

All That Is Solid Melts into the Bay: Anticipatory Ruination and Climate Change Adaptation

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Abstract: This paper explores the shaping of Bangladesh's southern coastal region, often framed as the most climate vulnerable place in the world, as a zone of climate crisis. As rising waters threaten communities inhabiting the low-lying coastal islands scattered across the deltaic plain, many within the government and donor community have identified shrimp aquaculture as a principal adaptation strategy. Shrimp aquaculture is integral to the dynamics of what I call anticipatory ruination, a discursive and material process of social and ecological destruction in anticipation of real or perceived threats. I elaborate anticipatory ruination as a process that both responds to and produces Bangladesh's climate crisis. I use this concept to explore not only the dynamics taking place in Bangladesh's delta region, but also the ways in which climate crisis is constituted more broadly.

Keywords: climate change, adaptation, anticipation, political ecology, development, Bangladesh

Bangladesh's southern coastal region is home to the world's largest delta, that of the Ganga, Meghna, and Brahmaputra rivers, which drain into the Bay of Bengal. This region, and particularly the southwestern district of Khulna, is often referred to as the most vulnerable to climate change in the world (Harris 2014). Key actors in policy, academic, and practitioner communities have raised the alarm over the threat of rising waters to communities that inhabit the low-lying coastal islands, which trail off into the Bay across the deltaic plain. In response, many within the government and donor community have identified shrimp aquaculture as a principal adaptation strategy throughout the coastal landscape (Paprocki 2018). The production of shrimp for export transforms the threat of rising sea levels into a market opportunity. Shrimp ponds now dot Khulna's coastal landscape, supported through micro-credit schemes, capacity-building workshops, input distribution programmes, zoning maps, and major engineering projects to build embankments and roads to facilitate shrimp cultivation and export. Framed by notions of resilience and adaptation, donors and development agencies are re-shaping the ways in which Khulna's landscape is understood, managed, and transformed.¹

The shaping of Khulna as a zone of climate crisis is an active and ongoing process, involving both epistemic and material dynamics. The mobilisation of shrimp

aquaculture in this landscape as a tool for climate change adaptation is integral to the dynamics of what I call *anticipatory ruination*, a discursive and material process of social and ecological destruction in anticipation of real or perceived threats. I use the concept to explore not only the dynamics taking place in Khulna in particular, but also the ways in which climate crisis is dialectically constituted (epistemically and materially) more generally.

Although today the expansion of shrimp aquaculture on former agricultural lands in Khulna is seen as a key climate change adaptation strategy, its introduction to the region is not new. Beginning in the 1980s, structural adjustment programmes began supporting commercial shrimp aquaculture in Khulna (Adnan 2013), with significant funding from the World Bank and USAID. At that point, shrimp was offered as an opportunity to diversify and promote export-led growth, while also facilitating more intensive production in the coastal region. Today, frozen shrimp is Bangladesh's second largest export after garments, and is considered central to the strategy of export-led growth for the country. Climate change adaptation in Khulna is linked to the region's pre-existing political economic project of development, of which shrimp aquaculture was already a key feature.

Yet, shrimp cultivation has also been implicated in ecological degradation and the dispossession of local rice farmers and has produced a landscape that visually invokes quite literal ruination. Due to the saline water that is piped in to fill shrimp ponds, soil salinity levels are often so high as to not only preclude rice farming, but also to kill trees and other remaining plant life. In an interview about the development interventions in Khulna, one donor in Dhaka compared the landscapes that are produced by this degradation to T.S. Elliot's wastelands. The salt hanging in the air can leave a faintly dry and sticky residue on one's skin. The feeling of ruination in this space, irrespective of an analysis of its drivers and histories, is inescapable. The transition from rice to shrimp has historically been (and continues to be) resisted by local social movements who see continued agricultural production in this region as a real alternative to the displacement wrought by commercial shrimp aquaculture. These dynamics of degradation and dispossession through shrimp production in Khulna will be explored in greater detail below. The continued centrality of shrimp, through the shifting development landscape from the structural adjustment of the 1980s to the contemporary focus on climate change adaptation illuminates the broader context of anticipatory ruination in this region.

Climate change adaptation in Khulna involves an imagination not only of the opportunities embedded in the expansion of shrimp aquaculture, but also the erasure of other possible futures (Paprocki and Huq 2018). Shrimp production becomes an opportunity as other modes of production are imagined as unviable. The transition from rice agriculture to shrimp aquaculture is rendered inevitable through anticipatory ruination of the practices of production and social reproduction through which communities in this region have historically sustained themselves. As Stoler writes, "ruins draw on residual pasts to make claims on futures. But they can also create a sense of irretrievability or of futures lost" (2013:21). Anticipatory ruination in Bangladesh works not only through the claims to possible futures through shrimp production, but also through the destruction of

imaginings of alternative futures, such as the persistence of agriculture and the communities in Khulna that depend on it. The sense of inevitable crisis thus dialectically anticipates and produces ruination.

While my examination of anticipatory ruination is firmly grounded in Khulna's particular historical and political geography, its reach extends much more broadly. To better understand the broader dynamics of anticipatory ruination through climate change adaptation that I explore in Khulna, I extend my ethnographic scope to international discourses on new modes of development decision making in the time of climate change. I thus examine the dynamics of anticipatory ruination at multiple scales. I begin with an exploration of the concept of anticipatory ruination and its intellectual antecedents. I then examine the work of anticipatory ruination and the discourse of climate crisis at a global scale, exploring the implications of generalised global adaptation decision-making models to coastal Bangladesh. I then investigate the process of imagining the future of Khulna by donors and development practitioners in Dhaka, then focus in on the particular dynamics of how this imaginary is carried out through shrimp aquaculture in rural communities in Khulna. Finally, I extend the temporal scope to an emerging proposal for planning and enacting this ruination in the region more broadly. Collectively, these explorations illuminate how the logic of anticipatory ruination works, as well as how that logic is manifested in a particular place. By shifting between temporalities and geographic scales, I explore how the anticipation of the future actively shapes the politics of the present.

Anticipatory Ruination

My understanding of ruination draws on the work of Ann Stoler and contributors to her volume *Imperial Debris* (2013), who explore ruination as an act, condition, and cause, each with its own temporality.² As Stoler writes, "*ruin* is both the claim about the state of a thing and a process affecting it. It serves as both noun and verb" (2013:11). Turning to ruination as a verb, as opposed to an analysis of ruins as inert objects, denaturalises the dynamics of destruction: who is the agent of ruination? How, why, and when does it take place? Thus, examining ruination as an ongoing process is to investigate claims of drivers of dispossession as remote, inevitable, or complete. Stoler and colleagues also direct attention to the historical dimensions of ruins, not as dead material artefacts of destruction, but as ongoing political projects that continue to have real effects, linking the exercise of power in past and present. As such, I understand anticipatory ruination in Khulna as an ongoing act with both histories and futures that links climate change to the longer ecological history of this region: to shrimp production, land use changes, and visions of adaptation and inevitable displacement. Similarly, Jackson has written that narratives of the "glacier-ruins" of climate change both naturalise and prefigure processes of ruination (Jackson 2015). Understanding ruination in this context is to question the notion of climate crisis as a spatially or temporally distant possibility. In contrast, anticipatory ruination directs us to understand the ways in which this crisis is actively produced in particular places through modes of power that operate at multiple scales.

Moreover, I draw on a growing literature that examines new forms of governing through analysis of the politics of *anticipation* (Adams et al. 2009; Amoore 2013; Anderson 2010; Braun 2015; Choi 2015; Cross 2014; Zeiderman 2016). This literature understands anticipation as a key technology of policing in a new world of increasingly securitised governance (Adey and Anderson 2012; Collier and Lakoff 2014; Massumi 2005; Stalcup 2015), and identifies ways in which anticipation precipitates certain forms of violence. Anticipatory ruination itself is entailed in sociotechnical imaginaries that “elevate some imagined futures above others” (Jasanoff and Kim 2015). This examination of the politics of anticipation is embedded in a broader literature on preemptive governance that responds to imaginations of future threats (Beck 1992), with the anticipatory governance of climate change being a particularly clear example of technological responses to risk (Asayama 2015; de Goede and Randalls 2009; Elliott 2017; Hulme 2008; Masco 2010; Sillman et al. 2015).

More broadly, the concept of anticipatory ruination is intellectually indebted to prior insights in the fields of political ecology and development studies concerned with social and environmental governance generally, and climate change and adaptation specifically. Anticipatory ruination builds on a long lineage of scholarship in critical development studies that understands development as an intentional but profoundly uneven and contradictory historical project aimed at governing people and landscapes in the global South in the context of decolonisation (Cowen and Shenton 1995; Hart 2001; McMichael 2004). This work is concerned with the links between development and social and ecological destruction (Escobar 1994; Neumann 2005; Robbins 2012). It has also highlighted the continuities between colonial rule and current modes of development and environmental regulation as practices of governmentality (Gupta 1998; Li 2007). Anticipatory ruination builds on this tradition by interrogating teleologies of development and its associated destruction. It highlights how regimes of environmental governance that anticipate and respond to climate crisis are linked with much longer historic processes of dispossession through development (Ahuja 2017).

Political ecologists have long been concerned with the concept of “adaptation” and its often troubling political implications (Watts 2015). Adaptation obscures causality of vulnerability, preventing structural analyses of responses (Bassett and Fogelman 2013; Peet et al. 2011; Ribot 2011, 2014; Robbins 2012). Anticipatory ruination builds on these interventions, highlighting how responses to climate change (and other causes of vulnerability) can exacerbate social and environmental threats (McMichael 2009). Early works in political ecology sought to redirect attention from organic analogies of adaptation and homeostasis to more rigorous political economy interrogating the disruption and dispossession embedded in processes of market integration and transformed resource management, with a focus on agrarian societies in the process of capitalist transition (Peet and Watts 2004; Watts 1983; Wisner et al. 2004). The concept of anticipatory ruination similarly questions narratives of dispossession or ruination as a natural process, directing attention to the contingent and extrinsic nature of certain forms of social and ecological disruption.

Anticipatory ruination builds on a robust critical literature concerning the epistemic power of what Wolford has called “spatial imaginaries” (Wolford 2004). This work is linked with the process that Mitchell refers to as “enframing”, that is, the material power of imagining space in order to render it legible for intervention (Mitchell 1988). The work of enframing, Mitchell tells us, not only facilitates control over space and its inhabitants, but it also offers the possibility of increased productivity (and extraction). The production of authoritative green knowledge facilitates intervention in the name of climate change and other environmental concerns (Demeritt 2001; Goldman 2005), even as the legitimacy of environmental knowledge and expertise is always negotiated and contested (Lave 2015). In recent years, several scholars have begun to investigate in particular the ways in which competing spatial imaginaries of climate crisis and adaptation suggest new terrains of struggle over what the future will look like under climate change (Braun 2014, 2015; Farbotko 2010; Fincher et al. 2015; Günel 2016; O’Lear and Dalby 2016). It is in this area that my discussion of anticipatory ruination intervenes most directly.

Building on these prior insights, the concept of anticipatory ruination highlights the exceptionally disruptive spatial imaginaries entailed in new modes of development and governance in the face of climate change. While the modes of domination and dispossession entailed in anticipatory ruination are not new (indeed, they reflect longstanding dynamics of development and colonial rule), the anticipation of future crisis suggests an unprecedented imperative for disruption. The concept of anticipatory ruination contributes a clear framework for linking dynamics of material destruction with epistemic processes that forecast that destruction before it takes place.

This paper is based on two years of multi-sited ethnographic research in Bangladesh and India and at international climate change conferences. In Bangladesh, I conducted research both in coastal villages with farmers and landless day labourers, as well as in Dhaka, Bangladesh’s capital, with donors, researchers, development practitioners, activists and government civil servants. In India, I conducted interviews in Kolkata, with migrants from Khulna as well as with Indian development practitioners and government officials. Participant observation at international conferences on climate change in Dhaka, Rotterdam, Paris, and Kuala Lumpur during this time facilitated my understanding of the broader context in which these dynamics play out and offered insights into the processes explored in this paper in particular.

My work in Khulna was shaped by a longstanding engagement with Nijera Kori, a landless peasant movement that consists of autonomous collectives of peasant farmers in villages throughout rural Bangladesh (Paprocki 2017). Nijera Kori’s mobilisation in opposition to shrimp aquaculture in the coastal region for over three decades was the original motivation for my research in this region. I have worked with Nijera Kori collectives in Khulna and other parts of the country since 2007 through both participatory research with Nijera Kori members and independent ethnographic research (Cons and Paprocki 2010; Paprocki 2016; Paprocki and Cons 2014). This engagement has shaped my research questions, and, indeed, my understandings of the region’s histories and futures (both possible and imagined).

Robust Decision Making

While anticipatory ruination is shaping Khulna's landscape and the communities that inhabit it in particular (and very real, material) ways, as a project, the anticipation of climate crisis is carried out at a variety of sites, spatial scales, and institutional contexts. I begin with an examination of discourses around climate change and development planning in the context of climate uncertainty. Researchers, donors and development planners and practitioners come together regularly at international conferences to discuss the available knowledge about climate change and how communities around the world can adapt to present and future changes. Such conversations facilitate and are embedded in anticipatory ruination in Bangladesh as elsewhere.

In the fall of 2014, I observed these dynamics clearly at a conference in Rotterdam, "Deltas in Times of Climate Change", hosted chiefly by a group of Dutch government, private, and research agencies. In one workshop, a Senior Economist at the World Bank used a board game called "Decisions for the Decade" commissioned by the World Bank and the RAND Corporation to demonstrate a decision-making tool they developed known as "Robust Decision Making".³ The World Bank and RAND encourage policy makers to use this tool in contexts of "deep uncertainty",⁴ such as climate change. The board game is intended to demonstrate to participants how decision makers identify "robust options" for investments that are less precarious in the context of uncertainty. The goal is not only to shape the way that decisions are made, but to structure understandings of the future that will shape different kinds of decisions.

Participants in the workshop, a variety of NGO development practitioners, researchers, and government civil servants primarily from Europe, Africa, and South and Southeast Asia, gathered around tables in a large conference room at Rotterdam's World Trade Center. We were given game boards and handfuls of beans and red pebbles as the World Bank economist explained the rules. We were told that our role in the game, representing provincial governors and national policy makers, was "to create a prosperous province and nation", which is sought in the game through decisions between investments in development or flood and drought protections. As we began, the economist encouraged eager game players, irreverently quipping, "let's reward the winners, but also shame the losers!" Faulty decisions produce natural disasters, or "crises", determined by a random roll of a die, dubbed the "probability density function". In each round, ersatz provincial governors for whom the "probability density function" produced a "crisis" were made to stand up from their seats and announce animatedly to the room: "Oh No!" In an online video about the use of Decisions for the Decade and associated games developed by the same group, one player describes the moment of crisis in game play: "all of a sudden a flood hit. And I died. So ... Well, I was washed away to a local slum town and have been subsisting off of leftover banana peels and whatnot." As this glib takeaway highlights, the point of these games is to allow players to imagine the kind of profound ruination from which there is no return. In the context of the game, this anticipation is pervasive—unless the player chooses the "robust option", the threat of ruination is always present.

Moreover, the anticipation of this ruination is understood to exist without geographic boundaries. Notably, the “provinces” we represented bore no signs of any particular place. Indeed, we were intended to imagine that they might stand in for any given province anywhere in the world. Webber (2015) has similarly observed attempts by the World Bank to develop mobile adaptation strategies without reference to place, highlighting the contradictions of this focus on adaptation policy mobility. Likewise, this game sought to help us assimilate equally boundless decision-making tools, intended to be applied universally, without specification.

In the second round, a twist was introduced: instead of making decisions between standard investments in development and protection, players were offered a “robust option”, by which their investments would be protected from any climate-based variability. The economist explained, “say you can invest in something, for example, industry, that would guarantee [returns] without any risk of flood or drought”. So there it is, the robust option: industry. It’s not vulnerable to droughts and flooding, unlike antiquated investments in things like agriculture and coastal embankments in rural areas. The economist lamented that robust options are expensive, and “not easy”, presumably a euphemism for their unpopularity with the fictitious constituencies of the game players. He exhorted sympathy (is this tongue-in-cheek?) for the “poor World Bank that needs to hand out all the money for all these development projects to make it all robust”. Game players were inclined to agree with him, then, when he chided those investing heavily in protection that “you’re pointing your countries on a less prosperous path!” By the last round of the game, when the standard die was replaced with a floppy piece of paper taped together, labelled “the cone of uncertainty” (apparently intended to represent the enhanced and profound uncertainty of the future under climate change), players already understood the moral. That is, ruination in the future will be inevitable; it will be necessary to make decisions that anticipate this ruination; these decisions may involve a normative shift in values and will radically change landscapes.

Decisions for the Decade thus facilitates the kind of “magical vision” (Tsing 2000:133) that conjures the empty, exposed space required for making decisions that appear neutral and rational. The game instils an understanding of what “robust options” might look like that are appropriate to this new dynamic of anticipatory ruination, for landscapes that do not yet exist, but will. The economist explained that he and his World Bank colleagues play this very game with policy makers all over the world in order to instil these same feelings of deep uncertainty and encourage reflection on how to pursue anticipatory governance strategies through Robust Decision Making strategies. Such tools facilitate a determination of appropriately robust decisions, involving quantitative, long-term policy analysis, and the use of modelling software to generate possible scenarios of this uncertain future.

What this board game and discussion mask are the profoundly normative nature of these decisions and the processes informing them. They present decisions as technical where they fundamentally involve the devaluation of certain futures

and livelihood strategies. Specifically, the devaluation of rural futures in favour of urban ones is a common feature of these imaginations. This devaluation is accomplished through what the economist described in a lecture he gave at this same conference as “framing”, a critical priority on which he encouraged all gathered participants to focus more. He explained that a more positive framing of the decisions about what needs to happen in anticipation of climate change is important, with the caveat that “just this difference in framing doesn’t change anything about the content”, though it does facilitate cooperation. For example, while standing in front of a slide depicting an image of Mumbai’s infamous Dharavi slum, he noted that “for a lot of people in rural areas, these places are opportunities for better jobs and higher salaries, better schools for their kids, access to health care”. Framing a migration from a rural community to Dharavi, then, as an “opportunity” for a more robust livelihood is critical to this process of imagining and creating different futures. Thus, it is perhaps no surprise that reports on Robust Decision Making often cite out-migration from rural to urban areas as a key example of potential “robust options” (Hallegatte et al. 2012; Lempert et al. 2013). As the economist’s comment about the rural migrants to Dharavi indicates, whether agrarian futures are “robust” or not, they are not understood to be normatively positive outcomes of development investment.

Therefore, decisions about what *should* be done as opposed to what *could* be done are quite different. The difference reflects the normative assessments and framings of what an ideal future might look like. In this way, where Robust Decision Making draws on the logics of anticipatory ruination, it creates opportunities for certain futures, while foreclosing others. In Bangladesh, the same logic can be observed in the planning discourses concerning the future of the coastal region. I turn now to an examination of these particular dynamics, and their impacts in Khulna.

Imagined Futures

Imagining the future of coastal Bangladesh is a critical moment in the process of anticipatory ruination, and one that development practitioners refer to often in discussions of how to plan development interventions in the coastal zone today. Through this work of imagining the future, notions of risk and uncertainty, along with normative evaluation of appropriate response, enters into the planning process. Framing the region’s future crisis involves claims to the need for both (1) general acquiescence and (2) specific authority by development practitioners. Each claim is explored in turn below.

Calls for acquiescence to the adjustments that climate change will require are the beginning of this process of anticipatory ruination. Experts explain that while the future is uncertain, it is necessary to proceed with the assumption of the possibility, even inevitability, of crisis. They assert the need for candid discussion about this inevitable ruination. Finding solutions will be difficult, as one expert explained, because “all solutions are bad solutions for some people”.⁵ Thus, as another explained, echoing a common refrain among development practitioners working in this field, the adaptations that will be deemed necessary “will make us

feel uncomfortable” but, she continued, “we need to move forward despite feeling uncomfortable”.⁶ The need to resign ourselves to the discomfort of the inevitable destruction is critical to this discourse. As one expert explained in a seminar at the Asian Development Bank office in Dhaka, “accepting failure” of adaptation, instead of denying it, is critical to forging strategies for what to do in response to climate change.⁷ Another expert, working on a climate change project for one UN agency, explained more specifically (referring to plans to support the growth of shrimp aquaculture instead of adaptation of water management to support rice farming systems), “we are not going to make things better with [river] dredging or water management, but there is definitely going to be shrimp farming”. By rejecting the possibility of strategies for effective amelioration of contemporary water management challenges, the practitioner effectively forecloses the possibility of an agricultural future for the region. These comments speak to an important paradox at the heart of anticipatory ruination—that is, despite our *lack* of knowledge about what will happen, there is a discursive construction of the inevitability of ruination; moreover, despite the tremendous energies being committed to devising solutions, it appears already known that the only possible solutions will not preempt inevitable ruination of landscapes and communities. Discussion of spaces and livelihoods that experts claim are “uninhabitable” and “unviable” bolster this language of inevitability, collectively naturalising ruination.

Development planners and practitioners respond to this language of inevitable ruination with claims to the necessity of their own authority in devising responses. “We need to create a vision for the future”, explained the expert concerned with discomfort cited above, precisely because of the need for uncomfortable solutions. Another adaptation expert explained to me that in this context:

no one can know what they’ll be doing in three or ten years down the road, including us, so as researchers and professionals, it’s our job to figure out what that future will look like and then to introduce people to it so they can begin to adapt.⁸

This quotation speaks to a particular understanding of governance through knowledge production. Specifically, that the role of experts is first to imagine what the future could or *should* look like, then to introduce it, and then to create it. The articulation highlights the normative and dialectical nature of anticipatory ruination, combining both epistemic and material dynamics.

The normative dimensions of this discourse are most commonly articulated as an afterthought, while the difference between what is *possible* and what has been deemed *preferable* remains ambiguous. A programme manager at one UN agency explained to me his project’s support of shrimp aquaculture programmes (and thus inundation of agricultural lands with saline water): “in those areas, it’s probably better to adapt to water. Water will come. It’s probably much more beneficial than agriculture”.⁹ In this case, it remains murky whether the practitioner’s assessment of the superiority of aquaculture to agriculture is due to its suitability to the ecological context, or some other normative claim about the relative economic benefits of shrimp vs. rice. What exactly is driving the change (“water will come”) is also left unspecified. The active nature of the decision to bring water onto the land is obscured in such discourses. Similarly, a practitioner with one German-

supported development agency objected when I asked him a question about why his programme supported shrimp instead of rice production, by explaining “no, shrimp is the major export earner, so we must support it”. But he then continued, “in ten years, who knows what will happen? We have no idea”.¹⁰ In both cases, the practitioner’s own assessment of the economic importance of shrimp nullifies the question of the kinds of production systems that are and will be possible in the region in place of normative assessments of the production system that is most desirable. Moreover, the role of programmes like his in shaping the answer to this question of what will happen in ten years is also obscured. Yet, this developmentalist economic logic, which sits outside of an assessment of climate impacts, is overlain on the evaluation of what “should” be done, to produce the logic of anticipatory ruination.

Thus, whether the inevitability of ruination is due to the imminence of climate change or, alternately, a particular analysis of economic imperatives remains an unlikely and unnecessary question. The anticipated future of the region is the same in either case. Development practitioners regularly refer to Bangladesh as a “model”, “leader”, and “pioneer” in adaptation, in the sense that the very act of imagining the ruination of this region creates possibilities for its transformation and ruination as forms of adaptation in themselves.¹¹

Shrimp

The expansion of shrimp aquaculture in Khulna plays a pivotal role in the region’s anticipatory ruination, shaping both its context and realisation. The effects of climate change, shrimp production, and the complex histories of dispossession tied up in development since the colonial period are all part of the same interconnected dynamics of the spatial governance of the region.

Prior to the shrimp boom, farmers in Khulna primarily grew one or two rice crops a year, and often a third “winter crop” more amenable to the elevated salinity levels of the rivers in the brackish coastal region, such as watermelon and sesame. This production involved the labour of smallholders, sharecroppers, as well as landless labourers. Their marginal land rights can be attributed to an extensive system of sub-infeudation with roots in the colonial period (Boyce 1987; Datta 1998; Van Schendel 1982). The insecurity of land tenure resulting from this highly unequal distribution of land rights facilitated the dispossession that accelerated the shrimp boom (Adnan 2013). It is the ruination of this agrarian political economy that has had the most profound influence on the transformation of production and social reproduction for Khulna’s rural inhabitants, both in the early years of the shrimp boom and today.¹²

Shrimp aquaculture has been implicated in a variety of different modes of social and ecological destruction in Khulna since the 1980s. Major concerns include ecological destruction through chemical effluents from ponds, soil salination, severe reductions in aquatic species diversity due to bycatch through wild capture of shrimp larvae, mangrove deforestation for shrimp ponds in brackish water habitats, and water logging of soils due to the blocking of canals for shrimp enclosures (Ahmed and Troell 2010; Ali 2006; Datta et al. 2010; Stonich and De La

Torre 2002; USAID 2006). For local activists, these environmental issues are embedded in deeper social concerns, namely the dispossession from land and labour opportunities in the transition from rice to shrimp (Datta 2006; Gain 2009; Guhathakurta 2008; Guimarães 1989; Halim 2004; Paprocki and Cons 2014; Sur 2010). These dispossessions are inherent to the transition, embedded in a transformation in production relations that entails higher concentrations of land tenure and ownership and less intensive labour requirements (Belton 2016). These impacts have been felt the most acutely by women as well as the majority landless populations who have historically worked as sharecroppers and agricultural day labourers in the region (Alamgir 2010; Datta 2006; Guhathakurta 2008; Halim 2004; Paprocki and Cons 2014).

Two particular modes of dispossession are most salient to understanding these social dynamics. The first is the land-grabbing that facilitated the early waves of the shrimp boom starting in the 1980s. These enclosures were usually carried out by urban elites, often through the use of violence against local communities. Though these dramatic forms of violent land-grabbing have declined in recent years, the insecurity and inequality of land tenure they escalated have not been ameliorated. Today, while violence continues to be used against those opposed to shrimp, land grabbing often takes place through various forms of judicial harassment and through the surreptitious inundation of agricultural lands with saltwater.¹³ The second, and more far-reaching, mode of dispossession is the reduction of labour opportunities in shrimp as opposed to rice production. Community members estimate that shrimp production requires somewhere between 1% and 10% of the amount of labour that rice farming requires.¹⁴ As shrimp ponds take over land from rice and other crop production, the people who used to depend on agricultural work to survive and feed their families increasingly find themselves without a place in the rural economy. As the elderly proprietor of a tea stall commented to me, “shrimp has destroyed all of the farmers”, invoking the Bengali word *dhongsho*, meaning literally “destroy”, “kill”, “waste”, or “ruin”. These dispossessed farmers migrate out of their villages to find work—to Khulna city, Dhaka, and often Kolkata, in the neighbouring Indian state of West Bengal. Thus, the expansion of commercial shrimp cultivation has a significant impact on the transformation of labour relations throughout the region, as well as the survival of its inhabitants.

This migration out of the coastal zone reflects a process of depeasantisation through the deepening of capitalist production relations in agrarian communities in Bangladesh as well as globally (Araghi 1995, 2009).¹⁵ This depeasantisation facilitates the intensification of extraction of resources from the region, by transforming a landscape that once produced largely for local consumption to one that produces for export markets. Yet, new discourses surrounding climate change in Bangladesh are re-shaping understandings of these migrations. While rural out-migration from Khulna is widely recognised (Guhathakurta 2011), it is commonly framed as climate migration (Comprehensive Disaster Management Programme [CDMP II] 2014; Norwegian Refugee Council 2015; Shamsuddoha et al. 2012; Siddiqui 2003). This framing not only obscures the dynamics of agrarian change at the heart of the transformation, it also facilitates further dispossession through

the production of alternative landscapes in response to what is seen as inevitable ruination.

Depolderisation

Finally, I turn to a nascent proposal for landscape engineering that suggests a potential logical extreme for the anticipatory ruination already being pursued in the region. This incipient imaginary is known loosely as “depolderisation”. Though no concrete designs for depolderisation have yet been produced, early proposals describe the potential for addressing the threat of sea-level rise throughout the coastal region by physically dismantling the large network of embankments that surround the islands throughout the coastal zone.¹⁶ Removing the embankments would allow tidal waters to inundate the area within, either completely or partially for certain times of the year or an extended period of several years. At this point, the concept of depolderisation exists more as an ideological project than a concrete paradigm for land and water management. However, its ideological power is significant. It not only shapes possibilities for the future, but it also holds sway in conversations about what is possible and desirable in the present and immediate future. In this sense, it plays a significant role in the future and present of adaptation in the region.¹⁷

Depolderisation has been embraced most earnestly in Bangladesh by the World Bank and has received critical support on both sides of the border from the India bureau of the World Wide Fund for Nature (WWF).¹⁸ The relevant programmes of each agency encompass two concrete goals. The first involves mitigation of the geomorphological problems created by the embankments in the first place, including subsidence of land and sedimentation of rivers, both of which are exacerbated by the threat of sea-level rise. The second goal of depolderisation involves espousing a particular vision of development in the coastal region—in particular, one that embraces the opportunities of a transformed economy. In Bangladesh specifically, this means growth of commercial shrimp aquaculture and the expansion of an urban-based, industrial economy.

The physical and social implications of depolderisation are dramatic, entailing a complete landscape transformation. Before embankments were built, the natural tidal pattern involved the inundation of coastal lowlands twice per day during certain parts of the year. Human settlements were established on highlands, with homes often built on plinths, while low-lying wetlands were used either for fishing or cultivation of traditional rice varieties (which not only tolerate this periodic flooding, but were also fortified by mineral-rich tidal sediment deposits) (Datta 1998; Duyne 1998; International Bank for Reconstruction and Development 1972; Westland 1874). Discourses proposing depolderisation suggest a “return” to such a hydrological regime. However, the polders in Bangladesh have dramatically transformed the landscape such that by obstructing the tidal deposition of sediments onto the lowlands, combined with subsidence of the land and relative rise of riverbeds surrounding them, in many cases the land within the polders has become lower than the low-tide level of the surrounding rivers. Thus, removing the embankments today would likely cause complete inundation of entire islands,

and the necessary displacement of the communities that inhabit them. Depending on the scale of depolderisation, the populations affected could be tremendous. One World Bank expert suggested “millions and millions” of coastal inhabitants.

The World Bank has long provided financial lending support for water infrastructure in Bangladesh, including for the construction and re-construction of the coastal polder system. Most recently, the Coastal Embankment Improvement Project (CEIP), which the World Bank cites among their chief climate change adaptation programmes, is focused on improvement of a series of pilot polders across the coastal zone. While the goal of the CEIP is ostensibly to fortify the embankments, it has also provided the grounds for discussions about whether the polders should exist at all. One of the components of this project seeks to engage an international consulting firm to devise a “sustainable polder concept” proposal for long-term engineering and management of the coastal landscape (World Bank 2015). World Bank employees and consultants whom I interviewed about this project referred to it as “Polders 2.0”. The Terms of Reference for this project stipulate that the “sustainable polder concept” must involve the possibility of depolderisation. Thus, even as the Bank invests millions in reconstruction of the polders, according to one Bank staff member in a presentation to a group of foreign donors, “much of the money” will go toward generating this new long-term vision for physical, social, and economic transformation.

Wherever depolderisation is discussed (by consultants, donors, and practitioners), it is talked about as an integral component of a broader vision of development for the region. That is, the anticipation of climate crisis combines with and brings about a normative vision of developed futures. These imagined futures entail the end of rural livelihoods in the delta, replacing them with a highly stylised (and age old) vision of development where the rural population transitions into an industrial labour force.

The normative dimensions of this vision are fleshed out in much greater detail in a report published by WWF in Kolkata in 2011 (Danda et al. 2011), funded by a World Bank project working to pioneer and integrate a new vision for managing and transforming this landscape on both sides of the border. The first four chapters of the report, entitled “Indian Sundarbans Delta: A Vision”, detail the environmental hazards produced by a variety of different social and physical drivers, including sea-level rise and other effects of climate change, overpopulation, and improper construction and maintenance of coastal embankments, dating to the colonial period. The fifth and final chapter details a phased strategy for depolderisation and depopulation of an area encompassing 45 Gram Panchayat districts and over 200 individual villages. A World Bank Strategy Report entitled “Building Resilience for Sustainable Development of the Sundarbans” describes a similar vision, providing even greater detail about the roll-out of particular interventions through which the vision will be accomplished over a period of 5–30 years (World Bank 2014). “Sustainable” economic development will be promoted in new peri-urban centres through vocational training for the future economy of the Sundarbans region, which involves tourism and “modernized aquaculture”, and so that residents might “successfully integrate themselves into cities” (World Bank

2014:219). In the latter phases of the strategy, remaining residents will be induced to migrate through the elimination of support for basic services and infrastructure. Experts at one workshop in Kolkata focused on this strategy for Sundarbans development and speculated that farmers, fishermen and their offspring currently living in the Sundarbans region would be much better off if they could be prepared for a transition into India's booming urban IT industry. "Give them proper skills", one World Bank expert implored, "they will run away!" In this development narrative, the IT industry represents the New India—the vision of an urban future for which the World Bank and other development agencies are striving. Responding to climate change is just one plank in pursuing this vision of development.

A reproduction of a painting included in the final chapter of the WWF report illustrates this vision evocatively. The painting depicts a bird's eye view of the Indian Sundarban region, with the tall buildings of the Kolkata skyline at the far edge of the horizon. In the foreground, one can see the clear lines of the islands along the coast of the Bay of Bengal. A broad swath of these islands further inland, however, appear to be vanishing into the water. At the edge of the Sundarbans, three small cities have sprung up, depicted by a few skyscrapers highlighted within bright red circles. One of the report's authors described to me his conversation with the artist from whom he commissioned the painting for the report, proudly displaying the original full-size piece framed in his office. He gave the artist a current map of the Sundarbans, he explained to me, but specified "you have to make some of the islands disappear, and portray that nature is taking it back, and portray that we have made some arrangements for these people". Here, then, is the vision for the future of the Sundarbans: vast tracts of islands vacated of their agrarian populations, who have relocated to industrial centres where they have been trained for their new urban livelihoods.

The report's author described to me the enthusiasm with which this vision was received by the World Bank. A standing-room only crowd at the World Bank headquarters in DC was excited, he explained, about new opportunities for investments in the "new" Sundarbans, for example in Tata Housing,¹⁹ which presumably was depicted by the tiny cities of the future in the report's painting. The vision is a powerful one. And while no concrete steps have yet been taken toward active resettlement, WWF has received financial support toward the dissemination of this vision from GIZ and DFID, in addition to the World Bank. Dissemination takes place through conferences and workshops, gratis field visits to the region for journalists, donors, government and NGO officials, and public consultations with residents of the Sundarbans themselves. Clearly these diverse constituencies have responded to the vision quite differently. The report indicates that in preliminary consultations concerning the vision, only about 5% of current inhabitants expressed an interest in the vision and the migrations it would require. The report speculates that this lack of interest among local residents may be due to reflection on "the experience of involuntary displaced people in other parts of the country" (Danda et al. 2011:40).

Experts who propose this displacement do not do so without awareness of the political implications of proposing resettlement at such a massive scale. At one

workshop in Kolkata in January 2015 for development planners from both Bangladesh and India at which a number of reporters were in attendance, World Bank and WWF experts repeatedly corrected one another for using the words “migration” and “resettlement”, which they acknowledged were “dirty words”. One expert, responding to such a chastisement, noted “we don’t need to call it migration, we can call it ‘gaining a higher standard of living’”. The concern indicates an acute awareness of the profoundly contested history of displacement and forced migration for development projects in India. However, experts affirm, climate change offers an opportunity for changing this narrative about development’s displacements. In the context of climate change, development-induced migration should be seen as a (now-necessary) opportunity, instead of a threat. One researcher expounding the economic potential of migration out of Bangladesh’s coastal region to a workshop on climate change adaptation in Rotterdam entreated the audience, “don’t think of resettlement ... think of all kinds of connectivity!” The strength of the state and its capacity for carrying out such activities is also a factor inflecting the legitimacy of such visions. One World Bank planner in Bangladesh explained to me that the potential for depolderisation currently seems much more feasible in India, where the government has a “much greater capacity for these kinds of massive resettlement projects”. Even as development practitioners on both sides of the border are clear that active resettlement will be the responsibility of the government (as opposed to non-state actors such as the World Bank), there is no question that it can be supported and pursued through the work of development and climate change adaptation carried out by NGOs.

Conclusion

The anticipatory ruination of Khulna through the expansion of shrimp aquaculture follows the same contours of epistemic intervention as those promoted globally through development planning in response to climate change. In Khulna in particular, this logic operates as a progression, masking the histories of each of its elements: uncertain future ruination becomes an explanation for the inevitable unviability of agriculture, shrimp aquaculture is proposed as an alternative, experts conclude that it is preferable, anyway, and should be embraced immediately as an opportunity. This entails a clear vision of what an ideal future is for communities in Khulna, divorced from those communities’ own visions of what is possible or desirable. Climate change becomes a post-facto justification for a process of ruination through the planning of particular development interventions both historically and into the future.

Yet, anticipatory ruination does not represent the only vision of a climate changed future for this region. The futures experts imagine for climate change often contrast significantly with the futures imagined by local residents (Fincher et al. 2015; Paprocki and Huq 2018), and these different spatial imaginaries often suggest competing moral economies of climate governance (Elliott 2017). Climate justice, Routledge (2016) has argued, is a fundamentally political framing in Bangladesh and elsewhere (see also Chatterton et al. 2013). It

necessitates, he explains, political antagonisms that render the pursuit of climate justice both localisable and contestable. As others have also illustrated, these localised contestations over climate justice bring debates of climate futures into conversation with a variety of other struggles for social and environmental justice (Cohen 2016, 2017; Elliott 2018; Koslov 2016). I suggest that interrogating and denaturalising anticipatory ruination creates space for imagining more just futures under climate change (Braun 2015; Collard et al. 2015), and therefore facilitates resistance.

Examining the dynamics of anticipatory ruination in Khulna sheds light on the stakes in succumbing to the teleologies of climate crisis in their material and epistemic dimensions. By understanding the production of anticipatory ruination, we are better able to understand not only the dynamics of dispossession, but also the alternative futures that are obscured in Khulna and elsewhere. The efforts of local communities and social movements (such as the one mentioned above composed of local farmers fighting against shrimp) to highlight these dynamics of ruination help us to understand both their antecedents, as well as to suggest the possibilities of alternative futures.

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Endnotes

¹ These dynamics are embedded in a larger dynamic of governance that I have elsewhere described as an *adaptation regime*, a socially and historically specific configuration of power that governs the landscape of possible intervention in the face of climate change (Paprocki 2018).

² Cf. Tsing's hopeful approach to investigating the coproduction of ruins and resurgence (Tsing 2015).

³ The game itself was developed by the Office of the Chief Economist of the World Bank in collaboration with the Red Cross/Red Crescent Climate Centre, with additional support from the German development agency GiZ (Suarez et al. 2015).

⁴ I examine the politics of uncertainty in Bangladesh in greater detail elsewhere but suffice it to say that the mobilisation of uncertainty is not incidental to the work being done here. Architects of Robust Decision Making trace their attention to "deep uncertainty" back to Frank Knight, a founder of the Chicago School of Economics, whose "Knightian Uncertainty" differentiates economic risk from uncertainty, proposing that the latter is essential for profit (Hallegatte et al. 2012; Knight 1921; Lempert et al. 2003).

⁵ Comments made by an adaptation practitioner at a public lecture in Dhaka, 23 December 2014.

⁶ Comments made by foreign researcher and planning professional at a conference in Dhaka, 1 January 2015.

⁷ Comments made at seminar at ADB office, 27 October 2014.

⁸ Interview with the author, 30 April 2014.

⁹ Interview with the author, 18 May 2014.

¹⁰ Interview with the author, 12 November 2014.

¹¹ On a longer history of the use of Bangladesh as a paradigmatic development “laboratory”, see Hossain (2017).

¹² Expanded discussions of these concerns in relation to the classical agrarian question can be found in Akram-Lodhi and Kay (2009) and McMichael (2013).

¹³ Would-be shrimp producers or their agents often cut down protective river embankments at night. (Interviews conducted by the author with farmers in Khulna, 2014–2015.)

¹⁴ Belton’s (2016) research suggests a less dramatic, but nevertheless substantial decrease in labour demand in the transition from rice to shrimp, citing 54% more labour required for complex (rice) agricultural systems relative to shrimp production (see also Paprocki 2018).

¹⁵ It is also important to note that trans-boundary migration in this region has a much longer history, reflecting a variety of social, political and economic transformations (Alexander et al. 2016; Cons 2016; Samaddar 1999).

¹⁶ The islands surrounded by these embankments have come to be known as “polders”, referring to the Dutch term for low-lying land surrounded by protective dykes, within which water levels can be controlled through a combination of inlet and outlet channels and pumping equipment.

¹⁷ It is worth noting that interventions similar to depolderisation have been proposed and pursued in various places in the past (Adnan 2006), loosely referred to collectively as “Tidal River Management”. This has entailed making intentional cuts at strategic locations in embankments in order to bring sediments into low-lying lands with the flood water. These approaches were largely directed at resolving drainage congestion caused by the buildup of sediment in rivers and canals. Proposals for depolderisation, while still evolving, would involve more large-scale embankment removals, directed at flooding entire islands to address subsidence.

¹⁸ These plans are expounded in a WWF report (Danda et al. 2011) and World Bank proposal (World Bank 2015) described in detail below. I expanded my understanding of the vision and implications of depolderisation through several interviews with staff and consultants at The World Bank, WWF, and Bangladeshi state agencies concerned with water management.

¹⁹ Tata Housing Development Company is one of India’s largest real estate development firms. It is a subsidiary of the Tata Group, a multinational conglomerate that claims annual revenues in excess of US\$100 billion. They are known for their investments directed at India’s growing urban middle class market; hence, Tata Housing would be an ideal developer for the imagined future cities on the periphery of the Sundarbans.

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