, and after independence, Muslims activists cooperated with activists with post-colonial ideologies (Novak, 1993). In Vietnam, where pre-colonial times exhibited well-developed, but now 'lost modernities' (Woodside, 2006), the religious strands of Taoism, Confucianism and Buddhism adjusted to a Communist bureaucracy that did not respect a separation between State and religion (Scigliano, 1964). In Myanmar, Buddhism is an even stronger force in the conceptualization of daily life than in Thailand and it still pervades political thought (Walton, 2017). Burmese institutions were first reshaped in the image and to the purposes of the British. In post-colonial times, institutions were reshaped to the purposes of first a 'non-aligned' parliamentary democracy, then by the purposes of a (paranoid) military regime (Myint-U 2006), and today, in response to the normative agendas of foreign and international institutions, including in water governance (Hogendoorn et al., 2018). Buddhist views were kept outside government, hardened in response to unsuccessful Christian religious missions (Bayly 2002), and took on a political role versus the military (Walton, 2017).

Siam, however, managed to stay independent, a buffer between Imperial giants, reforming its institutions with more autonomy (Winichakul, 1994). Throughout the colonial era, the Siamese elite

(footnote continued)

prevail, the monarchy is credited for assuring the stability for this emergence, proving that constitutional monarchy promotes constitutional democracy.' (Aryan, 2004, p.).

²² Such propaganda was still broadcast, for example on Bangkok's main airport, during the year of mourning upon the King's passing.

²³ Japan, an East Asian country that similarly maintained independence, also has many Buddhists. Yet it is a minority with traditionally little connection to state institutions, a history of militancy against native institutions, and of little influence on the daily life of the average Japanese person. Nevertheless, it is interesting to explore whether institutions in Japan still bear the traces of the influential *Shinto* religion, and whether this provides misfits with travelling concepts.

²⁴ Taking land from the Thai in the 1893 Franco-Siamese war.

²⁵ For example, in 2018 many Burmese elite engineers were above seventy years of age, born in the British empire. Most were trained at the Delft technical school in the Netherlands, near where delta plans also originate.

retained first a monopoly and then the lion's share of the trade surplus. It retained strong ideological influence and could choose to participate in global trade. Evers (1987) notes: 'the Siam economy seems much further advanced than any other Southeast Asian economies at the time, including the colonies.' (Evers, 1987, p. 765).

Siam could not escape an influence from liberal global markets altogether. In 1853, U.S. 'gunboat diplomacy' opened the Japanese market. The British in Hong Kong meanwhile stirred the cauldron, boiling over in the Opium Wars, destroying China, and removing Thailand's main trading partner. Reassessing Siamese prospects, the Thai King Mongkut welcomed the British Governor of Hong Kong²⁶ John Bowring with ceremonial pomp on the river. In the Bowring treaty of 1855, King Mongkut agreed to end the Royal Storage (its administered trade): non-royals could now trade with foreigners (Winichakul, 1994). The wane of China, the threat of power imbalance, improvements in maritime technology, and a Thai competitive advantage over the colonies made trade with Europeans attractive (Evers, 1987). The loss of royal privilege was not the only institution to go. For example, the Western version of a map gained influence, and changing a decaying radius of influence of city-states to a fixed territory with hard borders; through Western maps, Siam formed into a nation-state (Winichakul, 1994). De facto, the city of Bangkok could remain the *schwerpunkt*, supplied by a rural periphery.

Siam did modernize, absorbing pressure channeled by domestic diplomats instead of abscising the past through imposed reforms chosen by foreign bureaucrats. Thai elites chose to reform the education system (delivering civil servants promoting Thai views) and changed an absolute monarchy into a constitutional one in 1932. The Chao Phraya delta too did transform. Canals first increased from improved technologies and financial speculations and roads did not exist (Douglas and Wildavsky, 1983). After World War II, the U.S. became a military and economic presence in Bangkok. Highways and skyscrapers paved over the aquatic canal-based society, and with it, influenced how Thai people conceived of living together (Jensen and Morita, 2017).²⁷

In summary, the Thai have absorbed, even welcomed outside influence; yet unlike its neighbors, Thailand maintained autonomy (Winichakul, 1994; Bayly, 2004). Bangladesh, Myanmar, and Vietnam, in contrast, saw their institutions replaced by 19th-century liberal ideology and post-colonial reactions. The same institutional destruction holds of course for Cambodia, the country of the Upper Mekong Delta, which also is predominantly Buddhist.²⁸ Change in Thailand preserved Thai institutional continuities, including in technocratic institutions for water governance. In the absence of incentives, any foreign idea would need, we argue, congruence with a complex worldview performed in these institutions.

2.3.1. A genealogy of Dutch delta plans

We propose Delta plans import assumptions fitting poorly with the elements of Thai institutions and worldviews outlined above. Delta plans are very long-term Master plans for geophysical river deltas that the Dutch government, Dutch research institutes and Dutch private sector operators, such as globally operating engineering companies have tried to sell across the world. Delta plans formed from concepts

²⁶ Bowring was also a political economist and a lifelong friend and former employee of the founder of utilitarianism, Jeremy Bentham.

²⁷ For most of Thai history, the delta region itself was uninhabited for reasons of climate. The dry spells in the monsoon climate made water storage during heavy rainfall and flooding imperative for agriculture. The delta was a way of extending water flows from the sea to far-flung civilizations. This view differs from how, for example, the Dutch attend to their delta. Jensen and Morita argue that for the Dutch, the delta is land first, subject to land reclamation (Jensen and Morita 2017). That is certainly true today, though the name of the delta province of Zeeland (Sealand) gives a different signal.

²⁸ Cambodia has no delta plan either, but here the reasons cannot be explained through the same logic.

rooted in meeting Dutch flood management challenges in the delta of the Rhine and the Meuse. When a delta plan travels to a target delta, it leaves behind the Dutch environment, institutions, practices, and historical intentions. Policymakers, knowledge institutes, diplomats and engineering companies de-emphasize those differences and emphasize features with overlap between deltaic regions (Zegwaard, 2016). Focusing on the overlap makes it easy to visualize how a well-performing arrangement in the Netherlands should also work abroad. The similarities afford the Dutch to capitalize on their hard-won experience, making a national identity into a signal of engineering-quality in the competitive global water sector. Yet apart from the physical similarities, the delta plans frame deltas as backward areas to 'develop' into nation-states, taking into account long-term futures.

2.4. Nation-states

Delta plans have a Dutch pedigree. Delta plans imply a political economy continuous with 19th-century progressive liberalism (Bergsma, 2017). Hence, the concepts embedded in delta plans settled not just in meeting past Dutch challenges of keeping water out, but from a political project of developing backward regions *in*.²⁹ Before the 20th century, Dutch flood management was mostly ad hoc and local, giving rise to the hall-mark deliberative 'polder-model' of deliberation, and before the 19th-century, the Netherlands consisted of trading city-states within a republic of loose provinces.³⁰ From the 19th-century onwards, Dutch centralized policy-making practices in flood management developed alongside the idea of a Dutch nation-state, and institutions diffusing both ideas and their associated concepts accelerated after the flood disasters of 1916 and 1953, events catalyzing the formation of the first delta plans. After 1916, the first delta plan closed the Dutch *Zuiderzee*.³¹ After 1953, the megaprojects of the Delta Works transformed the landscape of South Holland and Zeeland. The Zeeland plan signaled the *economic backwardness* of flood-prone regions and the *national significance of disastrous storms and surge flooding* (De Pater, 2011; Knippenberg, 1997).

2.5. Futures

After the Dutch delta plans were implemented, delta plans became an abstracted, exportable type—a profitable, applicable concept to foreign deltas, focusing on economic growth, nation-building and vulnerability to climatic threats over long time frames.³² Delta plans

²⁹ Thailand, by contrast, dug canals in the Chao Phraya delta to let the sea *in*. The delta was an extension of the sea, facilitating trade (Jensen and Morita 2017).

³⁰ Formed into a loose Republic with *placeholder* rulers (or *Stadthouders*).

³¹ Notable here is that the Zuiderzee committee was headed by the physicist Hendrik Lorentz. Faced with difficulties in figuring out the enormous tidal flows, Lorentz managed to innovate the language and with it the mode of inference from narrow empiricism to mathematically formal by inventing the hydrodynamic equations of motion. These equations formed the basis of hydrological modeling. Not much later, the techno-scientific development continued in the setting up of the Delft Hydraulic lab, started by the human computer of the Zuiderzee project, J. Th. Thijssse. And from this lab, mathematical modeling later took shape, especially with its successor Deltares, one of the driving organizations exporting Dutch delta plans.

³² In the Netherlands, 'delta plans' now seem to synonymous with any large-scale government led problem-solving effort, hoping to bask in the glory of the original Delta plan of the mid-1950s. The 1990s already had its delta plan to conserve 'culture' at a national level. In 2015, a delta plan for mathematics education was set up. The delta plan as analogy is easily stretched. Houston, after Hurricane Harvey, for instance, needed a 'delta plan', wrote Dutch hydraulic engineers (Zwam, 2017). Houston has no river delta. The term delta itself provides an illustrative case for how language migrates through posing analogies. For Herodotus, the Nile had a delta because its river mouth resembled the triangle of the Greek letter delta. Over the centuries, this shape

foreground uncertain, far-away futures, making use of projections of demographics, economics, and more recently, climate science. For example, scenario planning (a method in delta plans) focuses on the ‘robustness’ of decisions within a quadrant of good and bad economic and climate futures.³³ In scenario-planning, these conjectured scenarios function as a best guess about the future, upon which strategic actions can be selected. The variables in those scenarios can collect or create data for any space or time-frame. This gives delta plans an aura of universal appliance. Future-oriented delta plans thus fit well with the agendas circulating in global knowledge networks (Zegwaard, 2016), evoking nation-building in poor and undeveloped areas and projecting climate and economic scenarios over long time frames. Delta plans in Thailand’s neighboring countries, for example, stimulate the following inferences: *deltas* in Vietnam, Myanmar and Bangladesh are of *national* importance and of *future economic* concern, and vulnerable to *future climate change*. Taking delta plans as variable signals for inference, they invariably emphasize desirable futures at the macro-level for a defined, deltaic territory.

3. Points of misfit between protestant-progressivism and Thai-Buddhism

Our claim is that a worldview travelling along with delta plans sits uneasily with the elements listed above. The main water governance institutions and policymaking practices in both the Netherlands and Thailand developed alongside distinct worldviews.

Robert Merton, the sociologist and historian of science, claimed modern science rooted in Protestant values (Merton, 1938).³⁴ Protestants hoped to show a fit between Faith and Reason, Merton argued, resulting in improved methods of reasoning. Protestants also believed fate was predestined. A select few would make Heaven in a distant future of resurrection. The Protestant could study to find clues in the world on their own fate, and clues were made probable for those who performed public deeds in line with reason. Sacrificing time and effort for public benefit with the use of reason, a devout Protestant avoided the ‘master sin’: hedonic ‘flesh pleasing’ and ‘idolatry’ (Merton, 1938, p. 425). Puritan ethos also favored mercantile profits and reasoning with applied capitalist uses, favoring the study of mathematics for accounting and physics for engineering.³⁵ Merton concludes: ‘We would certainly be led to profound error were we to assume that religious beliefs played the perfunctory role which is generally their lot today’ (Merton, 1938, p. 425). Historians have criticized the Puritan thesis for its details (Morgan, 1979).³⁶ Nevertheless, Protestantism favored the idea of imagining and *deterministic futures* and applying expertise to reach earthly, non-hedonic *desirable futures*.

The Netherlands’, for much of its *institutional* history as a republic and then nation-state, was a Protestant country, though a sizeable part

(footnote continued)

generalized to river mouths in general, whether they fitted into a triangle or not.

³³ Interview Arcadis, October 2017

³⁴ Earlier, in the Renaissance, more skeptical approaches to the study of God had arisen (in the margin), with for example the Jesuit Francisco Sanches concluding that God could be understood in a negative way—by subtracting what he was not—and rejecting the syllogistic arguments of the Church. And later Enlightenment thinkers credited with readying the mind for modern science, such as Descartes, Spinoza, Gassendi and Bayle were no atheists (Bayle was a Protestant).

³⁵ To Merton’s list, we might add the Christian cultivation of individualism (Dumont, 1985).

³⁶ They have not challenged the existence of a relationship between organized (Christian) religion and the growth of science. Also Polkinghorne (2006), sees causes of the growth of science in the Christian doctrine of creation and the increasing reference in the 17th century to a ‘Book of Nature’ besides the Book of Scripture.

of it was Catholic. The Dutch governmental institutions in which the original delta plans were developed arose in formerly Protestant regions. If we conjecture that history institutionalized a worldview in Thailand, the same must be said for The Netherlands. The delta of the Rhine and Meuse and around the ‘Zuiderzee’ were also firmly Protestant. Not surprisingly, delta plans fit well with the Protestant list mentioned above. Delta planning, we propose, favors the following order: seek clues for *future* possible states of the world (a gaze *outward*), then help select for actions expected to bring about a subset of publicly *desired* states. First, delta plans emphasize how methods of reason can generate knowledge on distant futures (the fate of deltas) in demographic, climatic change and macroeconomic terms, where people in the delta-region cannot control these forces. Still, knowing how these forces will impact the delta is useful, resulting in probabilistic and non-probabilistic information on distant futures.³⁷ And the way to find clues about the future is by starting public works with mercantile (Dutch) private sector operators, using applied mathematics and physics. Circulating delta plans are recipes for *national* and macro-level development. Fast economic growth within a fixed territory is something to strive after. Debts incurred are repaid in a richer future, and whether this is possible is made plausible to its planners by generating more information.

The Thai worldview is organized differently, and apart from the powerful city-focus making the developing delta-frame a poor fit, the contrast between Protestantism and Buddhism is illustrative. Buddhist practice favors the following order in reasoning: subjective introspection and attending to disquiet, noticing whether one has good intentions, and *only then* fitting the *right* actions and thoughts with available means. Attention explores tensions, resolved through relating and rearrangement. The notion of *desired futures*—core to Progressivist/Protestant thought should misfit in particular. Like Christianity, Buddhism comprises a varied set of traditions. The Thai and Burmese variant of Theravada Buddhism, for instance, mixes with local animistic practices (Manich Jumsai, 2000). Buddhism does have invariants. Buddhism is, for one, a process philosophy. Things keep unfolding, evolving, geometrically, but the notion of a single future end state is foreign. Protestant predestination resembles the determinism of the Hindu Wheel of Dharma. Buddhism, an offshoot of Hinduism, is a departure in this respect. In Buddhism, an escape from the Wheel is not just a possibility, but an admirable aspiration, coming, in contrast to Protestantism’s *outward* gaze, from a turn *inward*. Modern science addresses the objective, quantifiable, physical universe in order to gain power over the natural world. Buddhism guides attention to subjective, qualitative states of consciousness as a means to liberate the mind from its afflictive tendencies and obscurations (Wallace, 2006). In Buddhism, the future and desires play a different role than in Protestantism. Buddhism has a non-metaphysical attitude towards the future. Regarding desire, not just hedonism, but *all* desire is to be detached from. The Buddhist monk works to quench desire and reach a *future self* of Nirwana, and the common person sacrifices to reach an unknowable Karmic potential (Keyes et al., 1977). Buddhists focus on four logical points (further specified in an 8-fold path): all is suffering, suffering comes from desiring, desiring is a mental process, and desiring is unceasing, never satisfied (Rahula, 2004). As a result, one plays the cards one has been dealt; imagined futures foster desire. Thus, Buddhist ethics implies cultivation by *removing disquiet* from one’s present ‘inter-being’ (i.e. one only exists as a set of relations within a set of relations, with no essence) (Priest, 2016).³⁸

Epistemic pictures of futures and desired macro-states characterize

³⁷ Thinking about future uncertainty with rigor started in probability theory, with a notable trajectory from Keynes in the 1920’s to Kolmogorov and Savage in the 1950s.

³⁸ Interview Theravada Buddhist Monks and scholars at the Dhamma Home Buddhist study center in Bangkok, March 2017

the nation-building of early Dutch delta plans and the climate catastrophe thinking in recent delta plans. Buddhism de-emphasizes imagining epistemic pictures of futures, focuses on one's inter-being and capacity, and on detachment from all desire.

If present-day expertise intensive Delta plans fit with Protestant worldviews, do (some) present-day water governance arrangements in Thailand fit Buddhist views? To which we turn next.

4. The sufficiency economy and the Hydro Agro Informatics Institute

4.1. Sufficiency economy

In the 20th century, the World Bank 'restructured' Thailand through the National Social and Economic Development Plan. Thai agriculture, governed since Medieval times, was forced in line with economic liberalism, producing tensions and farmer-debts.³⁹ These 'structural adjustments' and global market capitalism generally were increasingly perceived as a corrosive influence on Thainess. In response, King Rama IX formulated an alternative ideology for development. This Sufficiency Economy (SE) mixes Buddhism, development economics, and water management policy (Dreschler, 2016a). The first SE Royal project occurred in 1951. By Rama IX's death in 2016, SE totalled 4596 projects. Instead of indebted others, the King used his charities and the Crown Property Bureau to subsidize or finance developments (Handley, 2006).⁴⁰ An easy conceptual fit for Buddhist countries, the concept of SE has travelled to other countries (Bhutan, for example).⁴¹ The SE precepts focus attention on the present. They address how to live within one's current means, whether one is a farmer or a national policymaker. For example, SE influences the national agriculture agenda.⁴² The SE precepts are normative, fitting the actions of civilians, politicians, civil servants and corporations to Buddhist principles, arguing not just against limitless growth and greed and for self-reliance, but de-emphasizing the importance of futures altogether. The core guiding principles in SE are moderation, understanding the consequences of actions on one's (social) environment ('reasonableness'), and dealing with *personal* risks ('self-immunity'). One learns to act on these principles by cultivating wisdom and virtue (Dreschler, 2016b). Striving outside

³⁹ Some respondents argued that the reforms resulted in a large-scale agro-industry focused on short term profits at the cost of soil and the environment. It also resulted in high levels of debt among farmers, with social ills as a result. The focus on growth has led to a degradation of the soil through pesticide and fertilizer use, and absurdities such as upstream hydro dams energizing air-conditioned malls in Bangkok (Marks, 2016) or agro-industry clearing the upstream forests, resulting in exacerbated floods in Bangkok (interview former chief engineering advisor to the Thai prime minister, April 2017). When interviewing a Thai engineer of (judging by the name) an elite family on the eve of the death of King Rama IX, it was not without strong emotion that a corrosive influence on Thai society by 'selling out' to foreign interests was discussed (interview Barames Vardhanabhuti on October 13th 2016 at Kasetsart University).

⁴⁰ After the death of Rama IX, his son Maha Vajiralongkorn took the throne. This transfer brought new uncertainty. Respondents attribute the Military's significant changes in the constitution to it. Rama IX's individual persona had an aura of infallibility in the popular mind. Vajiralongkorn, by contrast, has a scandal ridden past.

⁴¹ The experiences with the Sufficiency Economy have not altogether been successful. The failures occurred for economic and implementation reasons. These development projects did not lead to large scale adoption for economic reasons (Handley, 2006)

⁴² SE's economic development strategy fits E.F. Schumacher's book *Small is Beautiful* (Schumacher, 2010 [1973]). Schumacher distills his lessons learned from German post-war development, put as a counterweight to seeing limitless economic growth. Schumacher's book was inspired by Burmese Buddhism (Schumacher, 2010 [1973]). Rama IX himself translated the chapter on Buddhist Economics.

one's current means or inter-being is bound to cause suffering.

SE manifests in different policies and initiatives, from local village level cooperatives based on self-generated discipline to national policies (Handley, 2006). The SE is focused on a sustainable bootstrapping of capacity, deducing back from intent (Dreschler, 2016b). An example of a low-tech small scale delta flood management project is given by the so-called 'Monkey Cheeks'. These retain water in times of flooding for use during drought. As such, Monkey Cheeks anticipate possibilities. 'Monkey cheeks' require no imagined far-flung futures. Possible extremes of proximate local water levels will do. Just as other policies taking place in rural cooperatives organized under the SE, they can be classified as local, low-tech conceptual fits. We will now discuss how expertise-intensive institutions similarly can fit with the Buddhist traits, even if they do not link explicitly, as the rurally-oriented SE policies do.

4.2. HAI

Expertise-intensive governing builds capacity within pre-existing and co-evolving institutions. Technocrats, to be sure, spend attention to ensure effective, 'rational' policies; yet such policies are also crafted to fit prevailing values and ideology: policy-making occurs within historically grown, religiously and politically infused constraints. The best example of a rigorous organization fitting with the SE ideology is the Hydro Agro Informatics Institute (HAI). After all, HAI was—ostensibly, at least—also Rama IX's idea.

HAI consists of policy analysts working with complex data analysis methods. Its main aim is to improve the fractured water governance of Thailand, consisting of 26 organizations with unclear responsibilities and little communication (Marks, 2016). HAI also works closely with rural villages (stimulated by the King's subsidies to organize in line with the precepts of the Sufficiency Economy), connecting databases and mathematical formalisms to local knowledge. HAI is a network organization, improving, rearranging, and re-relating resources existing in the present state. HAI originates in the mid-1990s, after one of Bangkok's many floods. Rama IX shifted emphasis from a World Bank-loan grey infrastructure response, current when political and economic incentives arguably crossed any threshold—to strengthening information management within Thai flood management as a governance system. HAI was set up as a network hub and uses rigorous methods (for example using combinatorics) in data-management.⁴³ The (former) director of HAI, trained as a mathematician in combinatorics at the famous mathematical institute of ETH Zurich, disregarded climate scenarios (from GCMs—global climate models—and RCMs—regional climate models). For him, downscaled models of ensemble-based GCMs generating virtual futures could not form a rigorous basis for decision making.⁴⁴

HAI focuses instead on improving existing, fractured data sets

⁴³ HAI originates from a cooperation with the Massachusetts Institute of Technology (MIT). The story has it that since the King was born in Cambridge, Massachusetts in 1927, the family maintained ties, and contacts were easily forged. His father Mahidol Songkla, who is now regarded as the father of modern medicine and public health in Thailand, studied at Harvard and MIT. The King thus started the HAI. That is, the story as told by the former director of HAI (interview HAI, April 2017). In Thailand, many positive and at times incredible things are attributed to the King. Given this relentless hagiography, whether the King initiated HAI or assumed that position, is unknowable. For our argument it matters that the King and *all involved* claim this fact: as mutual knowledge it provides an indication of what *fits*.

⁴⁴ Interview HAI director Royol Chitradon, April 2017. After, HAI – under a new director - did join an international consortium emphasizing RCMs (HYPERLINK \l "Ref19" \o "Hogendoorn et al., 2018 Hogendoorn, D.W.N., Somavilla-Croxatto, L., Petersen, Petersen, A. (2018) Who changes the delta? The travels of water and climate governance expertise to Southeast Asian deltaic regions through global knowledge networks. Manuscript in p" Hogendoorn et al., 2018; et al., 2018)

within its sphere of influence—its *network* of organizations. HAI's policies do fit with the idea that an aim of action is to remove disquiet within networks of associations ('inter-being'). By requesting data sets scattered within the fractured governance system, harmonizing them, and feeding everything back into the system to further stimulate network reciprocity, increasingly functioning as a hub. The removal of disquiet and the view of reality as constituted as a set of networked relations with no real nodes is a core Buddhist idea with its own rigorous logical implications (Priest, 2016). HAI's emphasis on integrating and improving data instead of acquiring novel data is analogous to subjective introspection and making use of present capacity, and improving reciprocal ties between organizations by removing disturbances. Its data reflects the present state of the Chao Phraya basin and delta, anticipating locally tied possibilities, bootstrapping up instead of macroplanning.⁴⁵ HAI travels well in the region, expanding its approach to 14 different Hydro Informatics and Climate Data Centers via its collaborations with ASEAN and the World Bank. HAI's rigorous policymaking fits Buddhist worldviews.

5. Conclusions

Surrounded on all sides, one small delta of indomitable Thai still holds out against the concept of the delta plan. We argued that this absence was not a random outcome and can only partially be explained by (a lack of) economic and political incentives. We singled out delta plans to illustrate how incongruence between worldviews, performed in institutions, might constitute a threshold inhibiting knowledge travel. Delta plans signal fateful futures and foster desires, and bias attention away from cities and towards nation-state building. Protestant and Buddhist views differ at least on these themes: the subject–object distinction, the orientation towards the future, the normative desirability for profits, and the notion of individual salvation. As we argued, delta plans are not 'Protestant' (just as HAI is not Buddhist or an explicit part of the Buddhist inspired Sufficiency Economy). But delta plans, we argued, do fit with Progressivist-Protestant views. Delta plans infer to action from constructed possible macro futures, with data used for induction. Representations serve as information, as best guesses, to reduce choice on deltaic strategies. An ideal-typical Buddhist approach would deduce right actions from inwardly consulted intent and available means, with little to no prominence for hypothetical futures. We developed the possibility that the fit (and the incongruence with Thai worldviews) is not coincidental. After all, professionals craft signs for technocratic ends within broader societal patterns of association. In Buddhism, imagining the future is irrelevant, even counterproductive as it causes desire and with it suffering. Settling one's intent first, attending to disquiet within one's sphere of influence, and making use of existing means are norms serving as goal-posts for inference and should result in purposeful rearranging and re-relating of present resources. If the possibility raised has merit, these Buddhist assumptions in a Buddhist society should fit better with some water governance institutions than others. We used the example of HAI to illustrate that implicit and explicit fits do exist in expertise-intensive arrangements. Far from a cultural essentialist picture, we have provided an argument on how different and contingent, associations arising over time and performed in patterned ways result in difficult travels across.

Acknowledgments

This work was supported by the UK's Economic and Social Research Council (ESRC) [grant number ES/N018834/1] and the Netherlands Organisation for Scientific Research (NWO) [grant number 464-15-086] under the Open Research Area (ORA) for the Social Sciences agreement.

References

- Adas, M., 2011. The Burma Delta. Economic Development and Social Change on an Asian Rice Frontier. Wisconsin press, pp. 1852–1941.
- Aryan, G., 2004. Thai Monarchy. Institute for Democracy and Electoral Assistance.
- Baker, C., Pomeroy, D., Kraan, A., van de, Wyatt, D.K., 2005. Van Vliet's Siam. University of Washington Press.
- Baldwin, R., 2017. The Great Convergence. Information Technology and the New Globalism. Harvard University Press.
- Bayly, C.A., 2004. The Birth of the Modern World. 1780-1914. Princeton University Press.
- Bergsma, E., 2017. De Rol van Experts bij Overstromingsbeheer. PhD-dissertation. University of Amsterdam.
- Brummeluis, Hten, 2005. King of the waters. Homan Van Der Heide and the Origin of Modern Irrigation in Modern Siam. KITLV Press.
- De Pater, B., 2011. Conflicting images of the Zuider Zee around 1900: nation-building and the struggle against water. J. Hist. Geogr. 37, 82–94.
- Dellos, 2003. Mandala: from sacred origins to sovereign affairs in traditional Southeast Asia. CEWCES Research Papers.
- Dreschler, W., 2016a. Public administration within the sufficiency economy. Thai Journal of Public Administration.
- Dreschler, W., 2016b. The reality and diversity of buddhist economics. With case studies in Thailand, Bhutan, and Yogyakarta. Working Papers in Technology Governance and Economic Dynamics. pp. 69.
- Dumont, L., 1985. Christian beginnings of modern individualism. In: Carrithers, M., Collins, S., Lukes, S. (Eds.), The Category of the Person. Anthropology, Philosophy, History. Cambridge University Press, pp. 93–122.
- Embree, J., 1950. Thailand, a loosely structured social system. Am. Anthropol. 52, 181–193.
- Evers, H.D., 1987. Trade and state formation: siam in the early bangkok period. Mod. Asian Stud. 21 (4), 751–771.
- Handley, P., 2006. The King never smiles. A Biography of Thailand's Bhumibol Adulyadej. Yale University Press.
- Hogendoorn, D.W.N., Somavilla-Croxatto, L., Petersen, Petersen, A., 2018. Who Changes the Delta? The Travels of Water and Climate Governance Expertise to Southeast Asian Deltaic Regions Through Global Knowledge Networks. Manuscript in preparation.
- Jensen, C., Morita, A., 2017. Delta Ontologies. Infrastructural transformations in the Chao Phraya Delta. Social Anal. 61, 2.
- Keyes, C.F., 1977. Millenarianism, Theravāda Buddhism, and Thai Society. J. Asian Stud. 36 (1), 283–302.
- Khanittanan, W., 2001. Khmero-Thai: the great history in the Thai language of the Chao Phraya Basin. J. Lang. Ling. 19 (2), 35–50.
- Knippenberg, H., 1997. Dutch nation-building: a struggle against the water? Geojournal 43 (1), 27–40.
- Manich Jumsai, M.L., 2000. Understanding Thai Buddhism. Chalermnit.
- Marks, D., 2016. An Urban Political Ecology of the 2011 Bangkok Floods. PhD-dissertation. The University of Sidney.
- Merton, R.K., 1938. Science, technology and society in seventeenth century England. Osiris 4, 360–632.
- Morgan, J., 1979. Puritanism and science: a reinterpretation. Historical J. 22, 535–560.
- Murphy, S.A., Stark, M.T., 2016. Introduction: transitions from late prehistory to early historic periods in mainland Southeast Asia, c. Early to mid-first millennium CE. J. Southeast Asian Stud. 47 (3), 333–340.
- Novak, J.J., 1993. Bangladesh: Reflections on the Water. Indiana University Press.
- Polkinghorne, J., 2006. Christianity and science. In: Clayton, P. (Ed.), The Oxford Handbook of Religion and Science. Oxford University Press, pp. 57–70.
- Priest, G., 2016. One. Being an Investigation Into the Unity of Reality and of Its Parts, Including the Singular Object Which Is Nothingness. Oxford University Press.
- Rahula, W., 2004. Haw trai foundation press. What the Buddha Taught.
- Sangkhamanee, J., 2018. Infrastructure in the making: the chao phraya dam and the dance of agency. Trans Trans -regional -national Stud. Southeast Asia 1–22.
- Schumacher, E.F., 2010. 1973] *Small Is Beautiful*. Economics As If People Mattered. Harper Perennial.
- Scigliano, R., 1964. Vietnam: politics and religion. Asian Surv. 4 (1), 666–673.
- Stark, M.T., 2006. Early mainland southeast asian landscapes in the first millennium a.d. Annu. Rev. Anthropol. 35 (1), 407–432.
- Takaya, Y., 1973. An ecological interpretation of Thai history. J. Southeast Asian Stud. 6 (2), 190–195.
- Takaya, Y., 1987. Agricultural development of the tropical delta. University of Hawaii Press.
- Wallace, B.A., 2006. Buddhism and science. In: Clayton, P. (Ed.), The Oxford Handbook of Religion and Science. Oxford University Press, pp. 24–40.
- Walton, M.J., 2017. Buddhism, Politics, and Political Thought in Myanmar. Cambridge University Press.
- Winichakul, T., 1994. Siam Mapped: A History of the Geo-Body of a Nation. University of Hawaii Press.
- Woodside, A., 2006. Lost Modernities: China, Vietnam, Korea and the Hazards of World History. Harvard University Press.
- Xing, G., 2011. Asoka and Buddhist Kingship. International Buddhist College, Thailand March 2011.
- Zegwaard, A., 2016. Mud: Deltas Dealing With Uncertainties. Phd-thesis. Vrije University.
- Zwam, V., 2017. Houston heeft een deltaplan nodig. Trouw Retrieved on 11-09-2018 from. <https://www.trouw.nl/home/texas-heeft-een-deltaplan-nodig~abf8cb5d/>.

⁴⁵ Interview HAI director Royol Chitradon, April 2017.