MAKING AND UNMAKING AN AGRICULTURAL MIRACLE: INFRASTRUCTURE, ACCUMULATION, AND RESISTANCE IN VIETNAM'S MEKONG DELTA

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This dissertation draws on multiple methods, including archival research, household survey data, and interviews, to examine the forces, actors, and relations that have transformed the Mekong Delta into the foremost hub of rice production in Vietnam, as well as the ways in which the future of rice production – and with it Vietnam's broader food security – is being challenged by both climate change and by the shifting livelihoods of farmers themselves. The first paper traces how the social and environmental landscape of the Mekong Delta was transformed over the course of the 20th century through the construction of water management infrastructures such as dikes, dams, and sluice gates, with the overall aim of increasing rice production. The second paper uses survey data from two areas — one engaged in rice agriculture and the other shrimp aquaculture — to examine the divergent dynamics of accumulation and dispossession within these two production systems. The final paper focuses on conflicts which have emerged between shrimp farmers and the state around infrastructure projects designed to ensure national food security and adapt to global climate change. As the state has built up new barriers to protect the rice fields of the Mekong, these efforts have encountered resistance from shrimp farmers themselves, who have engaged in acts of "counter-accumulation," as by subverting government infrastructure and covertly rebuilding the productive forces in shrimp aquaculture.

BIOGRAPHICAL SKETCH

Timothy Gorman received a Bachelor of Science from the Edmund A. Walsh School of Foreign Service at Georgetown University in Washington, D.C. in 2002, a Master of Arts in Southeast Asian Studies from the National University of Singapore in 2007, and a Master of Science in Development Sociology from Cornell University in 2012. Before beginning his graduate studies at Cornell, he worked for several years in Hanoi, Vietnam, as a communications officer and consultant in the field of rural development. In the fall of 2018, he will be joining the Department of Sociology at Montclair State University in New Jersey as an assistant professor.

to my parents, with gratitude,

to Pauline, with devotion,

and to Sylvie, with awe.

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VND: Vietnamese Đồng (unit of currency)

USD: United States Dollars

HYV: High-yielding variety

Km: Kilometer

Ha: Hectare

CHAPTER 1

INTRODUCTION

The following three papers all hinge on the concept of accumulation and the processes by which it takes place in agriculture and aquaculture, exploring how these processes have played out over the course of the last century in the Mekong Delta region of southern Vietnam.[1]

The first paper, entitled "Accumulation as Political Strategy: Infrastructure, Property, and Production in the Mekong Delta" draws on archival documents to argue that accumulation in rice agriculture is a long-standing state project in Vietnam, one that has transcended a series of political regimes, each of which used the maximization of production as a means to (extra-economic) political ends, and worked through the transformation of both the biophysical environment and the social relations of property and production. Examining the history of both large-scale infrastructure projects and property regimes in the Mekong Delta over the course of three successive political regimes — from the French colonial period to the independent South Vietnamese state of the Vietnam War era to the post-war socialist republic — this paper argues that these various interventions into both the material forces and the social relations of production have been deployed with an overarching goal: to maximize the rice surplus in the Mekong Delta as a state accumulation strategy.

[1] See Figure 1.1 for a map of the region and case study sites.

The second paper, entitled “Divergent Accumulation Pathways in Bạc Liêu,” uses survey data from two areas, one a rice-growing village lying behind a ring of dikes and sluice gates, and one a shrimp-farming village in an area exposed to tidal inundation, to trace patterns and dynamics of accumulation and dispossession generated by two competing accumulation strategies: one centered around the intensive cultivation of rice, and one on the cultivation of farmed shrimp. Each of these different accumulation pathways works through different configuration of social relations and productive forces. Specifically, the constraints imposed through the property regime (specifically, the land-use planning regime) and the infrastructures of water management constrain accumulation in the “protected” area and direct it towards rice agriculture. Meanwhile, in the other village, the lack of such protective infrastructure and of similar constraints on land use has facilitated the near-total conversion of former rice paddies to shrimp ponds. The paper argues that differences in the nature of production systems, their biophysical properties, and the political-economic structures in which they are embedded profoundly shape possibilities for accumulation and prospects for dispossession among different social groups.

The third paper, entitled “The Art of Not Being Freshened: Accumulation, Resistance, and Environmental Transformation in Bến Tre,” draws on qualitative research and interviews to examine the contentious everyday politics of salinity control infrastructure in Bến Tre province. In Bến Tre, an ongoing effort to create a new freshwater zone through the construction of a network of dikes and sluice gates (designed in part as a response to the rise in sea levels induced by global climate change) has encountered significant resistance from local farmers, who have subverted

and sabotaged these infrastructures in order to preserve their access to salt water and thus their ability to farm marine shrimp. The paper focuses on the tension between state accumulation projects and practices of "everyday accumulation," arguing that efforts by states to constrain or guide accumulation into specific sectors (here rice agriculture) often entail the forced disaccumulation of productive forces in other sectors or crops. As a corollary, resistance to such state effort can work through what I dub "counter-accumulation," or the continued pursuit of everyday accumulation in the face of state efforts to restructure and direct the productive forces towards other ends.

Defining Accumulation

Any effort to trace patterns and processes of accumulation in a particular locale and over a designated time period must first start with a specification of what is meant by the term. "Accumulation" is here defined not just in monetary terms (i.e. the accumulation of capital in the form of money), but the expansion of productive capacity through changes to either or both the physical forces and social relations of production. The compulsion to accumulate is the defining feature of capitalist production. As Marx puts it in the first volume of Capital, the pressure to accumulate is the mantra and the imperative under which producers under capitalism operate: "Accumulate, accumulate! That is Moses and the prophets!" (Marx 1915:652).

From the perspective of Marxian political economy, in which the following study is grounded, accumulation may take place through the transformation of either the *forces* or the *relations* of production (or, in many cases, some combination of interventions

into both aspects of production). While the "forces of production" (or *Produktivkrafte*) are never explicitly defined by Marx (Cohen 1978), they are used by him to refer to the "material powers or productive potential of society," including, but not limited to, machinery, labor-power, and naturally-occurring resources (O'Connor 1998:35). As such, all material productive forces are ultimately either "provided by nature" or "manufactured from nature" through the application of labor and technology (O'Connor 1998:35-37). In contrast, the "relations of production" (*Produktionsverhaltnisse*) are constituted primarily by the distribution of ownership and control over the means of production, and by the distribution of any resulting surplus (O'Connor 1998:35).

It is important to differentiate, at the outset, so-called "primitive accumulation" from accumulation more broadly. As originally theorized by Marx (1915:784-87), "primitive accumulation" occurs when new productive resources are brought into the realm of capitalist production and, more importantly, populations are severed from the means of subsistence and thus their labor made available for capitalist production. Glassman sums Marx's argument as follows: "Primitive accumulation is for Marx, first and foremost, the 'historical process of divorcing the producer from the means of production', transforming 'the social means of subsistence and of production into capital' and 'the immediate producers into wage laborers'" (Glassman 2006:610).

The concept of primitive accumulation thus serves to explain the origins of capitalism, accounting, as Marx put it, for the initial accumulation "preceding capitalistic accumulation; an accumulation not the result of the capitalist mode of production but

its starting point" (Marx 1915:784). In recent years, however, Harvey's reframing and expansion of primitive accumulation as "accumulation by dispossession" (2003) has shifted the terrain of primitive accumulation from a discrete event to an ongoing process, a continual incorporation of new territories, populations, and resources into capitalist production. Harvey, and those inspired by his work, have succeeded in putting accumulation by dispossession back at the center of the discussion, especially in critical studies of development and agrarian change. According to Araghi (2009:120), to take one example, "capital came to life via enclosures, and it continues to live through enclosures." Thus, in this reading, contemporary capitalism is driven and defined by an "unending need and insatiable appetite for privatization, through dispossession, repossession or commodification of public values, of labor, of knowledge systems — or what is called now property rights — of land, of the environment and other resources, of housing, of food and human genotypes, of ecology, biology and, in the end, of life itself." Such arguments for the centrality of primitive accumulation — and, by extension, accumulation by dispossession — have been especially prominent in discussions of capitalist development in the Global South (Glassman 2006:615). This process of development has worked, proponents of this view argue, through the bringing of new areas, new lands, and new populations into the circuits of global capitalism and through the sundering of traditional or customary claims to the means of subsistence.

The study that follows does not seek to deny or side-step the continuing role played by primitive accumulation (and its cousin, accumulation by dispossession) in processes of capitalist development, both in Vietnam and the Global South more broadly. But what

I do intend is to refocus the analysis on a different set of accumulation processes and repertoires of practices, carried out by both farmers themselves and by state agents. In doing so, I hew more closely to Marx himself, who argued that "expanded reproduction" (*erweiterten Reproduktion*, also translated as "extended reproduction") served as the primary form of accumulation in capitalist economies (Marx 1913). In simple terms, expanded reproduction works through "the reinvestment of profit in newer, more powerful methods of production" (Fine 1983:2). Such expanded reproduction is the force that drives the expansionary dynamics of capitalism. When "the surplus from one cycle of production can be invested in the next," the result is, as Adnan points out, a process of "accumulation based on production on an increasing scale," which takes place primarily through the development and expansion of the productive forces (Adnan 2013:91).

While much of the classic literature in the field of agrarian studies has taken as its central problematic these processes of expanded reproduction and the dynamics of social change and class differentiation that they engender, the recent shift in attention towards primitive accumulation and accumulation by dispossession in agriculture and rural development — and away from processes of expanded reproduction — has served, as Castellanos-Navarrete and Jansen argue (2013:17), to "occlude from view the material and political responses deployed by vast numbers of peasants and farmers to new economic and technical opportunities" by developing and expanding the productive forces in agriculture. The study that follows seeks to correct this imbalance by highlighting the diverse ways in which such expanded reproduction works in the agriculture and aquaculture sectors, and how it is driven — sometimes at cross

purposes — by investments on the part of both individual producers and the state in the expansion and intensification of production.

There are two main pathways by which expanded reproduction in agriculture takes place. The first consists of an extensive strategy, which works through "investment in land acquisitions" by capitalist farmers (Oya 2007:459). Much work in agrarian studies has focused on this mode of extensive accumulation, and the processes of differentiation and dispossession it serves to generate. In their survey of critical agrarian studies as a field, Akram-Lodhi and Kay (2010) draw on Kautsky (1988) and Lenin (1964) to summarize the general contours of this process: "Accumulating peasant households sought to increase their control over productive assets in order to give a further impetus to accumulation. Deficit peasants households were forced to liquidate their assets by selling them to more dynamic producers" (Akram-Lodhi and Kay 2010:187).

The second mode of accumulation consists of an intensive strategy, which works through "investments in means of production" besides land (Oya 2007:459). This can take multiple forms, from the hiring-in of additional wage labor to the restructuring of nature itself and the use of hybrid or genetically-modified seed varieties (Kloppenburg 2004). In the agricultural sector, however, mechanization has ranked, especially in recent decades, as the prime mechanism of accumulation and driver of intensified production. In his essay on the productive forces in agriculture, Bernstein (2010:302) attributes the primacy of mechanization in transforming the productive forces to its capacity to "reduce the labor input per unit of agricultural product," and "to enhance

the applications and productivity gains of technologies applied to key aspects of farming: tillage and cultivation practices, fertilizers and other agricultural chemicals, irrigation, and so on." This application of technology — in the form of mechanization — thus serves to enhance the efficacy of other improved means of production, such as chemical fertilizers and high-yielding varieties, producing the dramatic gains in productivity associated with the Green Revolution of the 1960s and 1970s.

Both of these forms of expanded reproduction, from the acquisition of land by individual households to the intensification of production through increased capitalization, can also serve to generate dispossession. This is particularly obvious in the case of land acquisitions, but the purchase and application of new inputs in agriculture — particularly mechanized inputs — may also indirectly serve to imperil the livelihoods and landholdings of small farmers and the rural poor, who depended upon wage labor opportunities in various stages of agricultural production but saw those opportunities erode with the introduction of mechanized implements. As Scott notes, based on fieldwork in a Malaysian village in the 1970s and 1980s, the "impact of machine harvesting has been enormous. The biggest losers have been almost exclusively the poorer households, who have seen their economic security and incomes driven back" (Scott 1985:112). For small farmers who rely on wage labor as a supplement to subsistence agriculture or petty commodity production, a loss of such income may be enough to separate them from their land, as through distress sales.

While the papers that follow all touch upon themes of both accumulation and dispossession, they do not explicitly engage with or follow Harvey's formulation of

"accumulation by dispossession." That is, they do take as their central problematic, as does Harvey, the management of "overaccumulation crises" nor do they work from the assumption that capitalist development works primarily by "releas[ing] a set of assets (including labor power) at a very low (and in some instances zero) cost," so that capitalist producers can then "seize hold of such assets and immediately turn them to profitable use" (Harvey 2003:149-51). Rather, they examine the ways in which both states seek to promote and shape expanded reproduction to their own ends in the form of "accumulation strategies," as well as the ways in which individual producers seek to expand and develop the productive forces at the farm-scale, a process that I, following Hall, Hirsch, and Li (2011), dub "everyday accumulation."

Hall, Hirsch, and Li define such everyday accumulation primarily in terms of extensive accumulation, or the "practices that enable some people to accumulate land and capital at the expense of their neighbors and kin" (Hall, Hirsch and Li 2011:145-46). Inspired as well by Kerkvliet's notion of "everyday politics," which he defines as the myriad "ways in which individuals and small groups … make a living, raise their families, [and] wrestle with daily problems" (2005:22), I use the term "everyday accumulation" in a more expansive capacity, encompassing a range of activities, including everyday practices of extensive accumulation, as through the clearance of forest land for farming or the acquisition of land from others, as well as those of intensive accumulation, as through investments of capital and labor in land improvements or small-scale technologies (such as pumps) designed to increase the productivity of existing land.

Accumulation from Above: State Accumulation Strategies

Accumulation in agriculture is, however, not simply or exclusively the result of "everyday accumulation" by individual producers, but can result from focused efforts by states. In this and subsequent discussions of the state in the context of Vietnam, I hew closely to Bob Jessop's contributions to state theory (1990, 2008) and to his definition of the state as "a distinct ensemble of institutions and organizations" which serves to "define and enforce collectively binding decisions on a given population in the name of their common interest or general will" (Jessop 2008:9). This focus on the role of the state in defining and enforcing such "claims about the general will or communal interest," as opposed to narrow, individual interests, are, Jessop argues, "a key feature of the state system and distinguish it from straight-forward political domination or violent oppression" (Jessop 2008:9). However, he notes, the "the common interest or general will is always asymmetrical, marginalizing or defining some interests at the same time as it privileges others" (Jessop 2008:11).

Rather than serving as some sort of avatar of collective interests (or even the collective interests of "capital" in a general sense), the state reflects the interests of the particular individuals and groups who come to occupy the "particular institutions and agencies" of the state and to "activate [the] specific powers and state capacities inscribed" in those institutions (Jessop 2008:37). For Jessop, then, state power comes primarily, under capitalism, to operate through particular "hegemonic projects." These projects consist of "concrete, national-popular program[s] of action which assert a general

interest in the pursuit of objectives that explicitly or implicitly advance the long-term interests of the hegemonic class" that occupies positions of power within the state apparatus at given juncture (Jessop 1990:208).

Such efforts, Jessop argues, primarily take the form of what he calls "accumulation strategies" (1990). In this way, an accumulation strategy serves as the primary vehicle for governance under capitalism and constitutes an economic "growth model" aimed at achieving "economic expansion" on the scale of the nation or beyond (Jessop 1990:198, 208). Examples of such accumulation strategies include the import-substitution and export-promotion regimes of 1950s and 1960s Latin America, as well as the military-centered industrialization model of Japan in the decades before World War II (Jessop 1990:201). These strategies thus serve as a means of guiding accumulation (construed specifically as an increase in production or productive capacities) in ways that also realize extra-economic or political objectives designed to secure conditions of state hegemony. Thus, accumulation strategies are organized not for the pursuit of accumulation alone, but the expansion of economic output in the pursuit of overarching goals such as food security, military success, social reform, and political stability (Jessop 1990:208).

One of the primary tools that states have to foster and direct accumulation is the ability to reinvest public surpluses in infrastructure projects. As Neil Smith argues, state-sponsored infrastructure construction is a precondition for the accumulation of capital by individual producers, since "the necessity of capital accumulation ... requires a continuous investment of capital in the creation of a built environment for production"

(Smith 1984:159). Such forces of production include those constructed by individual producers, such as factories and warehouses, as well as those generally provided by the state, such as roads, railways, canals, and power stations. These state investments in infrastructure serve to kickstart accumulation in two ways. The first of these is by opening up new areas and resources to exploitation, and thus creating the conditions for extensive accumulation. Looking specifically to the history of modern Southeast Asia, Cramb points to the multiple examples of organized campaigns of "land settlement" that are "typically (though not necessarily) state-sponsored and centrally-managed" (Cramb 2011:45). This process of extensive accumulation was made possible, in many instances, by the construction of infrastructure by states looking to expand the base of agricultural production. Such infrastructure projects include road-building campaigns in places such as Indonesia and Thailand (Rigg 2002), and the construction of canals, such as occurred in the Mekong Delta in the 19th and 20th centuries (Biggs 2010). Both canals and roads serve to facilitate territorial expansion by opening up new areas for colonization and cultivation.

State infrastructure projects can serve to increase the productive capacity of an existing resource base, thus allowing for intensification and expanded reproduction through the reinvestment of agricultural profits. The role of state-funded infrastructure projects in kickstarting the increased agricultural output associated with the "Green Revolution" is particularly salient. As Hayami (2000:105) notes in his study of the Green Revolution in the Philippines, those areas which experienced the earliest and most rapid dissemination of new varieties were those in which irrigation canals had been constructed by the Philippine government in the 1950s. Likewise, the cultivation

of new wheat varieties succeeded most dramatically in the northwestern region of Mexico, on "land carved out of the deserts by government-financed irrigation schemes" (Pearse 1980:114). Finally, in Thailand, the construction of a massive dam at Chainat served to "open up more land in Central Thailand to agricultural production," while the year-round irrigation it made possible "allowed for practices such as double cropping of rice and stimulated agricultural intensification in the region" (Belton and Little 2008:125).

State accumulation projects do not, however, exclusively work through such infrastructure initiatives (or the transformation of the productive forces). Instead, they can also work through a combination of physical interventions and interventions into the *social* relations of production and property. These interventions can take the form of transformations of the property regime designed to spur extensive accumulation — as by issuing land titles to smallholder producers in frontier areas, upon the condition that they clear and settle the land (Borras 2006:75-77, Wolford and Gorman 2011) — as well as those designed to facilitate expanded reproduction. Examples of the latter include titling campaigns aimed at unlocking "dead capital" (De Soto 2000), as well as land reforms designed to break up uncompetitive latifundia (De Janvry 1981). Through such transformations of the social relations around agricultural land, or so the argument goes, greater outputs can be achieved on a given base of resources, as by stimulating greater efficiency, productivity, and competitiveness, and the reinvestment profits in the further development of the productive forces can be incentivized through the creation and protection of individual property rights (Binswanger-Mkhize, Bourguignon and Brink 2009, Binswanger, Deininger and Feder 1995).

Competing Modes of Accumulation: Staple Grains and High-Value production

The state-directed accumulation campaigns associated with the Green Revolution, which took as their central aim maximizing the production of staple grains such as wheat, maize, and rice, served an overarching goal that was political as well as economic: the realization of domestic self-sufficiency and thus a reduced dependence on food imports (McMichael and Schneider 2011). As Naylor notes, "the importance of agriculture for food availability" served to justify "the large investments that most governments make in the agriculture and food sectors," including "the construction of irrigation infrastructure, the conversion of land from swamps to fields, and the establishment of agricultural universities, research institutions, and extension services (Naylor 2014:19). Rather than replacing accumulation at the level of the individual producer, these state investments in the productive forces instead served to guide and shape the nature of everyday accumulation. While the Green Revolution took different forms in different countries, its common features set in motion similar patterns of social change in rural areas across national contexts, opening up certain similar pathways to accumulation (and dispossession) by virtue of the transformation of the social relations and physical forces of production towards the maximization of grain output.

It is important to note that while these processes of accumulation — both of the state-directed and "everyday" varieties — bear distinct differences from Harvey's notion of "accumulation by dispossession," they did in fact serve to generate disposessionary

tendencies of their own. Hence, one overarching consequence of the Green Revolution was a marked increase in social inequality in rural areas, a phenomenon noted across a wide array of national contexts (Freebairn 1995:277). As Yapa (1979:373) notes, these new technologies, such as higher-yielding seeds, were "adopted chiefly by those who have greater access to credit and capital." Meanwhile, the new levels of productivity offered by improved infrastructure and cultivation techniques incurred the eviction of tenants by landlords and the accumulation of greater and greater holdings by larger cultivators (Das 2002:59, Freebairn 1995:267-68). As Hayami (1981:170) puts it, the "large profit resulting from the exclusive adoption of MV [modern varieties] by large farmers stimulates them to enlarge their operational holdings by consolidating the farms of small nonadopters through purchase or tenant eviction. As a result, polarization of rural communities into large commercial farmers and landless proletariat is promoted."

Another driver of dispossession, as has been noted by multiple scholars of the Green Revolution, was mechanization. Across the developing world, the introduction of new varieties has been accompanied by the introduction of new mechanical inputs, such as tractors and combine harvesters, which decrease the need for manual labor at crucial points in the cropping cycle, as well as allowing for the more rapid completion of tasks such as the preparation of land and the harvesting and processing of crops (Byres 1981). As noted above, however, the introduction of mechanical inputs served to deprive the rural poor of a crucial source of income, namely that from seasonal field labor. The negative impact of mechanization on the rural poor was not confined to the introduction of labor-saving technologies in planting and harvesting; as Manning

(1988) notes, the introduction of mechanical rice hullers eliminated a crucial source of livelihood for women in Indonesia, who had traditionally performed the laborious task of pounding rice by hand in preparation for its sale. The effect of mechanization, thus, was not simply to concentrate the benefits of the Green Revolution at the top of the social pyramid, but to erode the livelihoods of those at the bottom and thus to reduce the capacity of small farmers to maintain control over productive assets such as land. As Hayami (1981:170) notes, this tendency can be seen as arising from and reinforcing the tendency towards the agglomeration and concentration of land-holdings spurred by the introduction of new technologies, as the resulting "large commercial farms have an intrinsic tendency to introduce large machinery," which consequently "reduces employment opportunities and wage rates for the landless population, resulting in a more inequitable income distribution."

By the 1980s, however, this state-backed mode of accumulation through the maximization of staple grain production had begun to falter. The Green Revolution was, from the perspective of states, extremely expensive, and as public debts in the Global South mounted, international development lenders such as the World Bank and IMF began to push structural adjustment policies which sought to dismantle the protections afforded to agricultural producers in the developing world and the public investments that had made intensive grain production feasible. The ethos of this new neoliberal regime was that of free and unfettered global markets in agricultural commodities, and its mantra that was simple, that the only way for countries in the developing world to achieve "food security" was through trade (Patel and McMichael 2014). Over the course of the 1980s and 1990s, "governments throughout the global

South" were, through the mechanism of structural adjustment, "forced to dismantle grain purchasing boards, sell off grain reserves, reduce financing and support for domestic agriculture, and lower trade barriers" (Isakson 2014:347).

In place of intensive staple grain production, lenders and international development institutions promoted the production of new, high-value crops, such as meats, fruits, vegetables, coffee, farmed seafood, and cut flowers, which could be exported to markets in the Global North, while at the same time "generat[ing] foreign exchange that could be used to repay debts to foreign lenders" (Isakson 2014:350). This new global trade was facilitated by technological developments — such those around global "cool chains" — that allowed for "fresh fruit and vegetable production and export in new regions of the globe" (Selwyn 2009). The result is a new international division of labor, in which "Northern staple grains [are] traded for Southern high-value products" (McMichael 2009:286). As a consequence, "throughout the developing world, the relative importance of grains and other starchy staple crops is declining, while that of high-value agricultural commodities is increasing" (Gulati 2007). "All over the world," Weinberger and Lumpkin (2007) note, "the area under food grains is under pressure from more profitable horticultural crops."

This shift can be understood, in general terms, as the eclipse of state-backed accumulation strategies in agriculture (focused on the maximization of grain output) in favor of new, more flexible and market-oriented forms of high-value commodity production. In this way, the erosion of state accumulation strategies, which served to direct everyday accumulation into a specific sector — intensive grain production —

allows for the more unfettered, spontaneous, and market-oriented pursuit of profits by individual capitalist producers: that is, a shift from state-directed to "everyday" accumulation. While undoubtedly opening up new avenues to accumulation by such producers, this shift has potentially negative implications for the livelihoods of smallholders and the rural poor that are less clear, and may serve to generate new tendencies towards dispossession.

The nature of these tendencies is, however, sharply debated within the literature. On one hand, some argue that the shift towards higher-value products will generate new pathways for accumulation and poverty alleviation for the rural poor and smallholders. This view is, for example, championed by the World Bank's *2008 World Development Report* (Akram-Lodhi 2008, The World Bank 2007). Elsewhere, others have noted that the production of high-value commodities such as fruits and vegetables is more labor-intensive than the production of staple grains, and offers higher returns on a per-hectare basis. For this reason, Weinberger and Lumpkin (2007:1471) argue that horticulture "has a comparative advantage under conditions where arable land is scarce and labor abundant, the typical situation in many countries of South and Southeast Asia." At the same time, the production of high-value commodities, which is less mechanized than that of staple grains and requires greater degrees of processing, given the perishable nature of the commodities, is seen as offering enhanced possibilities for rural employment generation (Langan 2011, Weinberger and Lumpkin 2007).

In opposition to this view is a chorus of more critical voices, who hold that the shift

towards new export commodities provides few opportunities for smallholder farmers and the rural poor, and instead simply serves to intensify the dispossession of smaller producers. While "medium to larger horticultural export producers often manage to expand and upgrade production, small producers often falter" (Ortiz and Aparicio 2007:383). This is because "only large farmers ... can guarantee the volume, quality and reliability of delivery required" (Raikes and Gibbon 2000:75). As a consequence, non-traditional export sectors are prone — like the production of traditional staple grains — to "consolidation and land concentration" (Selwyn 2010:539). Ortiz and Aparicio (2007:387) argue, citing their research in Argentina that the shift towards high-value exports has thus "had a negative effect on the small farm sector." For this reason, Timothy Wise (2009:869) argues that "many countries could benefit from 'food first' policies that give priority to domestic food production and internal market development over the pursuit of export markets."

Others have taken a more nuanced view, arguing that such dispossessionary tendencies vary from commodity to commodity. In Chile, for example, Challies and Murray (2011:39) argue that while "land and productive consolidation and the decline of smallholder participation" has occurred in other sectors, the production of raspberries "appears to provide an example of ongoing and increased smallholder participation," due to its relatively low capital requirements. Even in his strongly critical account of non-traditional export production in Guatemala, Isakson (2014:349) notes that smallholders have been able to carve out and retain a foothold in the production of vegetables such as broccoli and snowpeas for consumers in the Global North. For these reasons, Selwyn (2010:560) argues (from his study of grape

production in Brazil) that there exists a set of potential "micro-paths of capitalist development" in non-traditional exports, which have allowed smaller producers to benefit from the shift to high-value commodities, and thus retain, or even accumulate, productive assets such as land.

Infrastructure, Disaccumulation, and Resistance

The analysis set forth above has served to draw contrasts between the accumulation strategies of states and the everyday accumulation of individual producers, arguing that these distinct processes proceed through different mechanisms and are oriented towards different ends. At times, the competing nature of these processes serves to generate resistance by producers to state accumulation practices, a process that I dub "counter-accumulation." In other cases, however, state-centered accumulation "from above" and individual accumulation "from below" can complement one another.

While states, for example, may restructure the hydrological forces and conditions of production at the level of a river system, farmers themselves also work to restructure the forces of production at the level of their own farms or communities, as through the investment of capital and labor in the creation of "landesque capital" (Blaikie 1987:9) and the use of on-farm technology to increase productive capacity of the soil and water. As Pichler's (2015) examination of the oil palm sector in Indonesia and Biggs' (2010) work on the development of Green Revolution agriculture in the Mekong Delta during the Vietnam War period demonstrate, the general thrust of a state accumulation strategy and the investment of state resources in the construction of supportive

infrastructure (such as roads, dams, or irrigation canals) can be complemented by the transformation of the productive forces on the ground (as in the clearance of forest for oil palm cultivation or the use of diesel pumps for water management in rice cultivation).

However, the existence of these two different modes of accumulation also creates the possibility for conflict. When predicated on different modes of environmental transformation and different configurations of the productive forces, the pursuit of a state accumulation strategy may necessitate the dismantling of existing productive forces; that is, accumulation in one sector (as per a state accumulation strategy) may necessitate disaccumulation in another sector. Such disaccumulation takes the form of the physical destruction, degradation, or disassembly, of the technological and "landesque" forces of production that have been built up in a particular sector over time. As such, "disaccumulation" here (and in the papers that follow) is used in a sense distinct from "dispossession," which I define as the separation of producers from productive assets such as land. These two processes — of disaccumulation and dispossession — may co-occur, but they take place in distinct ways. While the mechanism of disaccumulation is *physical*, occurring through environmental forces or through the application of technology and human labor, dispossession is a social and juridical process, which takes place through the transfer of land ownership and control, as by market or non-market means.

Accumulation in one sector, or by one set of actors, may entail or generate tendencies towards disaccumulation (and possibly, as a result dispossession) among other actors

or in other sectors. For example, large-scale state accumulation projects may set in motion the destruction or degradation of productive forces at the level of the individual producer or farm. Such a process of disaccumulation often accompanies the construction of large dams for hydro-electric power generation and irrigation. In the process, flooding destroys not just homes but fields and other productive forces that have been built up over generations. For example, the Sơn La dam in northwestern Vietnam, which was constructed between 2005 and 2012, resulted not just in the displacement of an estimated 100,000 people, but also the flooding of 10,000 hectares of agricultural land, including rice paddies, gardens and fishponds (Dao 2010:335). Similarly, the construction of hydro-electric dams in Laos has resulted in the expropriation and destruction of rice paddies, swidden agricultural land, orchards, and coffee plantations (Delang and Toro 2011). The last of these is particularly consequential for farmers and local livelihoods in affected areas, since coffee trees require several years of investment and cultivation before bearing fruit. This process of disaccumulation can also work through the transformation of the productive forces in a way that makes continued production in a particular sector impossible, as by diverting water away from one region to transform another into a center of agricultural production. This is precisely the process that occurred in Egypt, as described by Barnes (2014:106-36). There, government schemes to open up new agricultural land in the desert for the cultivation of fruit and vegetables (for European export markets) and fodder for cattle operations have resulted in the diversion of irrigation water from cotton, maize, and onion farms in established agricultural land.

In the case of such conflicts, the primacy of the state mode of accumulation cannot be assumed, and those facing the prospect of disaccumulation through state projects often engage in acts of resistance, which I group under the rubric of contentious everyday politics.[2] Rather than focus on the ways that peasants and producers *resist* accumulation, as is the common tendency in the critical literature, I instead explore the ways in which resistance to specific modes or projects of accumulation works *through* the building up of productive forces in a manner that runs contrary to the state accumulation strategy, in processes that I dub "counter-accumulation." By focusing on how resistance works through practices of everyday accumulation, in this case by farmers in the Mekong Delta, I am not, however, seeking to argue that this is the *only* manner in which resistance can operate, nor am I arguing, as did Samuel Popkin (1979), that Vietnamese farmers are "rational peasants" whose actions are guided solely by individual self-interest, and who engage in resistance only when they believe that doing so will "maximize their expected utility" (31). The history of contentious political behavior is too complex to justify, as do Popkin and other proponents of such rational actor models (such as Olson (1965)), "excluding the analysis of values, norms, ideologies, projects, culture and identity" from the study of resistance writ large (Cohen 1985:688).

While the maximization of individual benefit — and more specifically, the pursuit of economic profit — is neither a universal feature of human behavior, nor does it lie at the root of all contentious political behavior, it does, however, serve as a potent driver of resistance under specific historical conjunctures and within particular political-economic structures. In this way, the analysis of resistance that follows, especially that found in the third paper, in informed not by a strict rational-choice perspective (even

[2] Here I draw on Kerkvliet's (1990, 2005) notion of "everyday politics" as well as Tilly's (2015) conceptualization of "contentious politics."

of the Marxian variant espoused by Elster (1985)), but rather by Max Weber's work on social action (Weber 1978:7-32), which stresses the importance of context and social structures in shaping individual action. Thus the ascendance of a particular form of instrumental rationality that accompanied, according to Weber, the rise of capitalism in Europe can be ascribed to an overarching "economic compulsion" towards efficiency, profit-maximization, and accumulation, rooted in the "technical and economic conditions of machine production" (Weber 2001:123-24). As Kalberg ((1980:1163) notes, "formal rational patterns of action are necessary in order to insure the success of a business enterprise" within a capitalist context, hence any individual producer who does not act in such as a profit-maximizing individual does so at his or her peril. Weber memorably captures this compulsion within the metaphor of the "iron cage" (*stahlhartes Gehäuse*), lamenting at the conclusion of *The Protestant Ethic* that while "the Puritan wanted to work in a calling; we are forced to do so" (Weber 2001:123).

The argument advanced below is that, under the conditions of post-reform capitalism that now prevail in rural Vietnam, the contentious political behavior of farmers is directed towards resisting and subverting state accumulation strategies and their infrastructural manifestations when such interventions impede or constrain pathways to accumulation at the level of the individual household or farm. Such an argument echoes reports on the everyday politics of water infrastructure from other contexts in the Global South. Barnes (2014), for example, describes how farmers in Egypt actively circumvent large-scale water management projects through the use of small-scale technologies, such as pumps, to divert irrigation water from regions and crops earmarked by the state for intensification. Meehan (2013, 2014), meanwhile, describes an assemblage of everyday technologies that households employ to direct and utilize the productive forces (specifically water) for household consumption and production,

undermining state infrastructure and reducing the capacity of the state to deliver water for commercial use.

These accounts, as does the one developed below, do not seek to argue that such forms of resistance and subversion through everyday accumulation are rooted in an ideological challenge to state power itself, or to the infrastructures that symbolize the state; rather, they arise from the everyday practices of households attempting to survive — and stave off tendencies to dispossession — within the constraints and pressures inherent to capitalism. Nevertheless, these accounts all point to the ways in which uncoordinated and individualized practices of everyday accumulation — and especially the building up of small-scale technologies — can serve to undermine largescale infrastructures and thus foil state accumulation strategies. In *Weapons of the Weak*, Scott argues that everyday practices can serve, when "multiplied many thousand-fold," to "make an utter shambles of the policies dreamed up by their would-be superiors in the capital." "Just as millions of anthozoan polyps create, willy-nilly, a coral reef," Scott writes, "so do the multiple acts of peasant insubordination and evasion create political and economic barrier reefs of their own" (Scott 1985:xvi-xvii).

Situating the Case Studies: The Mekong Delta and the Centrality of Rice in Vietnam

Understanding the drivers of accumulation — and of state accumulation strategies — around rice agriculture in Vietnam first requires an explication of the political, economic, and historical factors that have made rice central to governance in the country. Staple grains such as rice have long been central to the accumulation strategies of states, capitalist and otherwise, in the Asian context. Scott remarks (2009:41-42) that rice constituted, in the pre-modern period, the ideal "state crop" in

that it is “legible,” “predictable,” and “easily appropriable” by agents of the state, as well as being amenable to long-term storage in granaries. In more recent decades, rice has taken on the status of a “political commodity” in Southeast Asia (Timmer 2015:150), the production and distribution of which are subject to a high degree of intervention by states eager to ward off food shortages and price instability. Hence, the centering of rice in an accumulation strategy leverages the maximization of production to achieve two simultaneous outcomes: the extraction of an economic surplus by the state and a hedge against food insecurity.

The rice sector in Vietnam has long been subject to “centralized government activity, political control and social organization” through which a succession of states have sought to minimize “the risks from poverty and famine” (Timmer 2015:78). By nature of its relatively dense population and scarcity of arable land, and of its exposure to environmental hazards such as drought, floods, and typhoons, Vietnam has been vulnerable to food shortages for as long as it has existed as a polity. Throughout its history, Vietnam has also been strongly influenced by Confucian political thought, which places a strong emphasis on the prevention of famine as central to the responsibilities of the sovereign and necessary to the maintenance of a well-ordered society. Confucius is recorded, for example, as listing the key “requisites of government” as “sufficiency of food, sufficiency of military equipment, and the confidence of the people in their ruler” (Confucius 1971:254). If, by contrast, the government was unable to ensure adequate supplies of food, it was taken as a sign that the king had lost the “mandate of heaven,” and thus his legitimacy (Woodside 1989). Indeed, famine was a potent driver of both peasant unrest and rebellion by enterprising

vassals throughout Vietnam's pre-colonial history, and the maximization of rice production remained a consistent concern of its kings.[3]

The case studies below highlight not just the importance of rice to Vietnam, but the Mekong River Delta to rice production in that country, exploring how the region came to occupy its current position as Vietnam's largest source of rice, for both domestic consumption and for export, as well as the environmental factors which condition and constrain the development of agriculture in the region. Geographically, Vietnam is comprised of two river deltas, the Red River Delta in the north, and the Mekong River Delta in the far south. While the Red River Delta is the traditional home of the majority ethnic group, the Kinh, the Mekong Delta was traditionally inhabited by ethnic Khmer, and was only settled by Kinh people in the 16th through 18th centuries. The conquest of the south was pursued by the Vietnamese monarchies of this time period as a means of relieving demographic pressures in the north and increasing the food supply by bringing new lands under cultivation; this policy was supported through the creation of military garrisons along the southern frontier, as well as through state investments in infrastructure, especially canals for irrigation and transportation, in newly-settled areas (Nguyen-Marshall 2005:22-23).

For most of country's modern history, the Mekong Delta has comprised something of an agricultural "frontier," a relatively vast swathe of arable land whose productive potential far outstripped that of the smaller and more densely populated Red River

[3] In 1460, for example, when king Lê Thánh Tông took the throne, he immediately issued an edict "exhorting rural people to grow as much rice as possible," and "repeatedly reminded" local officials "to check that all available land was in production" (Taylor 2013:218).

Delta (Le Meur and Leurent 2013). In its "natural" state, however, the Mekong Delta is far from amenable to the cultivation of rice. The delta's position at the confluence of the river and the sea means that its environment and hydrology are characterized by the interplay of fresh and salt water. Saline intrusion, which occurs when seawater, driven by the tides, flows up the mouth of a river and into interior waterways, is thus a naturally occurring feature of the Mekong Delta's estuarine hydrology. It is also a strongly seasonal phenomenon. During the summer-fall rainy season, the river and its distributaries run high and fresh water predominates; during the dry season, the level of the river drops dramatically and, in the absence of a strong countervailing force, the tides can penetrate for dozens of miles inland, pushing salt water far up the mouth of the Mekong, from which it flows into inland waterways and canals. The delta's natural susceptibility to saline intrusion thus makes it an unlikely candidate for intensive agriculture, despite the fertile soils laid down by centuries of silt deposits. This is especially true in the case of rice agriculture, since rice is particularly intolerant of elevated salinity levels (Zeng and Shannon 2000). Most rice varieties can only tolerate salinity concentrations of 4 grams per liter in irrigation water; anything above this level can cause depressed yields and outright crop loss (Yu et al. 2010).

Consequently, the transformation of the Mekong Delta into a zone of intensive rice cultivation has only occurred in the past century, and was made possible by the construction of a vast infrastructure network — consisting of dikes, dams, and sluice gates — that serves to drain the marshy interior and, most pertinently to this study, render coastal areas cultivable by blocking the inflow of the tides and maintaining freshwater conditions for rice agriculture. Work on this system began with the French

colonial regime in the early 20th century, and was later championed by the South Vietnamese government in the 1960s and 1970s, and its American advisors, as a means of boosting agricultural production. It has, however, found its fullest expression and widest application in the past 25 years, as the current government has capitalized on its newfound ability to mobilize domestic and foreign funds by launching construction projects across the region. In this way, state investments, coupled with the labor and ingenuity of farmers themselves, have served, over the past century, to transform the Mekong Delta into a vast "machine" for the production of rice (Biggs et al. 2009).

This "machine" has proved to be phenomenally productive, and its contribution to the food security of Vietnam is hard to overstate. The Mekong Delta now produces over 20 million tons of rice per year, accounting for more than half of Vietnam's overall output and nearly all of its rice exports (Ministry of Agriculture and Rural Development 2017, Nguyen Duy Can et al. 2007). The relationship between the Mekong Delta and the rest of Vietnam is not just economic and political, but "metabolic" (Foster 1999, Swyngedouw and Heynen 2003), as rice-deficient provinces to the north and country's two major urban centers — Hanoi and Ho Chi Minh City — have come to depend on the region's surplus production for their sustenance. Even today, as Vietnam has become more affluent and as diets have shifted accordingly, the average Vietnamese person consumes most of her calories in the form of rice; on average, this translates to 1400 calories per day, equivalent to approximately 170 kg of rice per capita per year (Hai 2012:3, Tsukada 2011:59). The importance of rice to the Vietnamese diet is especially important when it comes to the rural poor and urban

working class, who are most dependent on this relatively cheap staple (Coxhead, Linh and Tam 2012).

Simply put, the health and productive capacity of Vietnam's population — indeed, its very survival — depends on the production of a caloric surplus in this one region and its transfer to the rest of the country, where rice from the Mekong Delta provides a major component in the diets of rich and poor alike. As Vietnam's modern history has shown, any disruption in this supply or shortages of this crucial staple can serve as a potent driver of social unrest and political change. In the waning days of World War II, for example, the disruption of north-south shipping by Allied bombing and the hoarding of rice by French and Japanese authorities touched off a horrific famine that killed upwards of a million people in northern Vietnam, setting the stage for Ho Chi Minh's abortive seizure of power and declaration of Vietnamese independence in September of 1945 (Gunn 2014). More recently, the endemic food shortages of the socialist period triggered growing social unrest in the 1980s, culminating in the storming of warehouses and granaries by hungry peasants in the Red River Delta province of Hà Nam Ninh in 1986, an event which contributed to the promulgation of market reforms in the late 1980s and early 1990s (Kerkvliet 2005:208).

For this reason, "food security" policies in Vietnam have been and continue to be framed around rice; even the term "food security" itself, *an ninh lương thực*, directly translates to "security" (*an ninh*) of "grains" (*lương thực*). As such, the Mekong Delta remains central not just to the accumulation strategies of Vietnamese state planners, but to their long-term capacity to retain power and legitimacy. Perhaps the most dire

threat to this accumulation strategy, and to the goal of national food security towards which it is directed, lies in the threat of climate change to the Mekong Delta. As the seas rise, they threaten, in the long term, to inundate the low-lying rice paddies of the Mekong Delta. In the short term, however, the effect of rising sea levels is being felt in the intensification of saline intrusion; as the tides rise, they push more and more seawater into coastal waterways, exposing a growing swathe of the Mekong Delta to more intense salinity levels and making the cultivation of rice increasingly difficult, especially during the dry season. At present, approximately 1.8 million hectares in the Mekong Delta, or about 45% of the region's total land area, are affected by saline intrusion (Smajgl et al. 2015:167). By 2050, that figure is projected to increase to 2.1 million ha, potentially compromising nearly 300,000 hectares of rice-growing land (Mekong River Commission 2011:175, Yu et al. 2010). Translated into production figures, this lost land area will reduce Vietnam's total rice output by approximately 1.8 million tons (Yu et al. 2010).

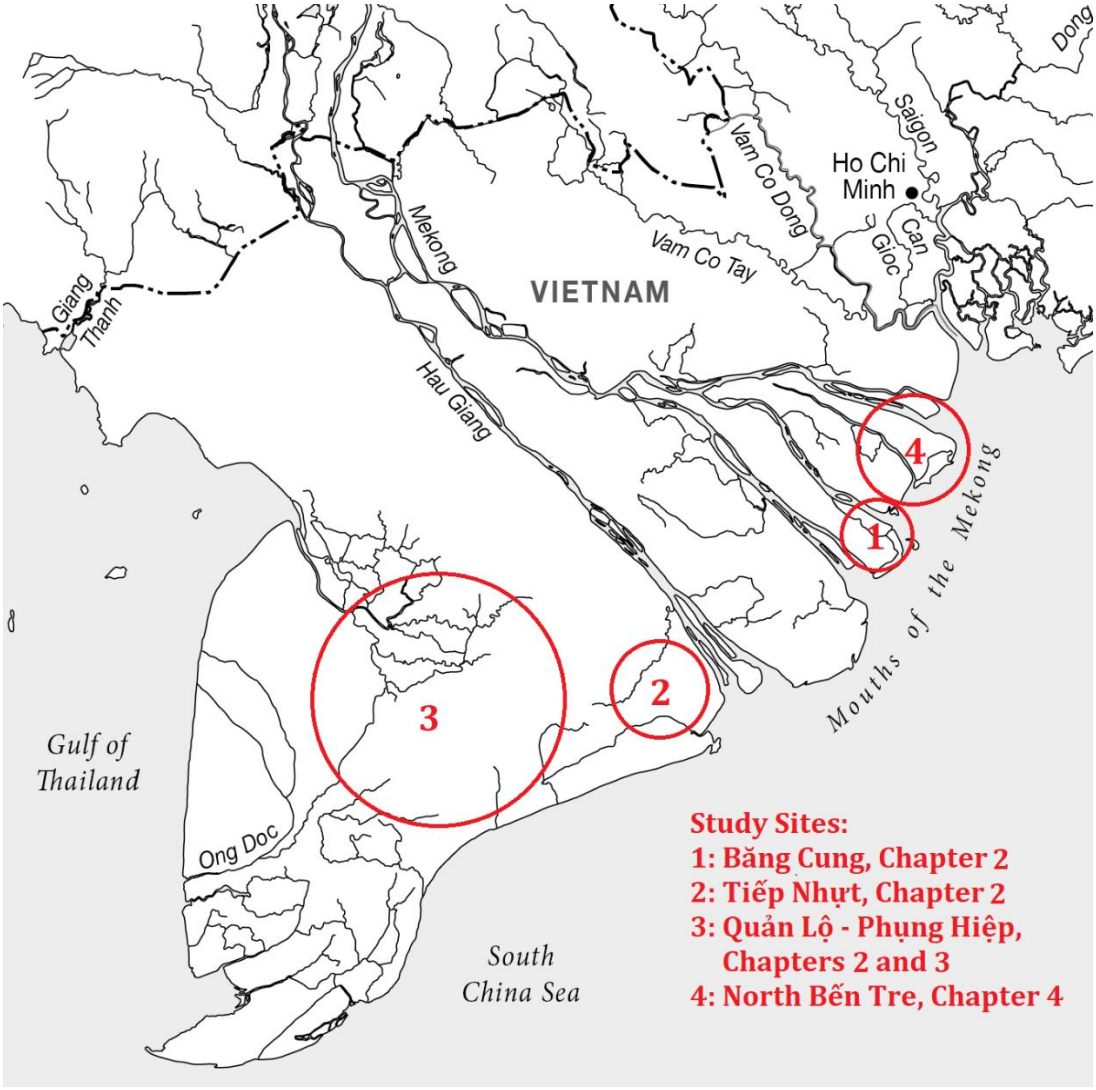
The rice-centered accumulation strategy of the Vietnamese state is, meanwhile, being undermined by another dynamic: the displacement of rice agriculture by the cultivation of farmed shrimp, a high-value commodity that offers a potentially more viable pathway to accumulation for farmers in the Mekong Delta. Between 2000 and 2010, the area of land in the Mekong Delta under aquaculture production, including both saltwater shrimp ponds and freshwater fish ponds, increased by 67%, from 445,300 to 742,700 hectares (General Statistics Office of Vietnam 2018). While this process originally proceeded through the settlement and clearance of mangrove forests, and thus a process of everyday accumulation via extensification, it has more

recently taken place through the conversion of agricultural land to salt-water shrimp ponds (Binh et al. 2005, Ha and Bush 2010). This process of conversion represents a process of everyday accumulation that works through intensification, rather than extensification, since it entails the investment of capital in the transformation of the productive forces — as by the digging of ponds and the introduction of farmed shrimp and the inputs needed to sustain them — towards the cultivation of a high-value export commodities.

The tremendous growth in agricultural production — particularly in staples such as rice — that has occurred in Vietnam since the introduction of economic reforms in the late 1980s has been hailed by some observers as a sort of miracle, through which Vietnam has achieved great strides in both reducing poverty and ensuring food security. This "agricultural miracle," as described in a celebratory 2008 article from *The Economist* (under the evocative title "From Basket Case to Rice Basket") rests on two pillars: the existence of "large tracts of coastal plain and river deltas" whose "fertile soils" render them "ideal for cultivation" and "the invisible hand of Adam Smith's free market" (Anonymous 2008). The Vietnamese state now faces countervailing tendencies on both fronts, as the environmental forces unleashed by climate change and the socio-economic forces unleashed by market reforms threaten the collapse of an agricultural miracle — the transformation of the Mekong Delta into a zone of intensive rice production — over a century in the making.

FIGURES

Figure 1.1: Location of Study Sites in the Mekong River Delta



Source: Adapted from CartoGIS Services (2018)

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CHAPTER 2

ACCUMULATION AS POLITICAL STRATEGY: INFRASTRUCTURE, PROPERTY, AND PRODUCTION IN THE MEKONG DELTA

A hundred years ago, much of the Mekong Delta was, as depicted by French colonialists, a waterlogged wasteland, a "forest of melaleuca and mangrove trees… inhabited by troupes of wild elephants" (Inspection générale des travaux publics 1930:7) and "haunted by marsh tigers and wild boars" (Leroy 1977:21). As, however, the forests were cleared, the marshes drained, and the exotic fauna extirpated over the course of the twentieth century, the Mekong River Delta went from being a frontier to an agriculture heartland. Rice production in the region increased exponentially (see Figure 2.1), and today, the Mekong Delta produces more than half of Vietnam's rice crop and nearly all of its exports (Nguyen Duy Can et al. 2007). As a region of export production, it is a major supplier of food to developing countries in Asia and Africa (Tsukada 2011), and thus plays an outsized role not just in Vietnam's food security, but in global food security as well.

This paper examines how the Mekong Delta came to be the target of a series of state-sponsored accumulation strategies — beginning in the French colonial period and continuing under the independent government of South Vietnam during the Vietnam War period and then the post-war socialist state — and how these state accumulation strategies transformed both the biophysical and social landscapes of the region. There is a remarkable continuity along the course of this history, despite the massive

political upheaval for which modern Vietnam is rightly known. These three regimes, as disparate as they were, all pursued a common objective: the maximization of rice production in the Mekong Delta. For each of these regimes, the maximization of rice production was central to larger economic goals and "accumulation strategies" (Jessop 1990), and was pursued through state-directed efforts to transform the material forces of production (through infrastructure projects) and the social relations of production (through the property regime). In the realm of the material forces of production, the interventions pursued by these three regimes remained remarkably consistent; it was common for a new regime to quite literally build upon the foundations laid or blueprints drafted by a previous regime, even if that regime was a sworn ideological enemy and an erstwhile foe. In the realm of social relations of production, however, there is marked discontinuity, as these different regimes applied very different approaches to restructuring the property system, in ways that each hoped would unlock the full agricultural potential of the Mekong Delta. Both sets of interventions had, however, unintended consequences, and served to generate counter-dynamics that undermined state accumulation strategies in ways unanticipated by their architects, as through the degradation of rice-growing land or the generation of social forces that diverted resources out of rice production.

This paper is based on archival research, conducted primarily at the Vietnamese National Archives II in Hồ Chí Minh City (formerly Saigon), and on the examination of primary sources and government documents from three historical periods: the French colonial era of the early 1900s; the independent state of South Vietnam, and in particular the latter years of the Thiệu administration (1965-1975); and the post-war

period (1975-present). The paper consists of three historical case studies that examine prevailing state accumulation strategies and interventions into the forces and relations of production during these three time periods. All three case studies focus on the coastal regions of the Mekong Delta (see Figure 2.2 for case study locations), which bore the brunt of efforts to restructure productive relations and forces.

The first of these historical sections examines the French colonial period, using a case study around the construction of the Băng Cung dam in Bến Tre province in the 1930s as a lens onto colonial accumulation strategies and their manifestation in the property regime and physical infrastructures around rice production. The second examines the efforts of the South Vietnamese government under President Thiệu to expand rice production, focusing on a case study of the Tiếp Nhựt project in Sóc Trăng province and exploring the ways in which the construction of infrastructure and the promulgation of land reforms were intertwined in the late 1960s and early 1970s. Finally, the third uses a case study of the Quản Lộ - Phụng Hiệp project in Bạc Liêu province to examine the ways in which the continued development of the physical relations of rice production has, in the post-war period, come into increasing tension with the social relations of production, especially in the aftermath of the Đổi Mới market reforms.

Expansion and Crisis in the French Colonial Era

The French colonization of Indochina formally began in 1862, with the establishment of a protectorate in Cochinchina, which encompassed both the Mekong Delta and the

city of Saigon and its environs to the northeast.[1] While the Mekong Delta had been inhabited for centuries, first by the Khmer and then, from the 16th century on, by ethnic Vietnamese, as a result of the territorial expansion of the Vietnamese kingdom under the Nguyen dynasty, it appeared to the French as a "sparsely settled frontier region" and a "great expanse of uncultivated swamp land" ready for appropriation (Murray 1980:58). Contemporary French authors thus depict the Mekong Delta as a wild landscape, inhabited by fearful beasts such as elephants and tigers, but also a potential resource, a vast expanse of arable land that could, in the parlance of French colonization, be "brought into value" (*mise en valeur*) or developed (Coquerel 1911:223). This vast, untapped wilderness stirred French proponents of colonization to evoke he specter of "Eldorado," the legendary land of riches, in describing Cochinchina's deltaic frontier (L'Echo annamite 1943b, Melin 1952:19). From the late 19th century, the French colonial regime aggressively promoted the expansion of rice cultivation in the Mekong Delta, with the goal of boosting rice exports and thus "bolstering colonial revenues through increased customs duties" (Murray 1980:58), while also "offset[ing] at least a portion of the prodigious costs of foreign occupation" (Murray 1980:420).

The exploitation of the Mekong Delta and the expansion of the area under agricultural production was accomplished during the French colonial regime through two complementary policies: one aimed at restructuring the physical forces of production and the other at the transformation of social relations around agriculture. The first was

[1] Cochinchina was in turn ruled as a constituent unit of French Indochina, along with Cambodia, Laos, Annam (in what is now central Vietnam), and Tonkin (in what is now northern Vietnam).

a set of physical interventions designed to expand the base of cultivated land through public investments in infrastructure, namely the construction of a vast network of canals, which served to both drain low-lying areas and provide a means by which rice could be transported to markets, both domestic and international. The extent of the physical transformation is dramatic. As David Biggs notes, "from 1890 to 1930, a fleet of steam-powered dredges moved more than 165 million cubic meters of earth, a feat comparable to more-famous projects such as Suez (260) and Panama (210)" (Biggs 2010:42). In total, the French excavated nearly 1,500 kilometers of navigable waterways and 2,500 kilometers of secondary canals in the five decades between 1879 and 1929 (Inspection générale des travaux publics 1930:63).

Digging canals, however, was only the first step towards the settlement of the frontier. To induce the clearance and cultivation of these newly opened areas, as well as to defray the cost of their construction, land alongside the new canals was auctioned off in "large indivisible tracts to enterprising concessionaires," including both French colonists and indigenous elites (Murray 1980:420). Such "virgin lands could not be bought by anyone else but capitalists," as "the small, native settler had nothing else to offer but his hands" (Gourou 1945:275) and "lack[ed] the technical skill and necessary capital" (Henry 1932:192). For this reason, as Henry concludes, "the enterprise of colonization depend[ed] on the medium and large landowners" (Henry 1932:192). As as a consequence, the social landscape in the newly-settled areas of the Mekong Delta was marked by extreme inequality, and by a stark divide between those who owned the land and those who worked it.

Statistics for the Mekong Delta from the 1920s show that only about one in four adult males owned land, with the rest working as tenant farmers on the estates of others and/or as hired laborers, circulating about the countryside according to the rhythms of the agricultural calendar (Murray 1980:429-39). Within the ranks of landowners, a small minority (estimated at less than 14% of the total landowning population) centralized control over land; these large landowners possessed "87.5% of the cultivated acreage and controlled the mass of farmers through short-term leases, obligatory advances, and usury" (Brocheux and Hémery 2009:265).

The political economy of colonial Indochina — both its social hierarchy and the fiscal stability of the French colonial state — was thus predicated on the continuous expansion of the agricultural frontier in the Mekong Delta and on the increase in overall rice output. As Brocheux and Hemery remark in their history of French Indochina, "colonial development was founded on Cochinchinese rice" (Brocheux and Hémery 2009:120). By the 1920s, Indochina was one of the largest exporters of rice in the world, supplying more than one-quarter of global exports, and earnings from rice alone consistently represented more than 60% of Indochina's total exports (Brocheux and Hémery 2009:265, Estèbe 1934). The Governor-General of French Indochina, Pierre Pasquier, remarked in 1933 that "the prosperity of Indochina rests entirely on the capacity of Cochinchina to export rice; all the economic activity of the colony depends on its available surplus" (Pasquier 1933).

The development of colonial Indochina, and of the Mekong Delta in particular, thus bears the hallmarks of a state-driven accumulation strategy that worked by expanding

the productive base through the transformation of swamps, forests, and other "wild" lands into cultivated land. In 1868, the area of the Mekong Delta under rice cultivation accounted for approximately 215,000 hectares. By 1930, that number had increased to 2,116,000 ha (Gastaldy 1931:65) (see Figure 2.3). The pace of expansion was particularly rapid during the 1920s; between 1922 and 1930, an average of 46,000 hectares were brought into cultivation each year in the Mekong Delta (Brocheux and Hémery 2009:123). As a result, the delta experienced in the late 19th and early 20th centuries an explosion in production that was "was achieved with little or no change in cultivation practices or inputs," but rather worked by continuously "extending the cultivated area" (Brown 1997:230).

In Bến Tre province, along the coast to the south of the French capital in Saigon, French colonial policy had a pronounced impact on both the physical environment — namely the hydrology of the province — and on the social relations of production and property. Even before the French conquest, much of Bến Tre was already under cultivation, owing to a network of natural waterways (*rạch*) which had allowed "for a very long time the cultivation of this rich province" (Robin 1918:11). This "richness" and area of extensive cultivation was mainly confined, however, to the interior of the province, and the coastal areas were only converted to rice cultivation with the excavation of canals by the French. Between 1870 and 1917, a series of major canals were built in the coastal districts, including the Mỏ Cày canal (1905); the Đồng Xuân canal (1888-1890); and the Chẹt Sậy canal (begun 1878, extended in 1905) (Nguyễn Chí Bền et al. 2001:148).

With this flurry of canal digging came a dramatic increase in the area under rice cultivation in Bến Tre. In 1880, the province contained 72,500 hectares of rice fields; by 1930, this figure had reached 110,200 hectares (Gran 1975:62). These gains came primarily in coastal districts, such as Ba Tri and Bình Đại, in which expanded cultivation was made possible by new canals. In keeping with the general pattern in the Mekong Delta, these coastal districts were settled largely through the allocation of land to concessionaires, both European and Vietnamese, in large parcels. A 1930 census shows, for example. that there were 41 landowners with between 50 and 100 hectares in Minh Trị, while there were an additional 27 who owned upwards of 100 hectares (Henry 1932:178-79).

Given the reliance of the colonial accumulation strategy on rice and the continual expansion of the area under its cultivation, the global decline in rice prices brought by the Great Depression presented an existential crisis. This crisis was manifested in the form of a massive wave of land abandonment in the rice sector. As costs of production came to exceed the "prices that could be realized on the market ... producers simply abandoned their rice-fields" (Murray 1980:458). Between 1930 and 1933, the cultivated area of the Mekong Delta fell from 2.22 million hectares to 1.96 million, and exports fell dramatically (Touzet 1934:9-10).

These tendencies were exacerbated by dynamics of environmental degradation that have their roots in the transformation of the physical base of production through the rapid canalization projects of the early 20th century. As early as 1920, it was noted in a French scientific journal that the digging of canals in the Mekong Delta had facilitated

not just settlement and the transportation of harvests, but the intrusion of salt water, "allow[ing] the play of the tides to be felt even in the interior" of the Mekong Delta (Bénabeq 1920). By the 1930s, this intensified phenomenon of saline intrusion was seen as a major constraint on rice production; as a report from the colonial Rice Office detailed, the "artificial and natural waterways which crisscross Cochinchina are invaded by salt water," affecting an area accounting for "almost all of the exporting zones furnishing the most beautiful rice" (Office Indochinois du Riz 1932). For these reasons, "agricultural activity is restrained to the rainy season, and the rent of the soil is reduced," with implications both for the economic viability of rice farming and for colonial tax coffers (Office Indochinois du Riz 1932). As the colonial Governor-General remarked in 1933, while the Mekong Delta had a "beautiful network of waterways that enabled the rapid development of greater and greater surface area," this network had originally been designed for transportation, and not water control, thus contributing to intensified saline intrusion and the "prolonged stagnation" of rice yields (Pasquier 1933).

To combat the pernicious effect of saline intrusion and "improve the conditions of rice production" in the Mekong Delta, the French Governor-General announced plans to strengthen the "defense against sea water" in the coastal provinces (Pasquier 1933:223). What this plan meant in practice was the construction of physical barriers, such as dams, sluice gates, and earthen dikes, to physically block the flow of salt water into the canal network. These projects were designed to address and ameliorate, at least temporarily, the environmental contradictions which arose as a result of the canalization project and to reverse the ongoing decline in the area under production,

thus stabilizing the material conditions for the accumulation strategy of the French colonial regime.

In Bến Tre province, the focus of these efforts came to rest on coastal districts such as Minh Trị, which had been brought under cultivation in the late 19th and early 20th century through the granting of concessions and digging of canals. By the 1930s, farmers in Minh Trị were increasingly affected by an “invasion” (*envhaissement*) of salt water, which flowed into their rice fields through the Băng Cung river (L'Echo annamite 1942b). After years of unsuccessful harvests, farmers in the region “grew weary, progressively abandoning to the undergrowth the greater part of the region” (L'Echo annamite 1942b). By the 1930s, more than 10,000 hectares of rice fields had been abandoned, and the villages of Minh Trị, once “very prosperous,” now ranked “among the poorest” in the province (L'Echo annamite 1942b). As the governor of the province, Thierry, put it in a 1937 letter to the Governor of Cochinchina, the low-lying lands of Minh Trị were “deteriorating more every year” in the face of saline intrusion. As a result, Thierry laments, he was now facing numerous demands by landowners to decommission their rice fields (that is, to abandon them and thus remove them from the tax rolls); this trend, if not arrested, threatened to "demolish the budget of the province” (Fonds Goucoch Folio 2432 III 59/N52(16) 1937a).

In the 1930s, the challenge for the French state was not bringing new land into production, but keeping land in production. In short, the French found themselves facing a rising tide of *disaccumulation*, manifested in the abandonment of land and the scaling back of production, and driven by environmental degradation and declining

terms of trade, that threatened the political-economic basis of colonial rule. While efforts to push back the agricultural frontier continued, as through a survey commissioned by the Governor-General in 1929 to identify new lands that could be opened up for further colonization and rice cultivation (Henry 1932:231-37), the primary aim of French regime became keeping land in production in the face of countervailing tendencies. To this end, the colonial government provided subsidized loans to large-scale rice farmers, which "permitted the maintenance under cultivation of the majority of the rice-fields of the colony" (Melin 1952:72). In short, disaccumulation by producers and landowners on the ground — as through the abandonment of rice-growing land to the tides and its reversion to swamp and forest — was to be countered by state investments in physical infrastructure that would in turn create the hydrological conditions for intensified production.

By the mid-1930s, the French metropolitan and colonial governments had allocated significant funds for the construction of salinity-control infrastructure in the Mekong Delta. These projects aimed to create enclosed areas, dubbed *casiers* in French, protected by salinity-control works. Among the most notable of the projects launched in the 1930s were the Gò Công, Tiếp Nhựt, and Băng Cung casiers. The Gò Công project, which enclosed 11,000 hectares of agricultural land, protected by 27 km of dikes along the Mekong and Vàm Cỏ rivers, was completed in 1937, while the Tiếp Nhựt project, which was more technologically ambitious and sought to block off several small rivers in Sóc Trăng province, was not completed until 1940.

In 1934, a team of engineers from the Office of Agricultural Hydraulics and

Navigation for South Indochina (*Circonscription d'Hydraulique Agricole et de Navigation de Sud Indochine*) proposed a fix to the problem of saline intrusion in Minh Trị: the construction of a salinity control dam on the Băng Cung river which would block the inflow of salt water and retain irrigation water for rice cultivation (see Figure 2.4). This solution was enthusiastically embraced by the French governor of Bến Tre, Thierry, who argued that it would not only "restore fertility" to areas that had been abandoned due to the influx of the tides, but also allow for the "bringing into value" of "new lands" (Fonds Goucoch. Folio H.6/2 1935). By Thierry's estimate, up to 7,000 hectares of new land could be "easily be cleared and turned into rice farms" once the "water regime is ameliorated" (Fonds Goucoch. Folio H.6/2 1935). Moreover, Thierry argued, the alleviation of salinity intrusion would spur migration to the region and prompt the return of those who had abandoned their land "to the villages where their ancestors lie," thus ensuring the availability of labor to till the land (Fonds Goucoch. Folio H.6/2 1935).

In conclusion, the French governor Thierry noted, the proposed works were "demanded by the population" of Minh Trị, by which he meant the landlords and notables with whom he had consulted in preparing his request (Fonds Goucoch. Folio H.6/2 1935). These demands were echoed in a 1937 petition (Fonds Goucoch Folio 2432 III 59/N52(16) 1937b), signed by several dozen landowners and notables in Minh Trị, and addressed to the Governor General of Indochina and the Governor of Cochinchina. In the petition, the landowners call for the immediate construction of the proposed dam, citing not just their personal hardship, but also the decline in rice production and harvested area due to the pernicious effect of salinization. In the

petition, the landowners claim that they were forced by the tides to leave thousands of hectares uncultivated and "wild." If, they argued, "the government did not fix this situation, then the salt water would spread even more," endangering crops further inland. If, on the other hand, the government made haste with the proposed project, nearly "10,000 hectares of wild, forested, and muddy land ... will turn into fertile farmland." Moreover, "land now ranked in the fourth and fifth class" for the purposes of tax assessment "will improve to the first class, and the benefit to the government will not be small" (Fonds Goucoch Folio 2432 III 59/N52(16) 1937b).

Construction on the works got underway in 1938, and consisted of a ring dike, which encircled the project area, and a rockfill dam, 220 meters long and 16 meters high, which straddled the Băng Cung river at its mouth along the South China Sea (L'Echo annamite 1942b). Though construction was delayed by the onset of World War II, the project was finally completed in time for the 1942 planting season. As a result, as proclaimed in a triumphant article in the Echo Annamite, a French-language newspaper in Saigon, "10,000 hectares, entirely abandoned for more than 30 years, will be now reconquered by cultivation," while an additional 4,000 hectares of rice fields, "whose current yields are very uncertain, will be improved." In total, an estimated 15,000 to 20,000 tons of rice would be added to the production of the province (L'Echo annamite 1942a).

In this way, the French sough to both forestall disaccumulation through the construction of infrastructure works that made the cultivation of rice in newly-settled areas economically and environmentally viable for large-scale producers, while at the

same time opening up “new lands” for rice agriculture. These efforts, along with similar infrastructure projects at Tiếp Nhựt and elsewhere, bore significant fruit over the course of the 1930s. By 1939, rice production in the Mekong Delta had recovered to pre-crisis levels tons and overall rice exports from French Indochina reached historic highs, topping two million tons (Brocheux and Hémery 2009:346). The dramatic increase in rice output marked the successful culmination of the colonial state’s anti-crisis policy, causing the head of the colonial Chamber of Agriculture to declare, in 1940, that “overproduction today, far from being an element of disequilibrium, is, to the contrary, a considerable force in the service of the country” (Brocheux 1995:165).

In the summer of 1940, however, the German army would overrun France, setting in motion a dramatic change in circumstances for its overseas colonies. After a brief power struggle, a new colonial government loyal to the collaborationist regime in Vichy would take power in Indochina, and in 1941, the Vichy administration assented to the colony’s occupation by the Japanese military. The Japanese were, however, content to preserve French sovereignty over Indochina and to leave the Vichy authorities in charge of the colony’s administration. In return, the Vichy government agreed to sell part of its rice surplus to Japan at discounted prices (Gunn 2014). Though shipments fell short of Japanese expectations, Indochinese exports to Japan reached almost one million tonnes in both 1942 and 1943 (Gunn 2014:147). In the face of rising production, and rising pressure from Japan to supply rice exports on concessionary terms, the attention of state planners now turned to far more ambitious infrastructure projects, dubbed “grands travaux,” or great works, by the new Vichy

authorities (Freud 2013). Such works were described by Jean Decoux, the Vichy Governor-General of Indochina, in a 1943 speech as an "imperative necessity in a country that must derive from its soil nourishment for a population that grows unceasingly," not to mention the annual tribute imposed by Japan (L'Echo annamite 1943a).

The most ambitious of these new projects sought to use build on the successes at Băng Cung, albeit on a much grander scale. In the early 1940s, French engineers developed a plan to make a vast swathe of the salinity-plagued Cà Mau peninsula, known as the Quản Lộ - Phụng Hiệp plain, more suitable and stable for rice cultivation. While the area had been largely brought under rice production by 1930, production was constrained and threatened by the tides, which "penetrate deeply into this expanse," conveyed by "both by natural and artificial channels," causing surface water resources to run saline for much of the year and "impregnating" the soil with salts, which inhibited cultivation far into the rainy season (Anon 1943). As in Băng Cung, French engineers at the Department of Agricultural Hydraulics and Navigation for South Indochina (*Circonscription d'Hydraulique Agricole et de Navigation de Sud-Indochine*) proposed the construction of dams on major canals to block this inflow.

These efforts first took concrete form in 1943, when construction began on large dam on the Mỹ Thạnh River. When completed, the dam would protect 150,000 hectares of rice land in the Quản Lộ - Phụng Hiệp plain from saline intrusion (L'Echo annamite 1943c). In this way, it was hoped — as the colonial Governor of Bạc Liêu province put it in a 1944 letter — that "disciplining the water regime" in a manner conducive to

rice cultivation would allow the Quản Lộ - Phụng Hiệp plain to "yield its full potential" (Fonds du Gouverneur de la Cochinchine (Phủ Thống đốc Nam Kỳ): Folio H.62/18 1944).

This vision was, however, dashed by political turmoil and by the exigencies of war. Following a Japanese coup in 1945, which overthrew the Vichy regime in Hanoi, construction crews abandoned their work on the Mỹ Thạnh dam, leaving its foundation at the mercy of the very tides it was meant to tame. The dream of transforming the vast agrarian frontier of the Cà Mau peninsula into a hub of rice production would be set aside, for now, only to re-emerge in the future.

Infrastructure, Intensification, and Green Revolution in the Vietnam War

The end of World War II would mark the beginning of three decades of conflict in Vietnam, from the First Indochina War (1946-1954) against the French, who were determined to reclaim their erstwhile colony, to the devastating conflict of the 1960s and early 1970s. During the Vietnam War, rice production in the Mekong Delta was once again harnessed as a vehicle of accumulation and development, but this time under the government of an independent South Vietnam, most notably during the rule of President Nguyễn Văn Thiệu (1965-1975). The Thiệu regime differed sharply from that of the French in that it was ideologically oriented towards a program of nationalist developmentalism — aimed at economic modernization and industrialization rather than colonial extraction — which in turn hinged on the intensification of rice production in existing areas. As under the French, however, the Mekong Delta once

again became a veritable laboratory for the restructuring of both the biophysical forces of production (through largescale infrastructure projects and the introduction of new seeds and inputs designed to maximize rice output) and the social relations of production (through the introduction of redistributive land reforms).

The following section consists first of a general overview of these trends and then of a detailed case study which uses a particular project and region — that of the Tiếp Nhựt water control project in the province of Ba Xuyên (current-day Sóc Trăng) — as a window onto the restructuring of social relations and biophysical forces of production and their role in the overall accumulation strategy of the Thiệu regime. When Nguyễn Văn Thiệu took power in 1965, after two years of political instability following the assassination of president Ngô Đình Diệm, he inherited a dire situation. Not only was the war with North Vietnam and its ally, the communist insurgency known as the National Liberation Front, escalating, but agricultural production was deteriorating, most notably in the Mekong Delta. As war engulfed the region, many farmers fled their villages for the relative safety of the cities, while the draft of working-age men contributed to a general shortage of labor for those that stayed behind (Joint Development Group 1969). As a result of this outflux of farmers, hundreds of thousands of hectares of rice-growing land was lying abandoned in the Mekong Delta, with much of it undergoing progressive damage from "sea water seeping in through broken or unattended dikes" (Embassy of Viet Nam 1972:11)

As a result of the deteriorating security situation and the demographic shift it engendered, overall rice production in the Mekong Delta fell from 4.36 million tons in

1963/64 to 4.21 million in 1964/65 and 3.97 million in 1965/66 (Embassy of Viet Nam 1972:5). The consequences of this decline in output, which took place against a backdrop of rapid population growth, were far-reaching. By the mid-1960s, it became increasingly difficult for the state to procure surplus rice from the delta, and Saigon and the other rice-deficient areas of the Southeast and Central South Vietnam were suffering from acute shortages. In 1963, the government banned the export of rice. By 1967, the country was importing upwards of three-quarters of a million tons from overseas, ranking it among the world's largest importers (Joint Development Group 1969:175). In 1969, "the total amount of foreign exchange spent for the import of agricultural products" into South Vietnam amounted to more than $197 million USD, as compared to just $38 million in 1960 (Ministry of Land Reform and Agriculture and Fishery Development 1970:7).

The primary objective of South Vietnam's agricultural development policy in the late 1960s and early 1970s was to reverse this dependence on imported rice and the ensuing drain on reserves of foreign exchange. The achievement of national self-sufficiency in rice (which would not just alleviate the trade deficit, but also improve the capacity of the South Vietnamese state to ensure adequate food supplies, especially in urban areas) thus served as a key pillar of President Thiệu's developmentalist policy of national "self-support" and thus the broader accumulation strategy of the Thiệu regime (Goodman, Harris and Wood 1971). Over the long term, these efforts were seen as essential not just to freeing the country from its reliance on imported food, but to shoring up the "stability of Vietnam's postwar economy" by ensuring the country's capacity to both meet domestic needs and export a sizable surplus (Development and

Resources Corporation 1969b:1). In this way, the rice sector would go from an economic drain to an engine of accumulation, as "increase[d] production for export purposes" would allow the state to "collect foreign exchange for the development of the national economy" (Ministry of Land Reform and Agriculture and Fishery Development 1970:11).

To achieve this dramatic increase in production, and transform the rice sector into an engine of accumulation and economic growth, South Vietnamese authorities and their American allies looked not to extensification and territorial expansion (the options for which were severely constrained by the government's lack of control over much of the countryside) but rather to the intensification of agricultural production on existing rice-growing land in areas under government control. To achieve this aim, the South Vietnamese government and its American allies vigorously promoted a new suite of agricultural technologies and production practices associated with the "Green Revolution." As a 1967 report, prepared by American consultants working on behalf of the South Vietnamese government, put it, the key to economic development in the country lay in unlocking the Mekong Delta's heretofore untapped "potential for agricultural production," which could be accomplished not by expanding the physical base of rice agriculture, but by "tripling present rice production on two million hectares" of existing rice-growing land (Joint Development Group 1967:2). This was to be achieved primarily, as advocated in the 1967 consultants' report and adopted as a primary thrust of agricultural development policy under President Nguyễn Văn Thiệu (Cullather 2010), through the popularization of new "high-yielding varieties" of rice (HYVs), such as IR-8, IR-5, IR-20, and IR-22, which were developed by the

International Rice Research Institute in the Philippines. These new varieties promised not just higher yields than traditional cultivars, but were also capable of producing two, or even three, crops per year under the appropriate environmental conditions (Development and Resources Corporation 1969c, Vo Tong Xuan 1975). The dissemination of HYVs was promoted by the South Vietnamese government through its "Accelerated Rice Program," which targeted the major rice-growing provinces of the Mekong Delta, distributing "rice kits" which included seed from IRRI along with starter packages of insecticide and fertilizer (Embassy of Viet Nam 1972). By the end of 1968, 41,000 hectares, mostly in the Mekong Delta, were planted under IR-8 alone, and by 1969, that figure had nearly quintupled to 204,000 hectares, on which nearly 1 million metric tons were produced (or about one-fifth of the country's overall rice output) (Vo Tong Xuan 1975:89).

The strategy pursued by the South Vietnamese government and its American advisors in the 1960s and 1970s was thus one of intensified production and expanded reproduction. In contrast to the extensive accumulation strategy pursued by the French, which worked by incorporating an ever-greater territorial area into the circuits of colonial capitalism, the Thiệu government sought to radically increase rice production by replacing the cultivation of a single annual crop of traditional seed varieties with the multi-cropping of new high-yielding varieties. Maximizing the productive capacity of these new rice varieties, however, would require a new round of investments in water management infrastructure, with the aim of ensuring hydrological conditions conducive to the year-round cultivation.

While farmers in the coastal provinces rushed to adopt these new varieties, they found them much less resilient in the face of saline intrusion than traditional strains. During the 1968-69 growing season, for example, fields under HYVs were devastated by a combination of drought and unusually high levels of saline intrusion, causing widespread losses; the only coastal areas that survived unscathed were those portions of Gò Công and Ba Xuyên provinces in which there were existing infrastructure works, namely sluice gates and sea dikes, that protected the rice fields from the tidal onslaught (Development and Resources Corporation 1969c:22, Nguyen Quang Chuyen 1970). The response of the South Vietnamese government and its American allies was not to abandon the cultivation of HYVs in coastal areas, but to build on the infrastructural legacy of their French predecessors and embark upon a new wave of projects designed to transform environmental and hydrological conditions in coastal areas. The late 1960s and early 1970s thus marked a dramatic resurgence in the planning and construction of water management infrastructure in the Mekong Delta, aimed at achieving "overall water control" and increased rice production through the double and triple-cropping of "miracle rice" (Development and Resources Corporation 1969c). Doing so, however, would require the construction of a vast network of water control systems, which would, when completed, stretch across the entire coastal delta and allow the South Vietnamese authorities to "seal off the agricultural lands from floods and high river stages, from the tides, and from the encroachment of salinity, and to control the ingress and egress of water to and from these sealed areas as required" (Development and Resources Corporation 1969b:IV-2).

The productive potential posed by new rice varieties could not, however, be unlocked

simply through infrastructure projects alone, but required a fundamental transformation of social-property relations around rice production. Despite some modest land reforms undertaken by South Vietnam's first president, Ngô Đình Diệm, in 1957, the social relations of rice production in the Mekong Delta were still — in a holdover from the French colonial period — polarized between a landlord class and a much larger base of landless tenants (Bredo 1968). The 1960-61 Agricultural Census of South Vietnam, for example, recorded that a mere 23% of farming households in the Mekong Delta owned all the land they worked (Prosterman 1970:753). Meanwhile, a very small minority — around 10% of the landowning population — owned around 55% of all agricultural land (Bredo 1968). Because he only rented, and did not own, the land he tilled, the average tenant farmer had no incentive to "increase his production and improve his livelihood," as through the use of HYVs and investments in the associated inputs, according to a report prepared by American consultants in 1969 (Development and Resources Corporation 1969b:iii-13). Consequently, the adoption of HYVs was concentrated among wealthier owner-operators, rather than among "marginal" smallholders or tenants, who not only lacked an incentive to invest in new varieties, but also collateral that they could borrow against to finance the transition to HYVs and the purchase of necessary inputs (Combs 1999:234). Unleashing the full potential of these productive forces, and kickstarting a process of expanded reproduction through the reinvestment of agricultural profits in increased production, would thus require a dramatic reprogramming of the social relations around agriculture. Consequently, President Thieu himself launched a massive land reform campaign, under the slogan of "Land to the Tillers," in the early 1970s.

Between 1970 and 1973, more than one million farming households received land titles, transforming them from tenants into smallholders (Prosterman and Riedinger 1987:139). These reforms had the effect of creating a new class of "entrepreneurial small farmers" in the Mekong Delta and elsewhere (Porter 1993:28), under the rationale that when a farmer "becomes the true owner of the plot of land he is tilling, he will certainly do his best to increase his production, thus contributing his part in the national development of agriculture" (Ministry of Land Reform and Agriculture and Fishery Development 1970:15).

This radical restructuring of the property regime served to order to shift control over the land from absentee landlords to owner-operators with a financial incentive (and, indeed, imperative) to "obtain the maximum benefits possible from their own farmland" through the application of "such modern farming methods as the introduction of improved seed, the increased application of fertilizer, soil improvement, insect and pest control, and application for some rational farming methods" (Agricultural Development Corporation 1971:v12). In this way, the introduction of new productive forces in agriculture, such as HYVs and the associated chemical inputs, was coupled with a dramatic transformation in the social relations of production, in the form of redistributive land reforms.

In the parlance of post-war development thinking, such an effort is exemplary of the "big push" strategy (Rosenstein-Rodan 1943), by which social, environmental, and biological constraints on increased production could, in theory, be overcome through a dramatic transformation of both the forces and relations of production. In the

American-allied nations of Southeast Asia, these efforts were organized under the banner of "Pioneer Agricultural Projects," the framework for which was established in 1971 by the Mekong Committee, the UNDP, and the World Bank. According to the Mekong Commission, the goal of these pioneer projects was to bridge the gap "between the 'laboratory' experiment and large-scale, real-life development projects. Unlike the experimental farms which [were] concerned primarily with biological aspects of agriculture, the pioneer farms [were] much larger in area, each encompassing hundreds or thousands of individual farmers who, under proper expert guidance, [were] supposed to utilize their land more 'rationally'" as through the cultivation of multiple crops per year (Tohtong 1974:12). In South Vietnam, three coordinated agricultural development projects, all of which were aimed at intensive rice cultivation, were designated as Pioneer Projects, including the Tiếp Nhựt project in Ba Xuyên province, upon which the remainder of this section will focus.

While the Tiếp Nhựt region (see Figure 2.5) had been the target of infrastructure projects under both the French (during the 1930s and 1940s) and under the government of Ngô Đình Diệm in the 1950s and early 1960s, the infrastructure works built in those earlier periods had fallen into disrepair by 1970. As a result, according to a provincial development plan from 1971, "many areas are abandoned because the gates and dikes are broken; the areas that remain have very low production, especially in low-lying areas and those near the ocean" (Ministry of Land Reform and Agriculture and Fishery Development 1971:13). Due to the lack of functioning water management infrastructure, rice agriculture in Ba Xuyên remained dominated by the single cropping of traditional varieties, which were sown on 200,000 hectares in the

1969-1970 growing season, as compared to 4,000 hectares of new HYVs (Nippon Koei Co. 1974:Appendix)

Beginning in 1971, the South Vietnamese government hired the Japanese construction and engineering firm Nippon Koei to develop a comprehensive rural development plan for the Tiếp Nhựt region, under the auspices of the Pioneer project. The resulting plan took as its primary aim an "increase in food production, especially rice" through the "introduction of a reliable year-round irrigation farming by means of rehabilitation of the existing water control structures" and the "construction of [new] salinity control structures" (Nippon Koei Co. 1974:1). These goals — and the prioritization of rice over other potential crops — were designed to align with the national economic policy outlined in the Government's Post-War Reconstruction Plan, the primary objective of which was the achievement of self-sufficiency in staple foods (Nippon Koei Co. 1974:42), as well as the long-term aim of boosting rice exports. A 1971 economic plan prepared by the provincial government, for example, identified the IR-20 and IR-22 rice varieties as key potential export crops, which could be intensively cultivated in the Tiếp Nhựt region upon completion of the proposed works (Ministry of Land Reform and Agriculture and Fishery Development 1971:18-19)

After an initial scoping visit, the Japanese engineers proposed a "system of works enclosing ... [an] area of 50,000 ha bounded by the Saintard Canal, Bassac, and My Thanh Rivers" (International Bank for Reconstruction and Development 1974:2). The immediate aim of the Tiếp Nhựt Pioneer Agricultural Project was to promote the adoption of HYVs and double-cropping in the area through the construction and

upgrading of sluice gates on the Long Phú and Ngan Rô canals, as well as building a series of smaller gates along major irrigation canals (Nippon Koei Co. 1974:S2). Upon completion of these proposed works, the consultants from Nippon Koei estimated that 4,390 hectares of existing agricultural land and an additional 9,480 of abandoned land could be made suitable for the double-cropping of HYVs (Nippon Koei Co. 1973:II-34).

Achieving these goals, however, would require more than just the construction of physical works and the dissemination of new varieties and techniques. Rather, they would require a transformation in the social relations of production, the first step towards which was the implementation of "land-to-the-tiller" reforms, which were carried out in Ba Xuyên between 1970 and 1972, concurrently with the construction of the works of the Tiếp Nhựt project. In total, land titles were distributed to 12,800 households in the project zone, amounting to a total of 29,500 hectares (Nippon Koei Co. 1973:ii-17). These reforms served to create, in the place of a landlord-dominated production system, a new class of smallholder farmers. In order to reap the benefits of new HYVs and the infrastructure works designed to allow their intensive cultivation, farmers would have to invest heavily in inputs and technologies at the farm-scale, including chemical fertilizers, new seeds, pumps, tractors, rotary weeders, and power threshers (International Bank for Reconstruction and Development 1974, Nippon Koei Co. 1974:27). Moreover, these new family farmers had to make investments in "landesque" capital, such as levelling their fields and digging drainage ditches (Nippon Koei Co. 1973:v-3). According to the findings of a survey conducted by Nippon Koei in 1973, it was found that the "typical farm family" in the area was

cultivating 3.0 hectares of paddy after the completion of the land reform, with the majority of landowning households having holdings of greater than 2.0 hectares, seen as the threshold of economic viability for multi-cropping of HYVs (Nippon Koei Co. 1973).

Through this big, coordinated push — involving not just the construction of salinity control works but also land reform and the dissemination of Green Revolution technologies — the Vietnamese government and its external backers, including the United Nations Development Program and International Bank for Reconstruction and Development, hoped to demonstrate the potential for double-cropping of HYVs and create a model for replication, paving the way for the development of coastal regions of the Mekong Delta "where agricultural production is constrained by salinity and drainage problems" (International Bank for Reconstruction and Development 1974:1). Once completed, according to a report prepared by the International Bank for Reconstruction and Development, the works would nearly double production in the project site — from 86,000 tons of rice per year to 165,000 — by bringing uncultivated land into production and allowing for the cultivation of HYVs on least 15,000 ha, of which 7,000 would be double-cropped (International Bank for Reconstruction and Development 1974:16). In this way, the Tiếp Nhựt project would not only demonstrate the region's latent agricultural potential, but would essentially pay for its own $15 million price tag through "conservatively estimated, direct development benefits" for both the South Vietnamese state (in the form of increased tax revenues and reduced reliance on imported rice) and the farmers themselves (in the form of higher incomes and living standards) (International Bank for Reconstruction

and Development 1974:17).

Thus, the dual interventions of infrastructure construction and "land-to-the-tiller" reforms formed the basis for a strategy of intensive accumulation that was, under Thiệu, central to an overall developmentalist strategy. Through the promotion of HYVs and the coordinated push for new infrastructure projects and land reforms, the South Vietnamese government was able to dramatically reduce the country's reliance on food imports, and by the early 1970s, it once again achieved a rice surplus (Embassy of Viet Nam 1972:20). In 1972, the South Vietnamese government declared that "with rice production and land distribution questions on the way to satisfactory conclusion," the country could now turn its attention to "developing a program whereby agriculture could serve both the needs of the population and support an industrialization program" (Embassy of Viet Nam 1972:6). Key to meeting these ends was the extraction of a sizable rice surplus from the new class of intensive family farmers in the Mekong Delta, who would serve as the social basis for an export-oriented accumulation strategy. According to a development strategy promulgated by the South Vietnamese government in 1970, farmers in the Mekong Delta were expected to "contribute from 90% to 95% in the total annual exports to collect foreign exchange needed for national development" (Ministry of Land Reform and Agriculture and Fishery Development 1970:5).

In the service of this export-oriented accumulation strategy, even the most ambitious of French schemes were resurrected, including plans to develop the vast Quản Lộ - Phụng Hiệp plain into a major center of agricultural production. In 1969, plans were

drawn up by South Vietnamese officials and American advisors for a vast network of canals, dikes, gates, and pumping stations, that would seal off 600,000 hectares of land in the Quản Lộ - Phụng Hiệp plain (deemed to be one of the "most suitable" areas of the delta "for HYV cultivation") from the sea and allow fresh water to be pumped in from further upstream (Development and Resources Corporation 1969c:18-19). All told, it was estimated that the Quản Lộ - Phụng Hiệp area could, if converted to the double-cropping of HYVs, produce an additional 4 million tons of rice per year, nearly equaling the total output of the entire Mekong Delta at that time (Development and Resources Corporation 1969a).

These efforts to introduce double-cropping of HYVs in the Quản Lộ - Phụng Hiệp plain ultimately foundered, however, in the mid-1970s, as the tides of war turned against the South Vietnamese regime in Saigon and the munificence of its American backers dried up. Meanwhile, the more modest attempt to transform the Tiếp Nhựt region into a zone of intensive rice production collapsed in the face of a deteriorating security situation. As early as 1972, consultants working on the Tiếp Nhựt project found their access to the interior regions of Ba Xuyên, where they intended to construct a series of salinity-control gates necessary to the success of the overall project, increasingly constrained by resurgent Communist forces, making not just construction of works, but the routine collection of hydrological data difficult (Nippon Koei Co. 1972:1.3). These problems would prevent the project from being completed before the end of the war in 1975; with the gates unfinished, the region remained exposed to the infiltration of salt water, which continued to make its way, as it had for decades, into the canals and rice paddies along the coastal stretches of Ba Xuyên.

Collectivization, Reform, and the (Un)Making of an Agricultural Miracle

With the cessation of hostilities and the reunification of North and South Vietnam in 1975, the new socialist authorities in Hanoi once again made the maximization of rice production one of their central aims. In some ways, the post-war accumulation strategy of the new socialist government was remarkably similar to that of its predecessor, in that it consisted mainly of efforts to expand agricultural production in the Mekong Delta as a means of both ensuring domestic food security and providing an exportable surplus of rice, and thus a base of accumulation for industrialization and economic modernization. However, this strategy was predicated on a very different approach to the restructuring of productive relations, at least in the first decade after reunification in 1975; while the socialist government continued to invest heavily in the expansion of productive capacity in the Mekong Delta through the construction of infrastructure and the dissemination of Green Revolution technologies, it simultaneously sought to restructure the social relations of production and property along collectivist lines.

The new authorities in Hanoi inherited a precarious situation; while rice production in the Mekong Delta had grown in the last few years of the war (with the introduction of new varieties and the construction of new infrastructure projects), it was insufficient to meet the needs of the newly-reunified country, which included the densely-populated and rice-deficient regions of central and northern Vietnam. Increasing rice production was thus "imperative" (Beresford 1985:373) both for the purposes of attaining national

food security and securing a base for capital accumulation and economic development. The new socialist regime looked in particular to the Mekong Delta as an area of enormous, but latent, potential in rice production, the realization of which was key to "rapidly solving the problem of food sufficiency for the whole country" (Long 2006:127). Moreover, if production in the Mekong Delta could be increased significantly, the region could be made to produce a sizable "surplus for export and financing of capital accumulation," and thus provide a "means of achieving eventual industrialization" in the war-torn country (Beresford 1985:374).

This new accumulation strategy took official form in the 1976-1980 Five Year Plan, the first issued for the reunified country under the new socialist government. This plan took as its central aim bolstering "the productive forces in agriculture" (Communist Party of Vietnam 2004:665). To accomplish this aim, the plan called for the dramatic expansion of staple food production: to 21 million tons of rice and equivalents in 1980 from just over 10 million in 1975 (Beresford 1989:115, Communist Party of Vietnam 2004:529), and for the strengthening of export production. As summed up by a Politburo member in a 1976 meeting of the Vietnamese Communist Party, the aim of the post-war development plan was "concentrating the forces of the entire country .... on developing all latent potentials concerning labor, land, and material bases to bring about a giant leap forward in agricultural development, considering production of grain and food the main concern" (Beresford 1985:374).

To accomplish this aim, the Five-Year Plan called for a mixed accumulation strategy. One pillar of this strategy rested on a renewed push for the clearance and settlement of

frontier areas. The economic development plan adopted at the Fourth Party Congress in 1976 called for the expansion of the cultivated area (*mở rộng diện tích*) (Dang 2007:57), with the ambition that the country's base of agricultural land increase to 10 million hectares, or double the figure in 1975 (Communist Party of Vietnam 2004:654,68). Expansion of production was to be carried out in areas designated as "New Economic Zones," including several in the Mekong Delta. In this way, the productive forces were to be expanded to encompass new areas, previously off-limits to cultivation given their remoteness and adverse environmental conditions (Hill 1984).

One of the most significant of these New Economic Zones was located in the marshy wetlands of the Cà Mau peninsula in what is now Bạc Liêu and Cà Mau provinces. This area overlapped significantly with the Quản Lộ - Phụng Hiệp plain, the object of previous development schemes by the French and South Vietnamese regimes. Between 1976 and 1980, 30,000 settlers from the Red River Delta in northern Vietnam arrived in what was dubbed the Minh Hải New Economic Zone. These settlers cleared or reclaimed 86,000 ha of land in the brackish wetlands of the Cà Mau peninsula (Hill 1984:393). Unable to access development finance from international institutions, the Vietnamese state instead relied on the "utilization of large existing labor reserves to carry out major construction works of clearing and reclaiming land, irrigation systems, roads and other necessary infrastructure" in the New Economic Zones (Beresford 1989:103). In the Cà Mau peninsula, this meant that farmers were conscripted to construct rudimentary infrastructure, such as earthen dikes (Luttrell 2001:270). In this way, the northern peasants would serve not just as the "territorial spearhead" of the

socialist state (De Koninck 1996), but actually carry out the material process of environmental transformation and restructuring of the productive forces required to make the expansion of rice cultivation possible.

Alongside this new campaign of extensive accumulation came a parallel effort to intensify production in existing agriculture areas through the continued promotion of Green Revolution technologies. The 1976 Five-Year Plan, for example, called for the increased "chemicalization" and "mechanization" of agriculture (Beresford and Fraser 1992:4). The decree of the Fourth Party Congress also called for intensification through the adoption of new seeds in agriculture (Dang 2007). To this end, the socialist authorities continued the policy of their predecessors in promoting and disseminating HYVs, following the enthusiastic adoption of these new varieties in North Vietnam during the 1970s (Cullather 2010). The new socialist government also sought to expand upon the efforts of its predecessors (and erstwhile foes) in continuing to develop and expand the material forces of production in the Mekong Delta through large-scale infrastructure projects. The 1976-1980 Five Year Plan, for example, called for the "digging of irrigation canals and the building of dams to block salt water and save fresh water," especially in the coastal zone. Due to the urgent issue of food insecurity facing the newly reunified country, "construction of hydraulic works to enable the expansion of multiple cropping" was perceived as an "urgent need" (Beresford 1989:103) To achieve this end, the new government built directly on foundations laid by its predecessor in attempting to complete construction of Pioneer Projects at Tiếp Nhựt and elsewhere, using "designs left behind by project consultants and with their own means and limited available equipment and machinery and labor

intensive methods" (US Embassy in Manila 1977). In 1977, the Vietnamese government even approached the World Bank and Asian Development Bank in attempt to secure further loans for these projects (US Embassy in Bangkok 1977); ultimately, however, these requests were blocked by the US.

Where the post-war government dramatically diverged from its predecessor, however, was in its efforts to transform the social relations of rice production in the Mekong Delta, with the eventual aim of creating a "modern centrally-planned production system in which the means of production are centrally-owned," and "socialist relations of production" prevailed (Beresford 1985:371). In April of 1978, the Hanoi government launched a collectivization campaign under Directive 43-CT/TW, which called for the "transformation of agriculture" in the south through the replication of the northern collective farm model (Long 2006:138). Party leader Lê Duẩn described this push as a "revolution in production relations" (Dang 2007:47) that would, combined with a "revolution in science and technology," serve to introduce "large-scale socialist production" in the former South Vietnam. By 1985, 77.2% of peasant families in the Mekong Delta belonged to production collectives, in which land was collectively owned and implements of production shared (Fforde 1996:134),

In essence, collectivization represented an attempt to foster intensified accumulation in agriculture through economies of scale — that is, accumulation through concentration — and expanded reproduction, as collective profits were reinvested in the further development of the (collectively-owned) productive forces, with little surplus being redirected to non-productive use. At the same time, the post-war economic plan called

for the diversion of an agricultural surplus to fund industrialization (or, more accurately, the accumulation of capital in the industrial sector), in a plan reminiscent of the "primitive socialist accumulation" carried out in the early days of the Soviet Union, whereby the "agricultural surplus of the peasantry" was appropriated and "used to finance investment in the expanding socialist industrial sector" via taxation, the manipulation of intersectoral terms of trade, and, finally, collectivization (Akram-Lodhi and Kay 2010:192-95). Such a plan would, of course, only succeed if the ambitious production targets outlined in the Five-Year Plan could be achieved.

Those hopes, however, would be dashed. The collectivization of agriculture in southern Vietnam did not, in the end, unleash the latent capacity of the existing base of productive forces, but instead spurred a wave of sabotage aimed at undermining these forces. Rather than turn them over to the collectives, farmers slaughtered buffalo and oxen, refused to harvest crops in time, destroyed rice fields, and sabotaged collectively owned machinery (Porter 1993:52-53, Quang Truong 1987:267-68, Vo 1990:90). Others simply refused to farm, leading to the abandonment of about 100,000 hectares of agricultural land (Long 2006:142). The accumulation strategy of the socialist state thus crumbled in the face of both external and internal pressures, the former arising from its inability to access international development finance and technical expertise (thus inhibiting its ability to further restructure the material forces of production in agriculture) and the latter from contradictions and tensions inherent in the collectivization drive. These tensions ultimately eroded the forces of production themselves, as through the destruction and degradation of collectively-owned fields and machinery, and thus the material base of intensive rice agriculture.

As a result of these tensions and contradictions, rice production dropped precipitously, falling about 400,000 tons between 1978 and 1980 (Long 2006:142). By the mid-1980s, Vietnam was once again importing several hundred thousand tons of rice per year (Food and Agriculture Organization 2017); rather than serving as a basis for accumulation and industrialization, the agricultural sector was unable to provide even for national subsistence needs, and consequently served to drain reserves of foreign exchange. This decline in output did not just undermine the accumulation strategy of the Vietnamese state, but placed the entire country under a pall of food insecurity. As production stagnated in the Mekong Delta, densely-populated regions to the north faced perennial shortages of rice. In the mid-1980s, some 40% of the rural population in northern Vietnam faced routine hunger, and by 1988, food shortages in the north placed an estimated 9.3 million people in danger of famine (Long 1993:176). Food shortfalls also raised the prospect of social unrest; Kerkvliet (2005:208) for example, describes how hungry peasants in the Red River Delta province of Ha Nam Ninh province stormed warehouses and granaries in 1986.

In a direct response to the growing threat of food insecurity and social unrest the government launched, also in 1986, a new economic strategy — dubbed "Đổi Mới" (or "renovation") in Vietnamese — which took a radically different approach to the structuring of social relations around property and production. These shifts were encapsulated in a 1988 directive, known as Resolution 10, which re-introduced markets for rice and other crops, replacing the quota system that had prevailed during the socialist period, as well as dismantling the collective farms and calling for the reallocation of land to individual households for private farming. Households would

then receive long-term land use rights for these parcels, with the duration of those rights ranging from 10 to 20 years (Pingali and Xuan 1992:707). These reforms were carried out with the stated purpose of reorganizing rice production in the Mekong Delta "along the line of intensive cultivation, multicropping" and "comprehensive business development" (Foreign Broadcast Information Service 1988), and had the effect of re-creating the social relations of production, dominated by commercially-oriented family farms, that had existed during the last years of the Thiệu regime (Gorman 2014).

At the same time, the Vietnamese government began once again to invest heavily in the construction of large-scale water infrastructure works, complementing the transformation of the social relations of production through land privatization with the intensified development of the productive forces. Much as under the South Vietnamese state, these infrastructure projects were designed to facilitate the intensive multi-cropping of high-yielding varieties, especially in the coastal zone. With the normalization of diplomatic relations with the US in 1995, Vietnam no longer found itself blocked from sources of international development finance and expertise; as a result, the late 1990s and early 2000s saw the proliferation of new infrastructure projects around the Mekong Delta. These include new works at Tiếp Nhựt (Sóc Trăng), South Mang Thit (Trà Vinh and Vĩnh Long), Ô Môn - Xà No (Cần Thơ, Hậu Giang, Kiên Giang), and Ba Lai (Bến Tre) (Benedikter 2014:104).

The most ambitious of these efforts was, however, the revival of a plan to transform the Quản Lộ-Phụng Hiệp plain into a zone of intensive rice production. While the

region had largely been brought into rice production by the 1980s, thanks in part to the establishment of the Minh Hải New Economic Zone and the resettlement of farmers from northern Vietnam, rice production in the region remained low. In the mid-1980s, however, the government of Vietnam began laying groundwork for a much more ambitious infrastructure scheme designed to permit intensified rice agriculture; in a 1985 report prepared for the Ministry of Irrigation, for example, the Quản Lộ-Phụng Hiệp plain was identified a "fertile region" with "great agricultural potential," which had, however, "not yet been developed" (Nguyễn Xuân Hùng and Ngô Kiến Trung 1985:37). Despite an abundance of cultivable land, the area remained afflicted by persistent saline intrusion, which caused the rice fields to lie cracked and fallow during the dry season; because farmers had to "rely on nature" and the onset of the rains to sow their single rice crop, agricultural livelihoods in the region remained precarious and outputs low (Nguyễn Xuân Hùng and Ngô Kiến Trung 1985:79).

Reviving plans drawn up by French engineers in the 1940s, the report recommended that efforts to dam the Mỹ Thạnh river be recommenced, along with the construction of secondary canals gates designed to block the inflow of salt water via secondary canals. While minor adjustments to these previous plans were made, both in the size of the project area and the sequence of infrastructure works to be constructed, the "development target remained the same, namely intensive rice production" (Mekong Secretariat 1988:2). These infrastructure works would, it was argued, permit the cultivation of two crops of rice per year on 341,000 hectares of agricultural land, allowing the province to increase its rice output from about 850,000 tons per year to 2.4 million tons (Mekong Secretariat 1988:59). Such an increase would serve to

advance the broader goal of increasing rice production in the Mekong Delta from about 7 million tons in 1985 to 10-12 million tons by the year 2000 (Mekong Secretariat 1988:37). In this way, the report concluded, the "Quản Lộ-Phụng Hiệp region would be able to make a remarkable contribution in adapting production to meet food demand" and, eventually, provide an exportable surplus (Nguyễn Xuân Hùng and Ngô Kiến Trung 1985:79).

Construction on the scheme began in the early 1990s, and between 1991 and 1997, seven major sluice gates were erected (at Mỹ Tú, Mỹ Phước, Cai Trau, Thạnh Tri, Cầu Sập, Vĩnh Mỹ, and Chủ Chí) (Ministry of Agriculture and Rural Development 1997). As a result of these initial works, the area of rice land under double-cropping in the project site increased five-fold, and an additional 40,000 hectares of new agricultural land were brought into production (Haskoning BV Consulting Engineers and Architects 1998). In 1999 the Vietnamese government received $102 million USD in concessional funding from the World Bank to build five more sluice gates, running from east to west along the Cà Mau-Bạc Liêu canal, (at Phước Long- Vĩnh Mỹ, Láng Trâm, Phó Sinh, Cà Mau and Bạch Ngưu) (see Figure 2.6). The projected impact of the project was to increase paddy production by 1.15 million tons per year by intensifying production on 129,000 hectares, allowing the cultivation of an additional crop in the dry season (World Bank 1999:33).

The combined effort of both the transformation in property relations and the construction of infrastructure to support intensified cultivation was to boost rice production dramatically: while Minh Hải province produced 643,000 tons of rice in

1985, in 2000, the region (by then split into two provinces: Bạc Liêu and Cà Mau) produced 1,744,000 tons (General Statistics Office of Vietnam 2004:144,1183). This trend was mirrored across the entire Mekong Delta, where production increased from 6.9 million tons to 16.7 million in the same 15-year period (General Statistics Office of Vietnam 2004:144, 1183). This tremendous growth in production, combined with the lifting of sanctions by the United States in 1995 and Vietnam's consequent re-integration into global markets, helped transform the country from an importer of rice in the late 1980s to one of the world's largest exporters by the late 1990s. As Vietnam was re-integrated into global circuits of commodity circulation, rice once again came to serve as a base for accumulation through the state-dominated rice export sector. Ryan (1999:10) estimates that the state-owned enterprise (VINAFood) that monopolized rice exports was able to extract $128 million USD in rents in 1995 alone, while Minot and Goletti (2000:70) estimate the figure at $150 million. Through such export monopolies, the state was able to capture and redirect a surplus towards the national budget. Meanwhile, the maximization of rice production and the control of the state over the distribution of the resulting surplus allowed for the maintenance of domestic food security as a means of ensuring social stability and state legitimacy.

While the Đổi Mới reforms were initially successful, in that they dramatically boosted rice export, the transformation of social relations — and specifically the renewed dominance of market-oriented, and even capitalistic, producers in the agricultural sector — introduced new sources of tension and contradiction, as farmers sought to move away from low-value rice production to high-value export crops. The resulting conflicts threatened, ultimately, to undermine the biophysical forces of rice production

in the Mekong Delta, which had been built up over more than a century of investments in water control infrastructure, as well as imperiling the accumulation strategy of the Vietnamese state and its basis in the agricultural sector.

In the coastal areas of the Mekong Delta, farmers had, by the late 1980s, begun converting their fields into brackish ponds and cultivating marine shrimp. As one contemporary report, compiled by the Secretariat of the Mekong River Commission, notes, while the "Quản Lộ/Phụng Hiệp area requires costly modifications to be used for intensive rice production, it is naturally fertile in terms of aquatic products — especially shrimp" (Mekong Secretariat 1988:3). By the 1990s, as the Quản Lộ-Phụng Hiệp project was being erected, this trend began to intensify, driven by farmers seeking out more profitable alternatives to rice. In 1999, a report by USAID noted that "some farmers prefer to and are already illegally pumping saline groundwater into some project areas in order to grow more lucrative shrimp, rather than rice," thus casting doubt on the project's fixation on rice production (USAID Office of Environment 1999:56). By the late 1990s, some farmers in western Bạc Liêu had embarked upon a campaign of sabotage against these new anti-salinity works, culminating in the destruction of the westernmost sluice at Láng Trâm in 2001 (Hoanh et al. 2003). On the afternoon of February 10, 2001, hundreds of farmers descended on Láng Trâm, attempting to open the metal doors of the sluice gate using farm tools. When those efforts failed, they instead destroyed an earthen embankment, allowing salt water to once again flow into the interior of the Quản Lộ-Phụng Hiệp plain (see Figure 2.7). With the destruction of the gates at Láng Trâm, the dream of transforming the Cà Mau peninsula from a marshy plain to a zone of intensive rice production,

which had animated a succession of state planners for nearly seven decades, were dashed, at least for the time being. Rice output in Bac Lieu dropped from 893,500 tons in 2000 to 614,400 tons in 2002. while the cropped area declined from 217,300 to 137,300 hectares (Ministry of Agriculture and Rural Development (Vietnam) 2017).

The irony of the Quản Lộ - Phụng Hiệp project is that the forces unleashed by the re-individuation of property and the re-introduction of markets first served to kickstart rapid accumulation in rice agriculture before steering it into different sectors, as farmers chased greater returns from high-value export commodities like shrimp. In the *Communist Manifesto,* Marx draws an analogy between bourgeois capitalism and the "sorcerer who is no longer able to control the powers of the nether world whom he has called up by his spells" (Marx 1906:21). In the early 2000s, the Vietnamese state found itself in much the same position, unable to control the social forces it had unleashed through reform, which had turned against the very forces of production in rice agriculture, as personified in the sluice gates themselves. With the social relations of production transformed by the privatization of property and integration into global markets, farmers in the Mekong Delta began to perceive the existing productive forces — as embodied in the new infrastructure projects transforming the land and waterscapes of Bạc Liêu towards the intensive production of rice — as constraining, rather than facilitating, accumulation. The act of destroying the gate at Láng Trâm was thus both one of disaccumulation, aimed undoing decades of state investment in the maximization of rice production, but also one of "creative destruction" (Schumpeter 1942), which served to unleash new productive capacity in shrimp aquaculture, albeit at the cost of the state accumulation strategy.

Conclusion

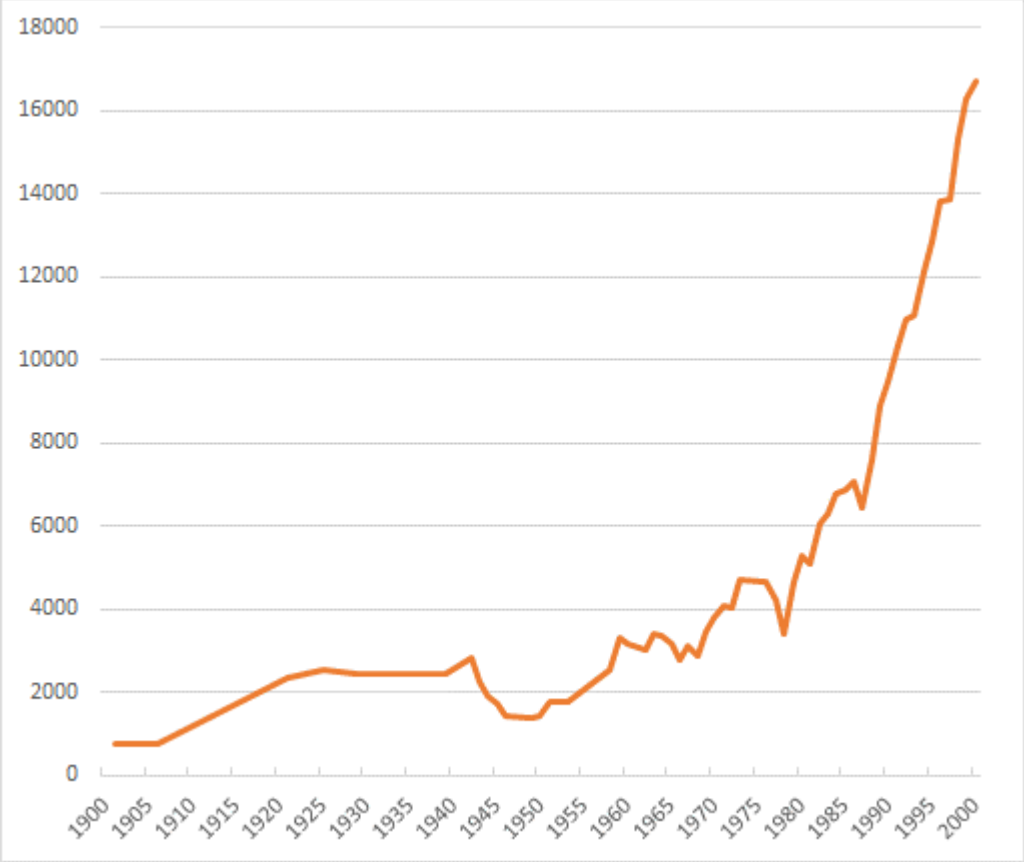
State-led efforts to spur accumulation through the maximization of agricultural output in staple grains remain a common feature in Asia and the Global South more broadly (Burmeister 2000, McMichael and Kim 1994, Muller 2015). Even in Vietnam, rice remains central to the accumulation, rural development, and climate change adaptation strategies of the state. On a broader scale, these attempts to wring the maximum possible production from the Mekong Delta through not just through the development of the productive forces but the restructuring of social relations resonate with much of mainstream development thinking. Much of the literature on the campaign — by states, NGOs, and private industry — to foster a "new" Green Revolution in Africa and create the basis for accumulation in agriculture hinges on the perceived "yield gap" in African agriculture (Godfray et al. 2010). If the current level of output is seen to be falling short of its potential, this gap legitimizes both new investments in the development of the productive forces (through large-scale infrastructure projects as well as the dissemination of new agricultural technologies) as well as dramatic interventions into the social relations of production, as through privatization, marketization, and land titling. It is only in this way, so the argument goes, that so-called "dead capital" can be brought to life and the maximum possible outcomes wrung from the existing productive forces (De Soto 2000).

The lesson offered by the experience of the Mekong Delta, however, is that attempts to unleash such productive forces — the "animal spirits" of capitalism, to use the vivid

phrasing of Keynes (1954) — sometimes bring unintended and unforeseen consequences. In the Mekong Delta, state-led attempts to restructure the social relations and biophysical forces of production have set in motion countervailing tendencies — both environmental and social — that have undermined state accumulation projects. One of the essential tasks facing any developmental state (or. more broadly any state that seeks to achieve political goals through the expansion of productive capacity) is to actively manage the development of the productive forces and the restructuring of social relations. Governing — and realizing political goals — through accumulation strategies is, however, a process fraught with risk, as efforts to foster accumulation can unleash unexpected consequences and countervailing tendencies, from environmental degradation to everyday practices of profit-seeking producers, that upend the designs of state planners.

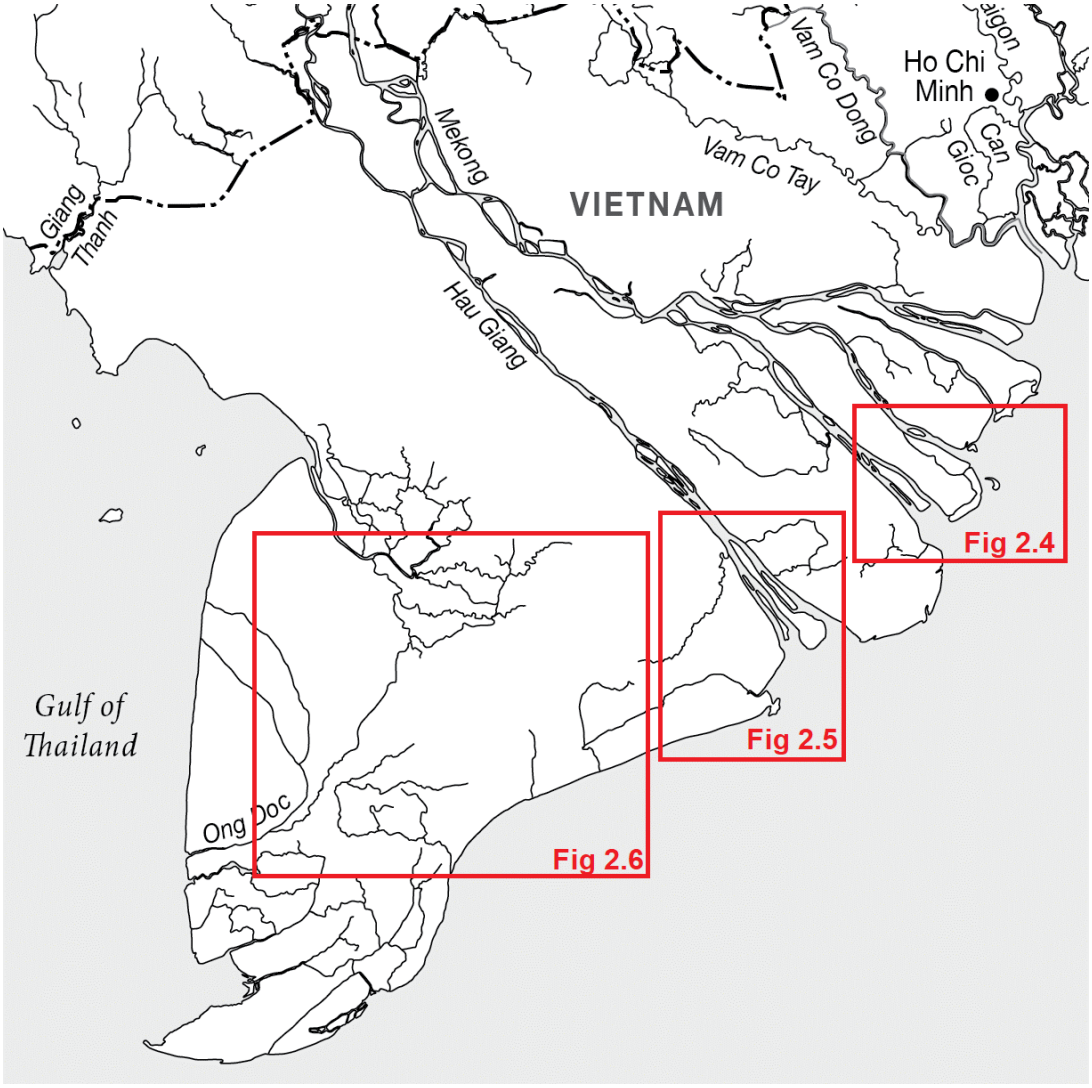
FIGURES

Figure 2.1: Production of Rice in the Mekong Delta (in Tons), 1900-2000



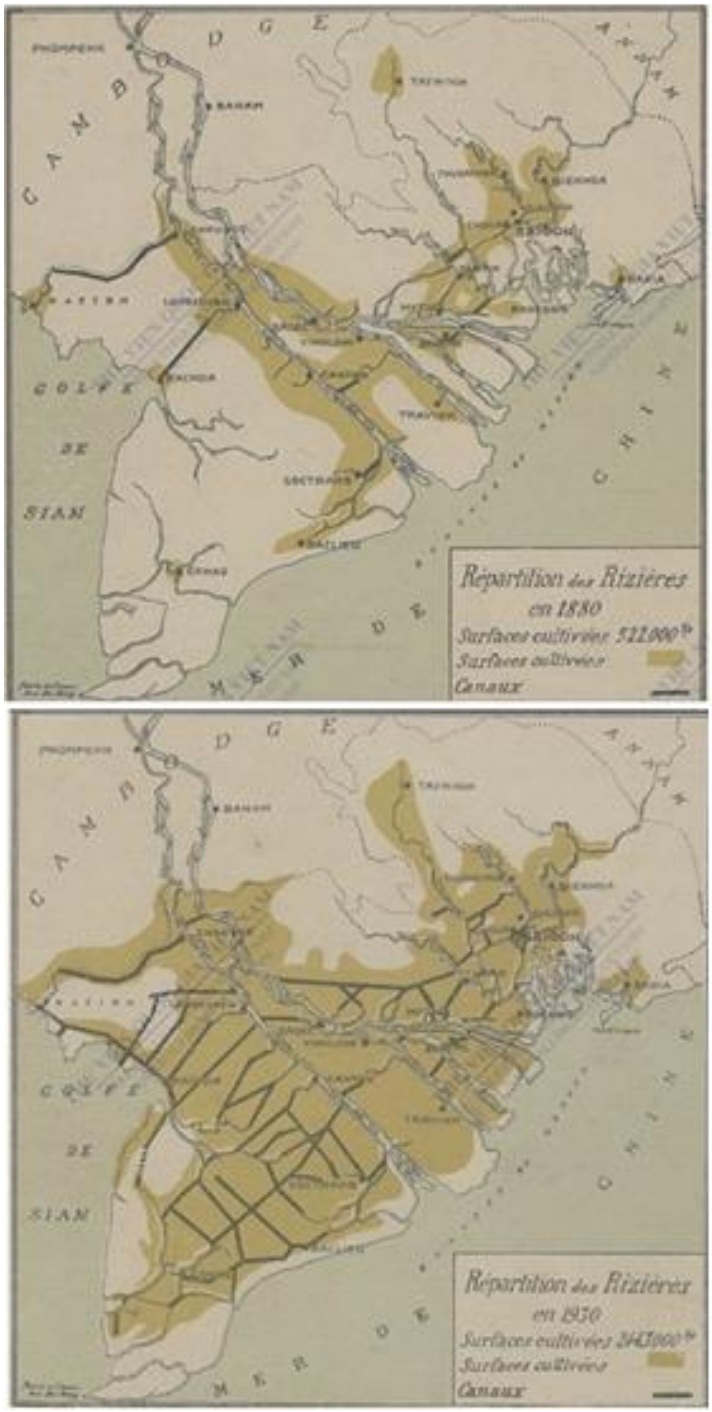
Sources: Pouyanne (1908:103)
General Statistics Office (2004:Vol 1: 56, 64-65, 791-95; Vol 2: 142-44, 1179-83)

Figure 2.2: Case Study Sites



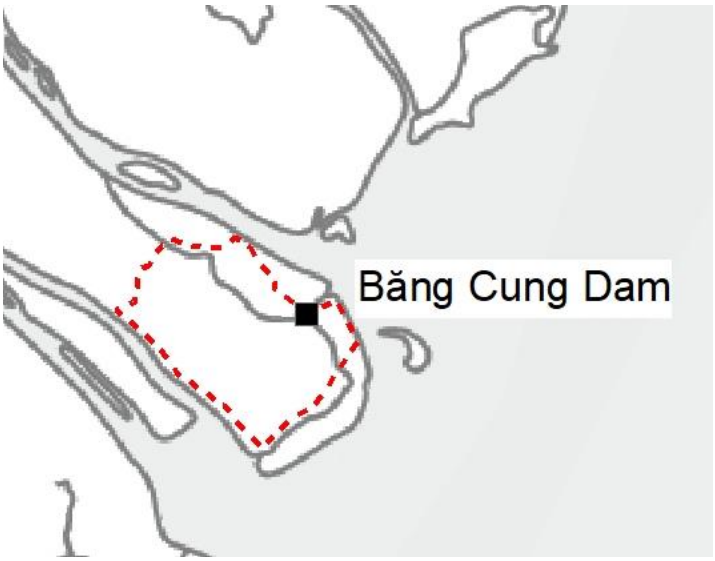
Source: Adapted from CartoGIS Services (2018)

Figure 2.3: Extent of rice cultivation in the Mekong Delta, 1880-1930



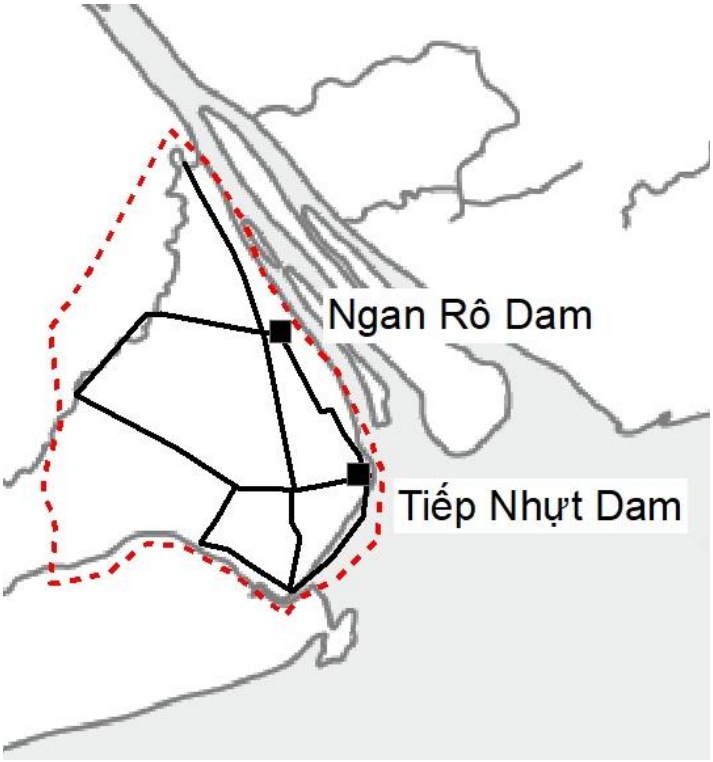
Source: Inspection Générale des Travaux, Dragages De Cochinchine (1930)

Figure 2.4: Map of Băng Cung Project



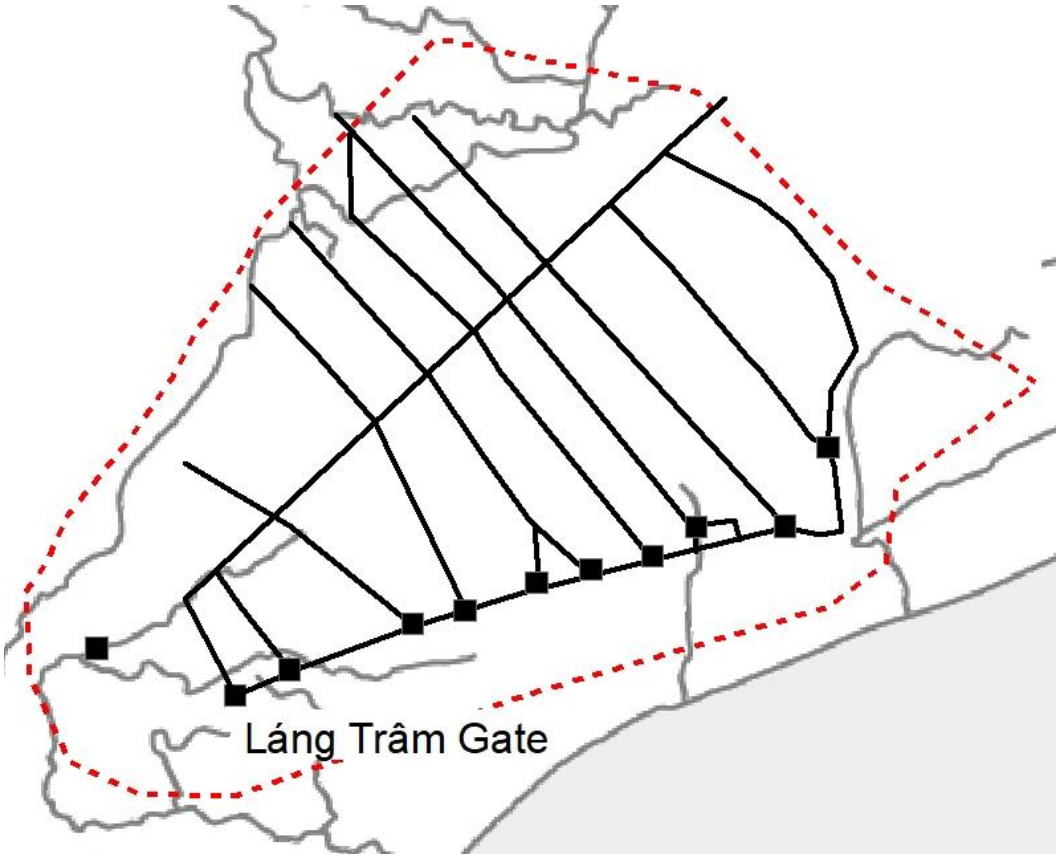
Source: Adapted from CartoGIS Services (2018)

Figure 2.5: Map of Tiếp Nhựt Project



Red dashes indicate extent of project area, black lines irrigation canals
Source: Adapted from CartoGIS Services (2018)

Figure 2.6: Map of Quản Lộ-Phụng Hiệp Project



Source: Adapted from CartoGIS Services (2018)

Figure 2.7: Destruction of the Gate at Láng Trâm

Source: Việt Hùng (2001)

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CHAPTER 3

DIVERGENT ACCUMULATION PATHWAYS IN BẠC LIÊU

In the wake of the unrest that erupted around the Láng Trâm gate in 2001, the Vietnamese government scaled back its efforts to expand the zone of salinity protection in Bạc Liêu and deactivated some of the existing sluice gates (Hoanh et al. 2003). The result was a sharp divergence in environmental conditions: where there was once a region dominated by the mix of saline and fresh water, there are now sharply delineated zones of freshwater and saline influence. By the mid-2000s, the western half of the province was comprised almost entirely of saltwater shrimp ponds, while the eastern half — where the sluices remain operational — was dominated by intensive rice agriculture. This chapter draws upon longitudinal survey data to trace divergent patterns of accumulation and dispossession in two villages in Bạc Liêu, one located within this newly salinized zone, in which shrimp farming has become dominant since 2001, and one which remains protected by the sluices and reliant on rice agriculture as a primary form of livelihood.

Rice production has long been the central economic activity in the Mekong Delta (see Chapter 2). For this reason, much of the existing work on accumulation in the agricultural sector — in Vietnam more broadly and in the Mekong Delta in particular — has focused on agriculture and rice production (Akram-Lodhi 2004, Akram-Lodhi 2005, Prota and Beresford 2012, Trần 2017). From this body of work arises a cohesive narrative: in the aftermath of market reforms in the late 1980s, rice agriculture was

reconstituted in the early 1990s on the basis of private land ownership and market-oriented production, albeit on a relatively small scale. The redistribution of land has been cited as a key driver of poverty alleviation in rural Vietnam (Ravallion and van de Walle 2008, Van Luong and Unger 1998), but since the 1990s, the rice sector has been steadily transformed through a process of consolidation and concentration. As Akram-Lodhi puts it, "It appears that processes of peasant class differentiation are underway, with the apparent emergence of a stratum of rich peasants with relatively larger landholdings," while below this group sit the "rural landless, whose numbers are swelling as the agrarian transition proceeds" (2005:107). Since the base of agricultural land has not increased significantly in recent years, this process of accumulation through land acquisition has been accompanied by the rising incidence of landlessness in rural Vietnam and by an increasingly unequal distribution of agricultural land (Akram-Lodhi 2010).

While much existing work on processes of accumulation and dispossession in agriculture in the Vietnamese context has focused on the rice sector, the agricultural landscape in Vietnam has, since the 1990s, been transformed by the emergence of high-value production, especially in aquaculture. Over the past two decades, the production of farmed shrimp (including *Penaeus monodon*, or giant tiger prawn, as well as *Litopenaeus vannamei*, commonly known as whiteleg shrimp) in Vietnam has exploded, from 55,300 tons in 1995 to 634,800 in 2015 (General Statistics Office of Vietnam 2017), and the country now ranks among the largest suppliers of shrimp for the global market. The emergence of the aquaculture sector in the Mekong Delta thus serves to open up different pathways for accumulation than those which exist in rice

agriculture; with potentially significant implications for social dynamics in rural areas.

The broader literature on the shift from staple grains to high-value commodity production offers, however, a range of divergent perspectives on how such a shift impacts patterns of accumulation and dispossession in rural areas (see Chapter 1). While some argue that the shift from staple grains to high-value export commodities fosters increasing dispossession among smallholders (Ortiz and Aparicio 2007, Raikes and Gibbon 2000, Selwyn 2009, Wise 2009), others contend that such a shift opens up new pathways to accumulation and poverty alleviation among small-scale farmers (Langan 2011, Weinberger and Lumpkin 2007, World Bank 2007). These debates carry over into the aquaculture sector as well. In their analysis of shrimp farming in Bangladesh, for example, authors such as Paprocki and Cons (2014) and Adnan (2013) argue that the shift from rice agriculture to shrimp farming has intensified dispossesion among smallholders and the rural poor, as large operators have come to dominate the sector. While others have observed similar dynamics within the Vietnamese shrimp-farming sector (Hong Anh Vu 2011), much of the literature on shrimp aquaculture in Southeast Asia has instead pointed out the continued importance of small-scale producers within the sector, suggesting that pathways of accumulation exist that do not necessitate the consolidation of production in the hands of large corporate farms and the ensuing dispossession of smaller operators (Hall 2011). Vandergeest et al (1999:584) find, for example, that the Thai shrimp aquaculture sector is characterized by the "continued predominance of small and medium-sized" producers, in contrast to other contexts, such as Bangladesh and Ecuador, where larger operators predominate. The variation in outcomes is thus attributable, they argue, not

to any intrinsic quality or tendency within shrimp production itself, but to pre-existing differences in "agrarian relations, government policies, and the physical landscape," with differential "access to capital and land" being a major determinant of the form and scale taken by shrimp-farming operations.

Study Sites and Research Methods

This paper seeks to assess the differences in processes of accumulation and dispossession as they play out in both the production of staple grains and that of high-value export commodities. To do so, it draws on survey data collected in two villages in Bạc Liêu province at two points in time — 2001 and 2014 — to trace the patterns, drivers, and implications of accumulation and dispossession in two different forms of production: rice agriculture and shrimp aquaculture.

These two villages, which I pseudonymously dub Hòa Bình and Phong Thạnh, were chosen because they represent divergent water management strategies and hydrological conditions. In 2001, both Hòa Bình and Phong Thạnh (see Figure 3.1) were located within the confines of the Quản Lộ - Phụng Hiệp project area, and residents of both villages engaged in rice agriculture as their predominant form of livelihood. In 2001, 91% of households in Hòa Bình grew rice, as did 85% of households in Phong Thạnh, according to survey data collected by researchers from the International Rice Research Institute (Tran Thi Ut 2004). However, environmental conditions and cropping patterns diverged dramatically after the destruction of the Láng Trâm gate in 2001 and the deactivation of the westernmost gates of the Quản Lộ

- Phụng Hiệp project (Hoanh et al. 2003). By the mid-2000s, the western half of the province (including Phong Thạnh village) was comprised almost entirely of saltwater shrimp ponds, while the eastern half (including Hòa Bình) was dominated by intensive rice agriculture. This divergence in environmental conditions and land-use patterns is evident in Figure 3.1, in which there is a clearly visible delineation between intensively cultivated rice fields (which appear in the satellite imagery as areas of bright green) and shrimp aquaculture ponds (which appear blue in color).

In recent years, the Vietnamese government has invested heavily in infrastructure to seal off these different hydrological regions from one another, and to protect intensive rice agriculture in Hòa Bình and surrounding communities. Since 2009, the national government has invested 691 billion VND (or approximately $35 million) in a system of 66 sluice gates, designed to seal off irrigation canals and block the inflow of salt water into the rice-growing areas of Bạc Liêu (Ministry of Agriculture and Rural Development 2017). These investments have been driven both by growing fears around climate change and sea-level rise, a potent threat to intensive rice agriculture in coastal areas like Bạc Liêu, as well as by renewed concerns around national food security, especially in the wake of the 2007-2008 global food price crisis (Gorman Forthcoming).

These infrastructure investments have gone hand-in-hand with the strengthening of land-use planning and of restrictions on land use, meant to slow the conversion of rice-growing land to other uses, such as shrimp aquaculture. In 2010, 77,610 hectares, or about one-third of the province's total area, was under intensive rice cultivation;

according to the land-use plan developed by the province and approved by the national government in 2012, this area is to be expanded to 83,000 hectares by the year 2020 (Government of Vietnam 2013). The land-use plan also mandates that this land be kept in intensive rice production (i.e. the production of two or more crops per year), and places legal restriction on the conversion of rice-growing land, not just to aquaculture or residential use, but to the cultivation of alternative crops such as fruits and vegetables.

These interventions, in the form of new infrastructure projects, restrictions on land conversion, and the use of land-use planning to mandate the intensive cultivation of rice have served their intended purpose of boosting rice production in the Mekong Delta as a whole and in Bạc Liêu in particular, counteracting the downward trend of the late 1990s and early 2000s. In 2004, the entire province of Bạc Liêu produced 614,000 tons of rice, but by 2013 that amount had topped 1 million tons (General Statistics Office of Vietnam 2017). This trend towards increased production is especially strong in Hòa Bình village. There, most households engaged in the single-cropping of rice before 1998, when the nearby sluice gate was constructed as part of the Quản Lộ - Phụng Hiệp project. At the time of the 2001 survey, most rice-growing households grew two crops, and in the mid-2000s, they converted to triple cropping. Even as total rice output increased, however, the percentage of households engaged in rice agriculture fell from 91% in 2001 to 81% to the time of the second survey in 2014. This decline indicates that rice production was being carried out by a smaller base of larger operators. In Phong Thạnh, by comparison, 77% of households were engaged in shrimp aquaculture in 2014, and none in rice agriculture.

The survey data for this study were conducted in two waves: one in 2001 and one in 2014. The 2001 data were collected by Trần Thị Út and researchers from the International Rice Research Institute (Tran Thi Ut 2004), while the 2014 data were collected by the author and a team of research assistants from the Mekong Delta Development Research Institute at Cần Thơ University. The 2014 resurvey replicated the sampling approach of the original 2001 survey, which consisted of a full census of both villages. In 2001, 162 households in Hòa Bình village was surveyed, and in 2014, 223 were surveyed. In Phong Thạnh, 213 households were surveyed in 2001 and 324 in 2014.[1] The overall response rate to these surveys was high, reflecting more than 90% of the reported population in these villages. In Phong Thạnh, the village head reported that there were 335 resident households, while in Hòa Bình the number of households surveyed actually exceed the official estimate of 222 households.

From these data, a subset of households were matched between the 2001 and 2014 data, based on the name and age of the household head. In total, 258 households were matched between the samples, including 150 households in Phong Thạnh and 108 households in Hòa Bình. In total, 68.9% of the originally surveyed households could be matched to a household surveyed in 2014, based on the name and age of the

[1] This paper follows Schmink (1984) in defining the household as a "co-resident groups of persons, who share most aspects of consumption, drawing on and allocating a common pool of resources (including labor) to ensure their material reproduction" (89). The use of the household as both the unit of data collection and empirical analysis was informed not just by practical concerns (the previous iteration of the survey data was collected at the household level, and the household, or *hộ*, is also a unit of political administration in Vietnam) but by the continuing position of households as the primary unit of production and social organization in rural Vietnam. It is, however, important to note at the outset that are limitations and risks to such an approach. One, as Schmink points out, is the "danger reifying the household unit and ignoring other organizational forms" (1984:94); the other is the risk of ignoring gendered power dynamics at the intrahousehold level (Deere 1995).

household head. In several cases, the household head had since deceased, but the husband or wife of the former head had since taken over as household head. Only 47.2% of the households surveyed in 2014 could, however, be matched back to a household present in the 2001 sample. This lower rate is due to the proliferation of new households in both villages, which occurs through in-migration and through demographically-driven processes of household division, as adult children marry and establish households of their own.

The 2014 survey questionnaire largely replicated the one used in 2001, allowing for a comparison of household socio-economic conditions over time. These questionnaires also included sections on household demography (ages, occupations, and residential status of household members); on the use and ownership of productive assets like land; on cultivation activities, including income and production costs from agriculture and aquaculture; and on non-agricultural income sources such as wage labor and remittances. The survey was administered by research assistants, and data entry was performed electronically, via the tablet-based OpenDataKit software package. These data were supplemented with semi-structured interviews and focus groups with members of the two villages. These interviews and focus groups were conducted before, during, and after the surveys and allow for more a complex picture of accumulation pathways and mechanisms to be assembled; several case studies drawn from these interviews are presented below, and in each case the identities of respondents are concealed by use of pseudonyms.

Patterns of Land Distribution in Hòa Bình and Phong Thạnh

This analysis starts from the premise that land is the "principal agrarian asset" and thus the primary, but not sole, basis for production and accumulation in agriculture and aquaculture (Akram-Lodhi 2004:771). While land is the *sine qua non* of primary production, the centrality of land to accumulation varies with the biophysical form that production takes in a particular crop or sector, as well as the political-economic context in which that production is embedded. This section analyzes the changing distribution of land in both villages, as well as the potential mechanisms which have driven these changes.

The 2014 survey gathered detailed information on all parcels for which households possessed land use rights, regardless of the geographic location of these parcels or their cultivation status. [2] In total, the 2014 survey includes data on 613 parcels for which households in Phong Thạnh possess land-use rights, and 603 parcels for which housheolds in Hòa Bình possess land-use rights. After dropping parcels located outside the village, as well as parcels that were cultivated, but did not belong to belong to surveyed households (so as to avoid double-counting), the sample from Phong Thạnh included a total of 503 parcels in the village, with a combined area of 358.6 hectares, while the area of the entire village, as reported by village officials, was 522 hectares. In Hòa Bình, data were recorded for a total of 486 parcels in the village, with

[2] Technically, there is no private land ownership in Vietnam. Instead, households possess long-term tenure rights, secured with an official title (called *sổ đỏ* in Vietnamese). These certificates were first issued in 1993, and were initially valid for a term of 20 years for paddy land and fully transferable (Marsh, MacAulay and Hung 2006). Subsequent revisions to the Land Law in 1998, 2001, and 2003 creating a liberalized market for the sale, transfer, lease, exchange, or mortgage of agricultural land. In 2013, the term of those certificates was extended another 30 years (Hirsch, Mellac and Scurrah 2016)

a cumulative area of 264.9 hectares, while the reported area for the entire village was 402 hectares.[3]

Moving beyond these scope of the village, and taking into account all parcels for which surveyed households possess land-use rights, regardless of geographic location (inside or outside the villages themselves), we can see some clear differences in the distribution of land between the two contexts. The relative equity of this distribution can be used by calculating Gini coefficient for the distribution of land in each village. Gini coefficients assign numerical scores (ranging from 0 to 1) to assess how equally an asset is distributed among a population, with higher scores indicating more inequality.[4] Among households in Phong Thạnh, the frequency of functional landlessness (that is, of households with 500 square meters or less of land) was 22.7%, while the Gini index for the distribution of land was 0.55. In Hòa Bình, on the other hand, the distribution of land appears more egalitarian. There, the rate of functional landlessness was 8.5% in 2014 and the Gini index for the distribution of land was 0.46.

There is, however, an alternative means of assessing the distribution of land, which is to look not at ownership (or, more accurately, the possession of land-use rights) but at

[3] In Hòa Bình, survey respondents reported 235.1 hectares of agricultural land under cultivation in 2001. The discrepancy between parcels cultivated by villagers and the reported areas of the villages themselves can be explained by several factors. Total areas of the villages, for example, include land occupied by canals, roads, schools and government buildings; other possible contributions to the gap between the survey parcels and the total area of the villages include the possibility of missed households, under-reporting of parcels, and the existence of parcels that are owned or cultivated by non-residents (including those from neighboring villages and from farther afield). By nature of the survey design, non-resident households that own or cultivate land in the village were not included in the sample.

[4] Here and below, Gini coefficients are calculated using the INEQDECO model for Stata, documentation for which is available in Jenkins (2015).

the actual patterns of cultivation. In Phong Thạnh, 20 households in the 2014 survey reported that they were cultivating land (typically shrimp ponds) that did not belong to them, and which had been rented, borrowed, or acquired from another household as collateral on a mortgage.[5] In total, 15 hectares of land had been accessed in such a manner. In Hòa Bình, an even larger area of land, 39.5 hectares, had changed hands in such transactions, and 42 households were cultivating land that they had rented, borrowed, or mortgaged-in. Using total land under cultivation by household as the unit of measurement (rather than land ownership), Gini index for land under cultivation in Phong Thạnh remains basically unchanged, declining slightly from 0.55 to 0.53. In Hòa Bình, however, the Gini index for the distribution of land *increases* from 0.46 to 0.53, indicating an overall increase in the degree of distributional inequality.

To understand why the distribution of land under cultivation by households is more unequal than the distribution of land-use rights in the rice-growing village, Hòa Bình, it is necessary to examine the characteristics of households renting (or mortgaging) in land in 2014, as well as those renting and mortgaging-out land, by village (see Table 3.1). In Phong Thạnh village, the 16 households engaged in the out-renting or mortgaging of land had higher incomes, a larger overall area under cultivation, and older and more highly-educated heads than the 20 households who accessed land for cultivation through rental markets. In Hòa Bình village, by contrast, the 42 households accessing land for cultivation through rental and mortgage markets had higher

[5] The term mortgage (*cầm* in Vietnamese) here refers to the practice of transferring land to another person as a form of collateral on a loan. These mortgages are set for a fixed period, usually three years, after which the loan must be repaid or the land is kept by the lender.

incomes, larger areas under cultivation, and had household heads who were younger and better-educated compared to the 35 households engaged in the renting or mortgaging-out of land. This breakdown indicates that such temporary transfers, which fall short of the actual sale of land-use certificates, play different roles in each context. In Phong Thạnh, they are a means by which poorer households access and cultivate land owned by wealthier households, without the latter relinquishing control. In Hòa Bình, on the other hand, such transfers serve as a means by which wealthier households consolidate control over assets and scale up the size of their farming operations; in short, they serve as a means of accumulation.

The role of rental markets in Hòa Bình can be explained partially through the relatively high purchase price of land in the rice-growing village; respondents in Hòa Bình reported that a hectare of agriculture land in the village could be purchased for roughly 700 million VND (or approximately $35,000).[6] By contrast, a hectare of shrimp-farming land in Phong Thạnh could be purchased for between 200 and 300 million VND (or between $10,000 and $15,000).[7] For this reason, many households looking to scale up rice cultivation in Hòa Bình looked to rental markets as a means of accumulating land. The story of Vỹ, a female household head from Hòa Bình village is illustrative of this trend.[8] When surveyed in 2001, Vỹ (then 41), was farming 1.69 hectares of rice land, but by 2014, she and her husband had increased the area under rice cultivation to 3.09 hectares. They had done this, however, not by purchasing land,

[6] Interviews from 6/9 & 6/23.
[7] Interviews from 5/21 & 5/28.
[8] For this and other cases, pseudonyms are used to protect the identities of survey respondents.

but by renting six dispersed parcels throughout the village. Though the rental fees ate into their profits from rice, Vỹ explained that she and her husband had little choice, since land prices had increased dramatically in recent years.

An analysis of the land parcel data from the 2014 survey sheds light on the role of such transactions in land accumulation. The survey questionnaire included questions on how and when each parcel controlled by each household was acquired, allowing for the examination of land accumulation practices by village. Breaking down each village into quintiles by land under cultivation — not ownership — in 2014 demonstrates the relatively important role of land rentals and mortgages to overall accumulation in Hòa Bình (see Figure 3.2). In Phong Thạnh, only 14% of the area controlled by the upper-most quintile of land users had been acquired through land markets (as through sales, rentals, and mortgages); in comparison, 32% of the land area controlled by the uppermost quintile in Hòa Bình had been acquired through such markets.[9]

Given the important role played by such transactions in Hòa Bình village, as well as the relatively large size and frequency of these transactions, compared to Phong Thạnh, the analysis below uses land under cultivation, rather than land ownership, as the primary measure of land distribution and accumulation. While such an approach bears the risk of mischaracterizing some transactions (such as those which transpire when relatively poor households rent land from wealthier households) as

[9] In this way, this upper class of farmers in Hoa Binh, many of whom are engaged in cultivation on rented land, are reminiscent of the "capitalist tenant farmers" associated by Wood (1998) with the rise of agrarian capitalism in early modern England.

accumulation, ignoring the redistribution of cultivated land that occurs through such transactions, especially in the case of Hòa Bình village, carries with it a greater risk of underestimating the true degree of accumulation in agriculture and aquaculture.

Household-Level Determinants of Land Loss and Accumulation

This section moves beyond an analysis of the 2014 survey data in isolation in order to draw conclusions about the household-level variables that predict land accumulation (or disaccumulation) between 2001 and 2014. It does so by drawing upon the subset of 258 households that can be connected between the two waves of the survey, and constructing a linear regression model that uses household conditions in 2001 to predict total land under cultivation in 2014.

The first step of this analysis is to construct a dependent variable (*Land in 2014*) equal to land used by each household in 2014, including land rented or mortgaged-in but not land rented or mortgaged out to other households (and thus not under cultivation by the household in question).[10] I then generate four predictive (independent) variables, the first of which is *Land in 2001,* for the size of landholdings in 2001. Size of land-holding in 2001 is expected to have a positive relationship with landholding in 2014. This expectation that stems from the land accumulation in Vietnam and elsewhere, which holds that tendencies to accumulate land are greatest among those with larger initial holdings. As Ngo Vinh Long argues, those farmers who had "resources with

[10] This follows the earlier argument about restricting the analysis to land under *cultivation* by each household, rather than land ownership. Both the 2001 and the 2014 land variables are thus composed of land under cultivation by each household at that time.

which to respond to favorable market conditions" were able to expand and accumulate (Long 1993:184); meanwhile, those with small holdings reportedly encountered difficulties in achieving financial viability and in competing with their larger counterparts, leading in many cases to mounting debts and, eventually, the sale of land-holdings to more successful counterparts (Le Coq and Trebuil 2005:539).

The second independent variable is *Age of HH Head in 2001*, which measures the age of household head in the 2001 survey, and which is expected to have a negative relationship with total landholding in 2014. This expectation is in keeping with the literature on demographic drivers of differentiation among agrarian households (Chayanov 1986, Deere and De Janvry 1981). As household heads age, it is expected that they will begin to subdivide holdings among their offspring, and thus higher age will be associated with smaller overall holdings. The third independent variable included is *Ed. of HH Head in 2001*, which captures the education of household head in the 2001 survey as measured in years. This variable is included in the expectation that households with more highly-educated heads would have been better able to navigate changing economic conditions, and thus be more likely than their peers to have accumulated land between 2001 and 2014 (Huffman 2001, Walle 2003). The fourth and final independent variable included is *Ag. Wage Laborers in 2001*, representing the number of household members engaged in agricultural wage labor (such as for harvesting, weeding, and transplanting of rice) as a primary or secondary occupation in 2001. This variable is expected to have a negative relationship with total land in 2014. This expectation is based on the reported decline in agricultural wage labor opportunities that has accompanied the mechanization of rice agriculture in

communities like Hòa Bình (Le Coq and Trebuil 2005); moreover, since, as Joffre and Schmitt (2010:1863) note, “shrimp farming is less labor intensive than rice farming,” this transition may adversely impact those farmers who previously engaged in agricultural wage labor in Phong Thạnh.

The results of the regression model (see Table 3.2) show that all independent variables are significant at the level of $p < 0.05$, except for *Age of HH Head in 2001*. In total, the model explains 41.7% of the variance in 2014 land under cultivation across both villages. Recoding the variable for age of household head in 2001 as a simple binary, entitled *Young Head*, in which households whose heads were 40 years old or younger in 2001 are coded as “1” and all others as “0,” yields a new version of the model in which all independent variables are significant at the 0.05 level and predictive power slightly improved; the new model now explains 42.1% of the variance in 2014 landholdings. The relationships between these independent variables and the dependent variable of *Land in 2014* are all as predicted. Having more land in 2001 has an apparent positive effect on 2014 landholdings, as does having a more highly-educated or younger household head; on the other hand, the more agricultural laborers that a household had in 2001, the less land it is predicted to cultivate in 2014.

What these findings indicate, however, is that having a large area of land under cultivation in 2001 did not — in itself — assure a household of gaining land in the interim. The coefficient for the 2001 land variable is positive, indicating the more land a household had under cultivation in 2001, the more land it is expected to cultivate in 2014. Land under cultivation, is however, shaped as well by a by a combination of

other variables, including education (as each year of education by the household head adds 0.11 hectares to the predicted total for 2014), age of household head (with households led by younger heads predicted to cultivate 0.37 hectares more than their counterparts), and reliance on agricultural wage labor (with each household member engaged in waged farm work decreasing the predicted total by 0.17 hectares).

In Hòa Bình village, the case of a rice farmer named Bé and his household is illustrative of these gains that younger and well-educated households heads have attained. At the time of the 2001 survey, Bé (then 34 years old) and his family were cultivating 2.15 hectares of rice land, but by the 2014 survey, that total had increased to 5.30 hectares. According to Bé, this increase was driven primarily by the purchase of land; in 2004, he purchased 1.81 hectares of rice growing land, and in 2009, an additional 0.78 hectares. Due to this success in acquiring land, Bé's household ranked among the top ten households in Hòa Bình, in terms of landholdings, and the household's cumulative income in 2014 topped 138 million VND (or approximately $7,000). Bé was also among the most highly-educated household heads in the village, having attained 12 years of education, and by the time of the 2014 survey, he was serving as the village chief.

To determine whether or not the relationship between land under cultivation in 2001 and land under cultivation in 2014 varies significantly between the two villages, I constructed a third model which adds a dummy variable for all those households in the rice-growing village, Hòa Bình, as well as an interaction effect between that dummy variable and total land in 2001. Running the model with these two new variables adds

to its predictive power (with the revised model now predicting 44.3% of the variance in land under cultivation in 2014), but neither of the new variables is significant at the 0.05 level, and thus the relationship between land under cultivation in 2001 and 2014 cannot be said to vary significantly between the two villages.

While these linear regression models allow for an estimation of the effect of certain household conditions in 2001 on total land under cultivation in 2014, they do not allow us to make direct inferences as to the propensity of different households to gain or lose cultivated land in the period between 2001 and 2014. To determine whether and to what degree different conditions in 2001 made a household more likely to lose or gain land, I first construct a variable entitled *Gained/Lost Land*; those households for which land under cultivation decreased by 0.5 hectare or more are coded "1" on this variable, those who gained 0.5 hectare or more are coded "3" on this variable, and all other households, for whom land under cultivation stayed relatively constant, are coded "2." In total, 79 households (or 31% of the sample) lost a hectare or more, while 54 (21%) gained 0.5 hectare or more.

I then construct a multinomial logistic regression model to assess the role of household conditions in 2001 (using the same set of variables as the linear regression model above) in determining whether a household lost land, gained land, or saw its area under cultivation remain more or less unchanged. In the model (see Table 3.3), the base or reference category is set in the model as the unchanged outcome. Looking first at the results for *Outcome 1,* or the loss of 0.5 hectare or more, only two independent variables are significant predictors at the 0.05 level. These are *Total Land in 2001* and

Age of Household Head in 2001. Interpreting the relative risk ratio for the 2001 land variable, we can say that each hectare of land held by a household in 2001 made it three times more likely to lose land by 2014. Thus, there is a clear tendency for households with large holdings to lose, rather than to gain, land over time (or at least to temporarily transfer this land for cultivation by other households); this demonstrates that land itself is neither a necessary nor sufficient basis for accumulation. Those households with young heads, however, were 57% *less* likely to have lost a half-hectare or more. Looking at the results for *Outcome 3*, or the gain of 0.5 hectare or more, there are two significant independent variables: *Ed. of HH Head in 2001* and *Ag. Wage Laborers in 2001*. For each year of education attained by the household head as of 2001, that household was 23% more likely to gain land. For each agricultural wage laborer in a household in 2001, however, that household was 42% *less* likely to gain a half-hectare or more by 2014.

In some instances, the loss of land under cultivation was accompanied by the deterioration of economic and social status. One of the households interviewed in Hòa Bình, comprised of an older couple in their land 60s, named Kỳ and Tám, exemplifies this downward trend. While they had, at the time of the 2001 survey, cultivated 1.56 hectares of rice land, by the 2014 survey they had sold 0.65 hectares to pay for living expenses; meanwhile, their two adult children had migrated to Hồ Chí Minh City in search of work. For other households, however, the apparent loss of land belies a more complicated process of intergenerational transfer.

Another household in Hòa Bình, headed by a 65 year-old man named Tố, exemplifies

this trend. In 2001, Tố's household was cultivating 5.79 hectares of rice land, making it among the largest operators in the village. By 2014, the area under cultivation by Tố's household had declined to 4.48 hectares, marking a significant decline, but still ranking him among the larger farmers. Tố had, however, simply transferred some of his holdings to his sons, who had, in the meantime, established their own households. By 2014, the households headed by his four sons, ranging in age from 32 to 40, were cultivating 10.95 hectares of rice-growing land altogether, having used their inheritance as a base for accumulation that they had supplemented, in the intervening years, with land purchases. Thus, while Tố's story illustrates how and why a household with a large area under cultivation in 2001 might have been tended to lose, rather than gain, land over time, such as an apparent "loss" might have actually worked through inter-generational transfers that serve to cement, rather than undermine, higher economic status.[11]

Land Accumulation and the Nature of Agriculture and Aquaculture

As shown above, the distribution of cultivated land is becoming more unequal in both contexts. This trend has, however, been accompanied in Hòa Bình by a pronounced increase in income inequality, while the same has not occurred in Phong Thạnh. In 2001, the Gini index for the distribution of income by household stood at 0.497 in Phong Thạnh and 0.442 in Hòa Bình. By 2014, the Gini index for income distribution

[11] For the role of intergenerational transfers in land accumulation, see Ainembabazi and Angelsen (2016), Behrman (1997), Fuwa (1999), and Quisumbing (1994).

was 0.505 in Phong Thạnh (a slight increase above 2001), while in Hòa Bình the Gini index for income was 0.534 (see Figure 3.3). Hence, while the rise of shrimp aquaculture in Phong Thạnh has been accompanied by a modest increase in income inequality, the intensification of rice production in Hòa Bình has seen a much larger uptick in inequality.

Clearly, the relationship between land and income is not the same between the two villages, for reasons which have to do, in part, with the differing nature of rice agriculture and shrimp aquaculture. One means of assessing the relationship between landholdings and income is to obtain correlation coefficients for two variables: income from primary production (such as from agriculture, aquaculture, horticulture, and animal husbandry) and land cultivated by the household. Using the 2014 survey data from Phong Thạnh, we obtain a correlation coefficient of 0.382. In Hòa Bình, however, the correlation coefficient for agricultural income and land under cultivation is much higher (0.717), indicating a strong positive relationship between the two variables. This simple test demonstrates that the relationship between land under cultivation and income from agriculture and aquaculture is stronger in Hòa Bình than in Phong Thạnh, but does not yet provide an explanation for why this might be the case. If land under cultivation is a weaker determinant of income in the shrimp sector than it is in the rice sector, we must then turn our attention to the possible reasons why these two variables are more decoupled in one village (and sector) than in the other.

Turning first to the data from Hòa Bình, it is relatively easy to explain why incomes from agriculture so closely follow the area under cultivation. The simplest explanation

is that nearly all agricultural households in the village practice rice agriculture, and that variability in rice yields is relatively low. On average, households harvest about 7.1 tons per hectare per crop of rice. In comparison to the province of Bạc Liêu as a whole, this level of productivity is fairly high, especially given that all rice-growing households in the village engage in the cultivation of three crops per year. In 2014, for example, the average yield across the province was 5.75 tons per hectare (General Statistics Office of Vietnam 2017). Given the ubiquity of triple-cropping and relatively high yields from rice agriculture in Hòa Bình, there are few opportunities to boost production past current levels; thus the dominant accumulation strategy is one of land acquisition, or of scaling up rice production through the expansion of land under control.

Scaling up is not just, however, a pathway to accumulation but to survival as well: in the face of rising input costs and stagnant yields, the profits from rice agriculture are, at least on a per hectare basis, relatively meager. A kilogram of paddy sells for roughly 5,000 VND (or $0.25), and after expenses, profits per hectare are clustered around 100 million VND (or $500) per crop. Barring a failed growing season, a hectare of land would thus provide about 30 million VND ($1500) in income over the course of a year. In a country where the average per capita income has recently surpassed $2,000 per annum, this is barely sufficient to support an entire household. Rather, farmers in Hòa Bình reported that it was necessary to have at least three or four hectares of land in order to make a comfortable living from rice agriculture.[12] Reaching such a scale

[12] Focus group interview, 2/20/2014.

requires, however, massive capital outlays, given the high cost of agricultural land in Hòa Bình.

In contrast, the relationship between area under production and income is more variable in the Phong Thạnh, and by inference, the shrimp sector at large, at least in its current form. The vast majority of shrimp farmers in Phong Thạnh follow the extensive model of cultivation, which uses purchased shrimp fry stocked at relatively low densities, with limited applications of antibiotics and fertilizer, as opposed to an intensive method that uses higher stocking densities, purchased feed, and mechanically operated pumps and fans to aerate ponds, requiring higher capital outlays (Joffre and Bosma 2009, Lan 2013). On the whole, however, returns from this extensive method are low, at least as compared to agriculture; the average profit among extensive shrimp farmers in Phong Thạnh was 14.7 million VND per hectare (or about $750) per year.

There exist, however, alternative pathways to accumulation in shrimp aquaculture that lie not the acquisition of land but rather in the intensification of production. Such intensification can take the form of increased investments in improved inputs within the confines of extensive production. Some households have, however, made large capital investments in moving to intensive production, which requires higher outlays (for seed stock, antibiotics, electricity, labor for security as well as cleaning of ponds) but potentially yields much higher incomes. Of the five households engaged in intensive production, the average profit was 13.9 million VND per hectare (on an average of 1.35 hectares). With this increased average profitability comes greater

variability, however: of the five households raising intensive shrimp, two lost money, while one reported a profit of nearly 900 million VND (or $45,000) on three hectares of ponds. Six households in Phong Thạnh were also engaged in an extremely capital-intensive form of shrimp aquaculture that required relatively little in the way of land: the raising of shrimp stock (*giống*) in concrete-lined ponds or tanks. These operations ranged in scale from 50 to 500 square meters, but required capital outlays of upwards of 100 million VND ($5000) for the purchase of starter stock and equipment. While one farmer had lost his entire investment on a failed stock-raising venture, the five successful households had averaged 38.7 million VND in returns.

One household in Phong Thạnh, headed by a 53 year-old man named Lý offered a window into the potential gains to be made from intensification. In the past year, Lý had begun cultivating shrimp stock on a small scale, roughly one-tenth of a hectare. From this small plot, he reported, he could make a profit of 20 to 30 million VND (or $1,000 to $1,500). In this way, he and his household were able to derive a total income of 193 million VND (or about $9,000) from a mix of extensive shrimp farming and the production of seed stock, even as their overall landholdings *declined* from 5.7 to 4.0 hectares between the 2001 and 2014 surveys. Thus, the available pathways for accumulation in aquaculture lie not just through the acquisition of land, though that certainly has occurred, but through investments in inputs, as well as physical implements (such as fans) and modifications of the biophysical environment (such as through the digging, cleaning, and lining of shrimp ponds) that open up opportunities for more intensive production on existing land.

Such gambles were, however, not always successful. Hạnh and Hồng, a couple from Phong Thạnh, described how they had drawn on their savings and a bank loan to invest nearly 500 million VND (or $25,000) in the development of three intensive shrimp ponds, totaling 0.4 hectares. Much of this investment had gone into the purchasing of electric motors and fans to aerate the ponds, as well as shrimp stock. After three years of intensive shrimp farming, however, they had failed to recoup their investment, and in 2013 they experienced a disease outbreak that decimated their harvest. Unable to muster the operating capital for further intensive farming, they had, in the meantime, reverted to the extensive mode of production.

Given the relatively high cost of land in Hòa Bình and the relatively low returns on rice production, there have also been trends towards higher-value production in the rice-growing village as well. In recent years, a number of households have begun to cultivate fruits and vegetables on relatively small plots of garden land. Horticulture offers opportunities for intensification, and for high yields on small parcels of land, but requires high investments. One of the wealthiest households in Hòa Bình, for example, cultivates less than two hectares of land and derives its income primarily from a small parcel (0.3 hectares) of garden land, on which they cultivate fruits such as pomelo and jackfruit. In total the household reported more than 300 million VND (or about $15,000) in income from this relatively small parcel. In comparison, the same household earned less than a third as much income from a parcel of rice-growing land that was nearly four times as large as their garden plot.

Paths to accumulation in horticulture are, however, constrained by the land-use

planning regime, which not only sets aside land for rice agriculture, but also designates a limited amount of garden and residential land for non-rice production. In total, only 4.9 hectares of land in Hòa Bình under cultivation by 17 surveyed households were designated for horticulture use in 2014. As another horticulturalist, who derived a significant portion of her income from cultivation of an edible reed (called *cỏ năng* in Vietnamese) on a small parcel of garden land bluntly put it, "we are forced to grow rice."[13] As a consequence of this restricted supply, prices for horticulture land are nearly double those for rice-growing land: or about 1-1.5 billion VND for a single hectare.[14] In this way, farmers were constrained in their ability to adopt high-value crops by a land-use planning system that serves to protect and prioritize rice-growing land. The land-use planning system thus serves to direct accumulation towards land acquisition and increased scale, rather than towards intensification on existing parcels. There thus exists, by definition, a parallel tendency in the rice-growing sector towards dispossession and exclusion (since accumulation occurs through the acquisition of land). By contrast, pathways to accumulation exist in the shrimp sector that do not necessitate the dispossession of other producers (as through the intensification of shrimp production on existing land, by means of investments in capital and inputs).

[13] Focus group interview, Hòa Bình village, 2/20/214.
[14] Interview, Hòa Bình village, 6/23/2014.

Land, Employment, and Sector-Wide Accumulation

Increased inequality in land access is evident in both villages, but its drivers are different, as are its implications for income inequality and social differentiation. Understanding processes of accumulation in Phong Thạnh and Hòa Bình thus requires that we look not just at the ways in which the ownership and control of land have changed, but at the new opportunities that these sectors have — or have not — generated for waged employment. While differences in the nature of production — and the prospects for intensification — in each village account for some of the observed variations in the relationship between control of land and income from agriculture and aquaculture, there are additional reasons for which rising inequality in land ownership has been accompanied by a far sharper increase in income inequality in Hòa Bình than in Phong Thạnh.

Dividing the households by income quintile (see Figure 3.4) serves to visualize these inequalities, as well as the differing relationship between land and income in each village. In Hòa Bình, where land under cultivation is more strongly correlated with total income, the average of land under cultivation rises with each income quintile, from 0.74 hectares for the lowest income quintile to 3.21 hectares for the highest quintile. In Phong Thạnh, however, the poorest quintile actually controls more land, on average, (0.78 hectares) than does the next-highest quintile (0.67 hectares). Average land-holdings rise with each successive income quintile, but the wealthiest 20% of households in Phong Thạnh own, on average, only 2.38 hectares of land, compared with 3.21 hectares for their counterparts in Hòa Bình. The conclusion to be drawn is that having a large area of land under cultivation does not produce the same

gains in terms of income as it does in Hòa Bình.[15]

The data also tell us that household incomes are much more closely tied to land-based production in Hòa Bình than in Phong Thạnh. Profits from land-based production (including rice agriculture, horticulture, and animal husbandry) provide a much larger source of income for upper-income households in Hòa Bình than in Phong Thạnh. For those in the upper two income quintiles, agriculture provides 70% and 69% of total income, respectively. By contrast, aquaculture generates a more modest share of returns among upper income groups in Phong Thạnh, with only the uppermost quintile generating more than half (56%) of total income from shrimp farming.

This suggests that while incomes — and by extension, economic activities at the household level — are becoming decoupled from land ownership in Phong Thạnh (if not in Hòa Bình). This finding corresponds to Rigg's broader observation that "livelihoods and poverty are becoming de-linked from land (and from farming)" in the Global South, and in Southeast Asia in particular, as "non-farm activities" become more "central to rural livelihoods," and as "an increasing number of rural households have no commitment to farming whatsoever" (Rigg 2006:181-83). This trend is evidenced in Phong Thạnh by the relatively low share of household income generated by direct aquaculture production, which suggests that a process of "de-agrarianization"

[15] The same general relationship is observed between land and income (and the difference between villages) is observed in the land quintiles presented in Figure 4.2. In Hòa Bình, average income rises with each successive quintile, as does the share of household income derived from agricultural production. In Phong Thạnh, by comparison, the relationship between land and income is far less direct; while average incomes increase by land quintile, they do so only slightly from the first quintile (in which the average household has no land and an average income of 34.9 million VND) to the third quintile (in which the average household has 0.98 hectares and an average income of 44.0 million VND).

(Rigg 2006) is well underway in the area, as households, even those who still own and cultivate land, derive a greater and greater proportion of their incomes not from direct production, but from wage labor and non-agricultural self-employment. A closer inspection of the survey data reveal, however, that these new forms of livelihood are closely connected with the larger aquaculture sector.

Once harvested, shrimp are extremely perishable, and since the requisite cold chains do not exist to transport them for long distances, they thus need to be processed close to their place of origin. As Hall notes, the "biological characteristics of shrimp are … exacting;" since they deteriorate quickly, shrimp "must be moved from harvest to freezing/processing as quickly as possible" (Hall 2003:255). For this reason, there is now a processing facility in the district town nearest to Phong Thạnh that prepares shrimp for freezing and export. Many people from Phong Thạnh village, especially young women, work at this facility, while continuing to reside in the village. Thus, the shift towards high-value production in Phong Thạnh generates off-farm employment opportunities that are absent in the rice sector, and serves as a kind of lever for economic diversification. This diversification is marked by the proliferation of seafood processing facilities, as well as the rise of other businesses like the transportation and trading of shrimp and the cultivation and sale of shrimp fry.

For these reasons, the shrimp boom has brought opportunities for ancillary businesses for the wealthiest households in Phong Thạnh, serving to direct accumulation out of the acquisition of land and into other venues. One of the households with the largest holdings of shrimp-farming land was, for example, deriving a significant percent of its

overall income not from direct production but from the buying and selling of shrimp; the household, headed by a man in his late 30s, had even purchased a truck, with which he gathered shrimp from farmers in the village, which he packed with ice and transported to the processing plant in the district town.

The positive impacts of the shrimp boom had extended, however, even to the most economically vulnerable households, as exemplified by the case of a landless household headed by a 45-year old widow named Hai. Hai and her husband had been landless in 2001 as well, and reported that they were primarily dependent on agricultural wage labor; in the interim, her husband had passed away, and the household remained landless and dependent on wage labor. Rather than see their opportunities erode in the face of the transition from rice agriculture to shrimp aquaculture, however, Hai's household was, if not thriving, at least surviving. Hai herself worked about 20 days a month for a local shrimp trader, shelling shrimp in preparation for export. The work, she replied was stable and paid around $40,000 VND (or about $2) per day. Her daughter, meanwhile, was working at the local shrimp processing plant, where she was paid a salary of 1.2 million VND (or approximately $60) per month. This income, along with remittances from a son who was a construction worker in Hồ Chí Minh City, allowed the household a stable, if not comfortable, existence, with a reported annual income of 46 million VND (or $2,300).

In this way, sector-wide accumulation in shrimp aquaculture generates new economic opportunities for residents of Phong Thạnh village, both in the realm of wage labor and self-employment, that serve to attract or "pull" small shrimp farmers out of direct

production. Such a process, however, has not taken place in Hòa Bình. There, accumulation in the rice sector has generated few economic opportunities for smallholder farmers and land-poor households. The lack of economic viability for smallholder rice farming is compounded by the disappearance of wage labor opportunities in the agricultural sector itself. In the past, many poorer farmers were able to supplement their incomes by performing seasonal work on the farms of their neighbors, especially at harvest time. With the recent turn to mechanized combine harvesters, however, this source of income has evaporated.

As elsewhere in Southeast Asia, the introduction of combine harvesters has served to erode a source of seasonal income on which small farmers and the rural poor once relied (Scott 1985). This trend towards mechanization has been exacerbated by reliance on harvesting teams from other provinces; these teams transport combine harvesters on barges around the Mekong Delta, traveling from place to place based on local cropping calendars. In a focus group interview before the survey, a group of representatives from poor households reported that the use of combine harvesters, which were introduced about 4 to 5 years prior to the survey, had served to steadily erode their prospects for wage labor. As one woman in her forties reported, she was only able to find work transplanting rice seedlings, for about 10 days every harvest season. Beyond this, she had to rely on the income generated from her small parcel of 0.3 hectares of rice-growing land, and some remittances from her 25-year old son, who worked in a restaurant in Hồ Chí Minh City. “There’s too much labor in the countryside and not enough work,” she explained. “That’s why everyone has to go to

the city or to Bình Dương," an industrial area to the northeast.[16]

To assess the relative importance of different asset endowments, livelihood strategies, and demographic characteristics at the household level in shaping economic outcomes, I constructed a multiple linear regression model (see Table 3.4), which takes as its dependent variable the total reported household income in 2014 (*Income in 2014*). The first iteration of this model uses four independent variables to predict income: *Land in 2014*, *# of Ag. Wage Laborers*, *Education of HH Head*, and *# of Migrant Members*, with the last variable reflecting the number of members in each household who were reported as living outside the village in 2014, for purposes of work or study. The regression coefficients for each of these independent variables are significant at the level of $p < 0.05$, and all were positive. This indicates that household income is predicted to rise with land under cultivation and the education level of the household head, which is unsurprising, but also to rise with the number of household members engaged in agricultural wage labor or outmigration.

To assess whether these relationships varied between the two different villages, a second iteration of the model was run with a dummy variable (*Hòa Bình Village*) for the rice-growing village, as well as interaction terms for the four independent variables. The interaction terms for *# of Ag. Wage Laborers* and *Education of HH Head* did not yield statistically significant results, however, and these were dropped from the final iteration of the model. All coefficients in the final model are significant at the level of $p < 0.05$, and the final model accounts for 35.7% of variance in

[16] Focus group, Hòa Bình village, 2/21/2014.

household income levels (as compared to 29.5% for the original model without the village variable and interaction terms).

This final model demonstrates two differences between the rice-growing village of Hòa Bình and the shrimp-farming village of Phong Thạnh. The first of these is the difference in returns to land between villages. While the regression coefficient for *Land in 2014* indicates that each additional hectare under cultivation will raise the predicted income of the household by 20.4 million VND (or approximately $1000) in Phong Thạnh, the interaction term for land in Hòa Bình indicates that each hectare under cultivation in that village will bring an *additional* 30.0 million VND in predicted income. At the same time, the negative coefficient of the village dummy variable (*Hòa Bình Village*) indicates that despite the higher rate of returns on rice production, these gains are only realized by larger farmers. This difference is visualized in Figure 3.5, which graphs predicted household income by land under cultivation for each village (setting all other independent variables to their village-level means).

In simple terms, this relationship demonstrates that being landless, or having only a small parcel of land, is less strongly associated with poverty in Phong Thạnh than it is in Hòa Bình, and that landless or land-poor households do not suffer as great of a penalty in terms of their income as do their counterparts in the rice-growing area. The negative coefficient of the *Hòa Bình Village* term (-23.7 million VND) also suggests that, despite its higher returns per hectare, rice production only yields a net positive income at a certain scale, at around 0.5 hectares. Approximately one quarter of rice-

farming households in Hòa Bình fall below that cut-off. Though the scale of these farming operations may lie below the threshold for economic viability in rice production (at least of the intensive, mechanized variety), these households continue to engage in farming and maintain ownership and control over their plots. This reluctance to "de-agrarianize," even under adverse circumstances, may in turn reflect the dim prospects for off-farm employment in the rice-growing area.[17]

The second major difference between the two villages lies in the returns from out-migration. The percentage of households with migrant members is roughly the same between the two contexts: 40.8% in Hòa Bình and 40.6% in Phong Thạnh. While the coefficient for the variable *# of Migrant Members* indicates that each migrant member adds approximately 22.6 million VND to the predicted income of households in Phong Thạnh, the negative coefficient for the interaction term almost completely negates this relationship for Hòa Bình village. These findings suggest, despite the relative proximity of these two case-study regions, the preponderance of "pull" factors in driving migration from Phong Thạnh, where the prevalence of migrants is associated with income gains at the household level, thus indicating migration for relatively high-paying employment, and of "push" factors in Hòa Bình, where outmigration has little net economic benefit at the household level.[18] In the context of the rice-growing village, decisions to migrate may be more strongly compelled by the lack of wage

[17] The high frequency of smaller households renting-out or mortgaging land to wealthier households, as observed in Hòa Bình, may also be a result of this reluctance to permanently part with land or to exit from agriculture, even in the face of economic distress.

[18] This observation fits into the broader literature on "push" and "pull" factors in migration decision-making (Hare 1999, Parkins 2010). "Pull" factors are those which attract migrants to a destination, and "push" factors, or factors in the migrant's place of origin that compel or drive them to seek out opportunities elsewhere.

labor opportunities in the local area and by other pressing conditions, such as debt or economic distress at the household level. Hence household members who migrate may find themselves engaged in relatively low-paying casual labor and are able to remit little to their households after accounting for living expenses in their destination.

Conclusion: Accumulation without Dispossession?

While much of the critical agrarian studies literature has, in recent years, been framed around Harvey's (2003) notion of "accumulation by dispossession," these two cases suggest that the relationship between accumulation and dispossession varies sharply between contexts. Despite the geographic proximity of these two villages, they evince divergent tendencies that emerge, I argue, from differences in both the biophysical basis of production and the political-economic structures that prevail in these two different sectors: rice agriculture and shrimp aquaculture. As a result, while accumulation in rice agriculture in Hòa Bình works through (and requires) the dispossession of smallholder farmers, dispossession of smaller producers is not a necessary precondition for accumulation in shrimp farming, at least in Phong Thạnh village.

In Hòa Bình, accumulation has generated dispossession through both the accumulation of land and indirectly through the displacement of rural labor. Whereas most rice farmers in the Mekong Delta only grew one crop in the 1980s, they now grow two or, in many areas, three crops per year. As prospects for continued intensification dim, however, and as per-hectare profits are squeezed by rising input costs and competitive

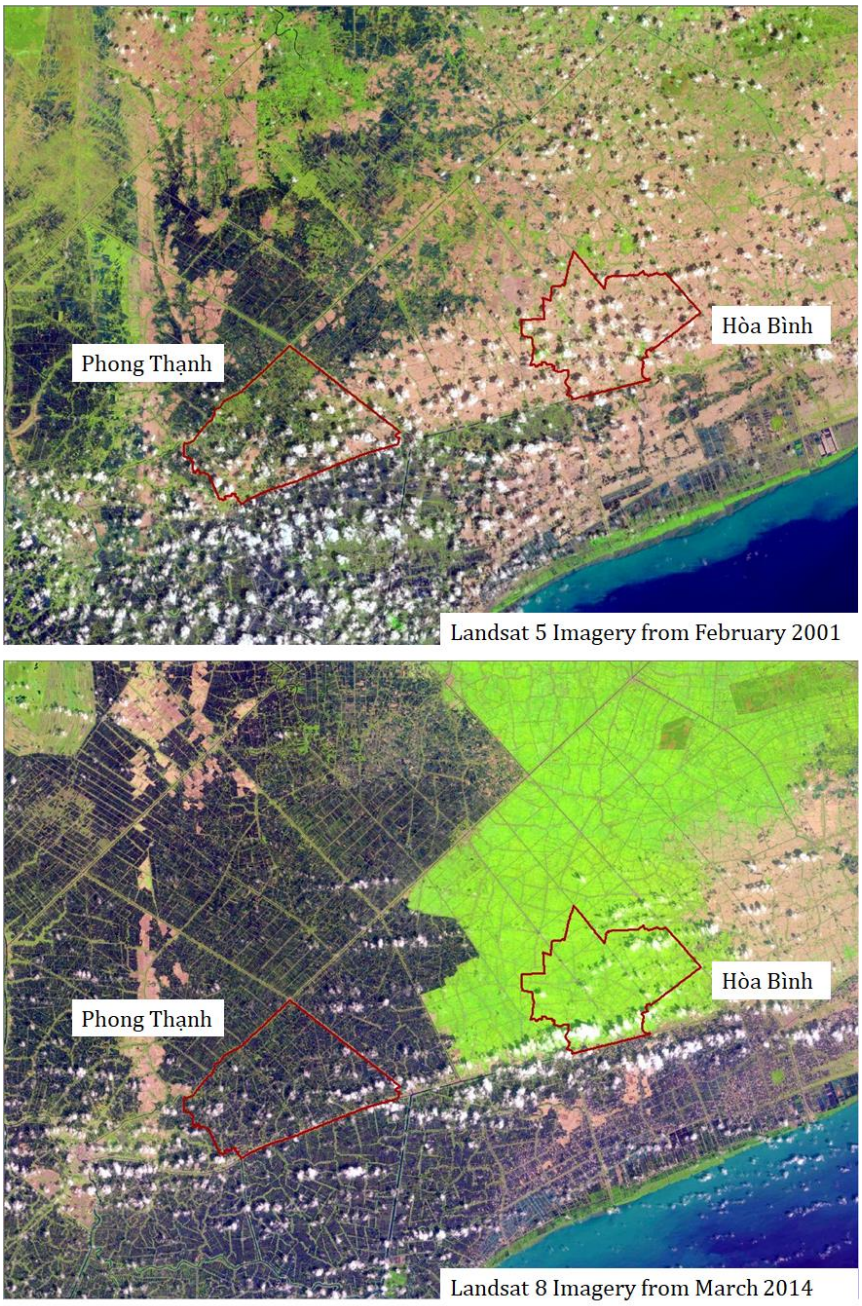
pressures, farmers have little choice but to expand. Thus, tendencies to accumulate in the rice sector are geared towards the acquisition of land, a process that, in the absence of an agricultural frontier, leads inexorably to the dispossession of other, less competitive producers.

Moreover, the consolidation of land ownership and the emergence of mechanized, commercially-oriented rice production has not generated a surge in demand for agricultural wage labor. Rather than being turned into an agrarian proletariat, newly landless and land-poor farmers have instead, as Li argues, been rendered a "surplus population" whose labor is not required for continued accumulation by capitalist farmers (Li 2010). At the same time, a constrictive land-use planning regime, erected in the name of national food security, has prevented smallholders from engaging in alternative production strategies, such as the cultivation of fruits and vegetables or even the conversion of agricultural land to salt-water ponds for shrimp aquaculture, that might offer higher returns per hectare than rice and thus provide a more viable source of livelihood for those with limited land resources. The data from Hòa Bình village thus illustrate the fundamental paradox of Vietnam's food security strategy: by fostering the development of "modern," mechanized, large-scale rice production and by promulgating land-use plans and constructing physical structures (such as sluice gates) designed to promote and facilitate intensive rice production, the government of Vietnam has largely succeeded in raising rice output and forestalling a food crisis, while it has at the same time undermined the social basis and economic viability of smallholder rice farming.

In Phong Thạnh, however, sector-wide accumulation in shrimp aquaculture has neither required the dispossession of small-scale producers nor rendered the labor of smallholders and the rural landless "surplus." Rather, the untapped possibility of intensification within shrimp aquaculture channels accumulation tendencies towards investments in capital — rather than the acquisition of land — thus allowing highly-capitalized modes of intensive production to exist, at least for the time being, side-by-side with more extensive modes of production that remain economically viable for smaller-scale producers. Meanwhile the proliferation of ancillary enterprises has opened up pathways for both accumulation (as in the buying and selling of shrimp) and wage labor in the shrimp sector more broadly, creating positive incentives for diversification and transition out of direct production. In this way, the development of the aquaculture sector in Phong Thạnh might plausibly be construed as an example of what Paudel calls "accumulation without dispossession" (2016).

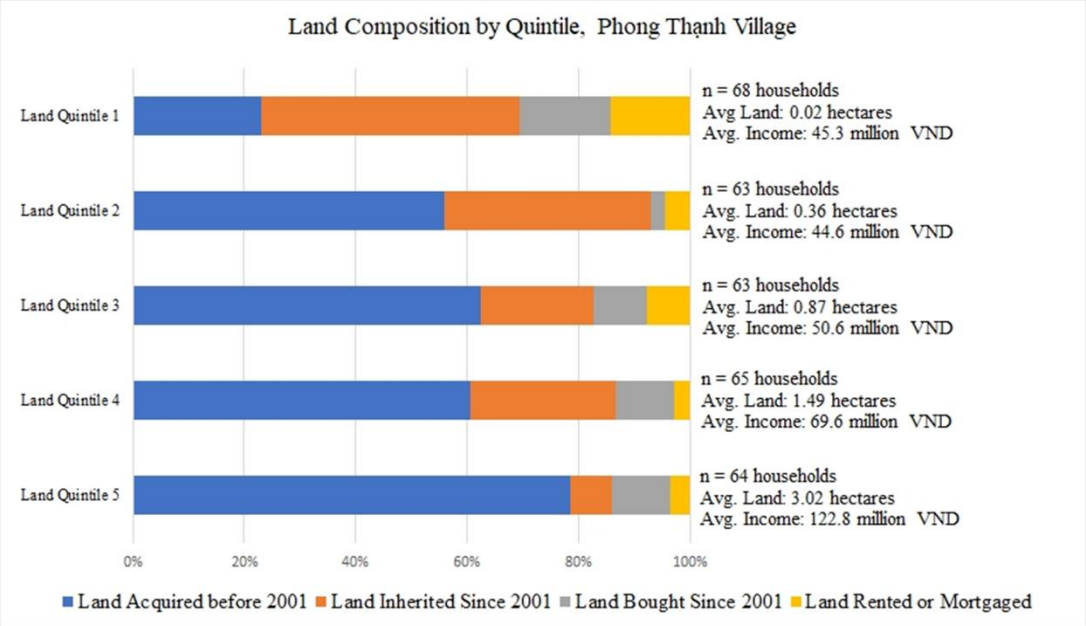
FIGURES

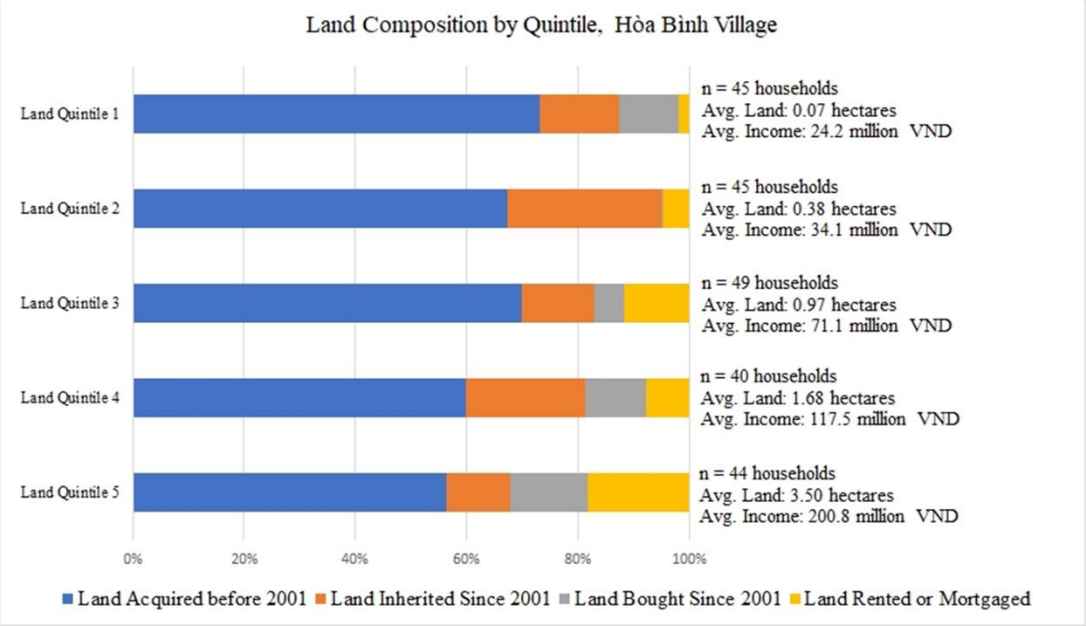
Figure 3.1: Location of Study Sites



Landsat imagery courtesy of NASA Goddard Space Flight Center and U.S. Geological Survey

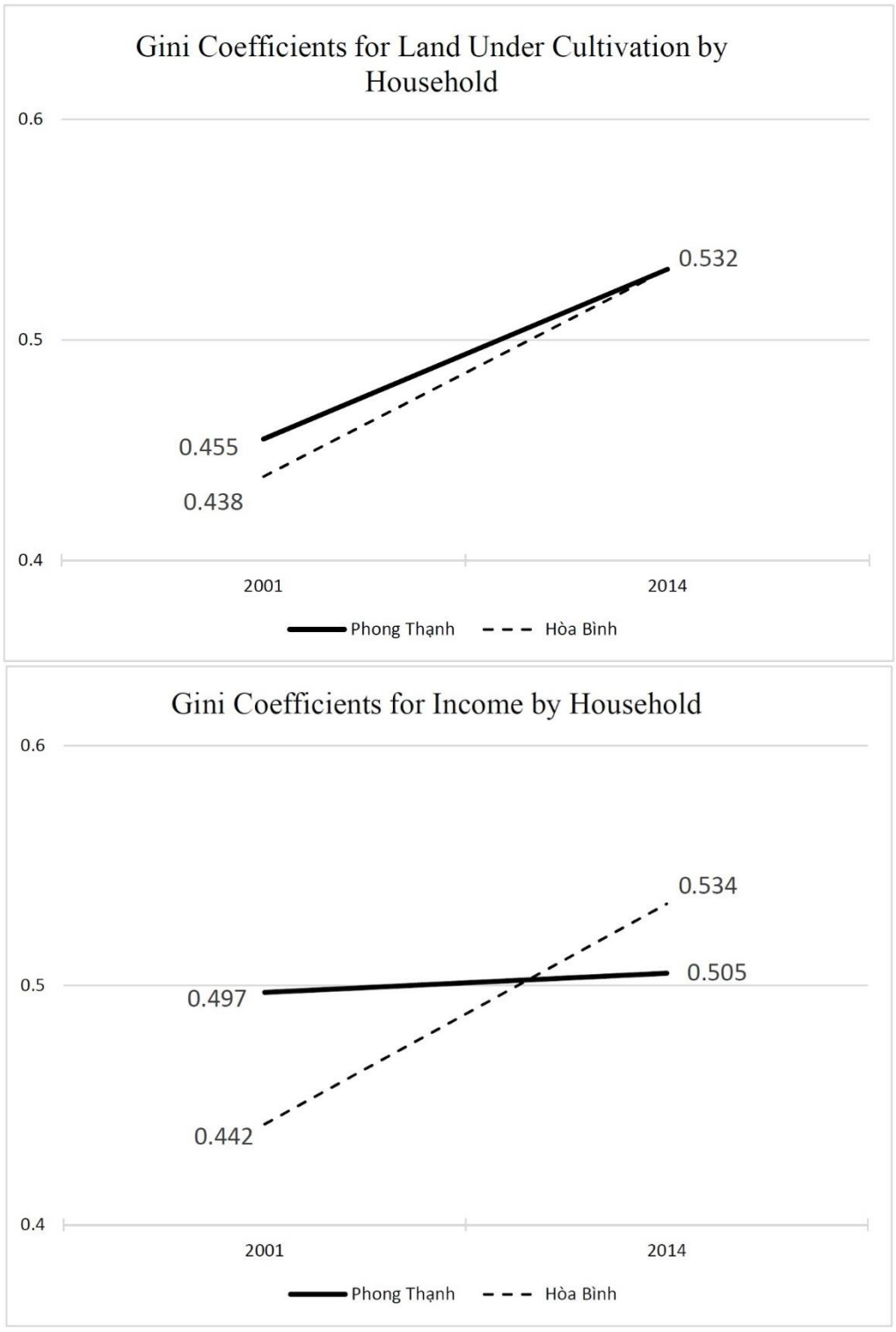
Figure 3.2: Land Under Cultivation by Quintile and Village





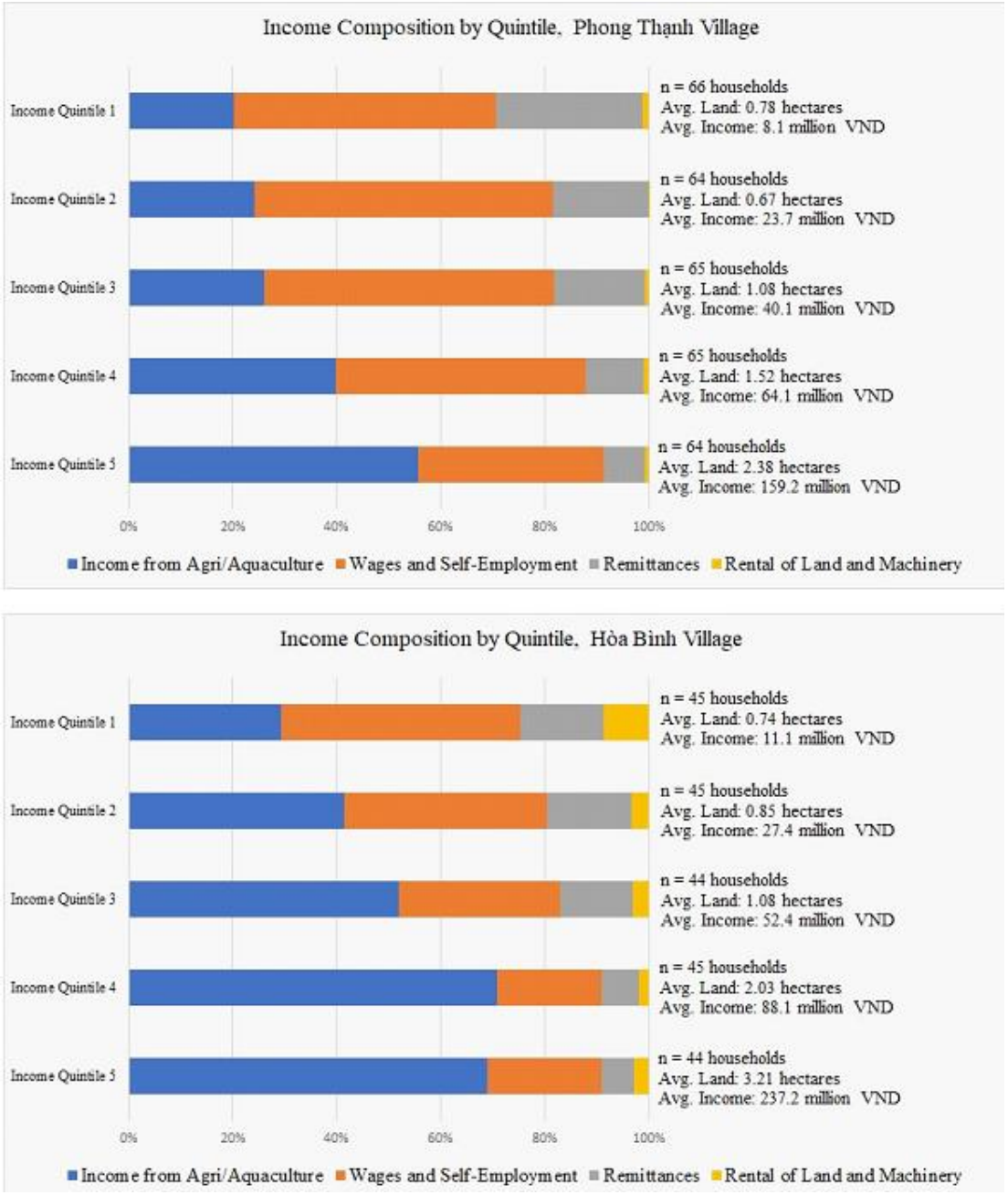
Source: 2014 Survey

Figure 3.3: Gini Coefficients for the Distribution of Land and Income by Village



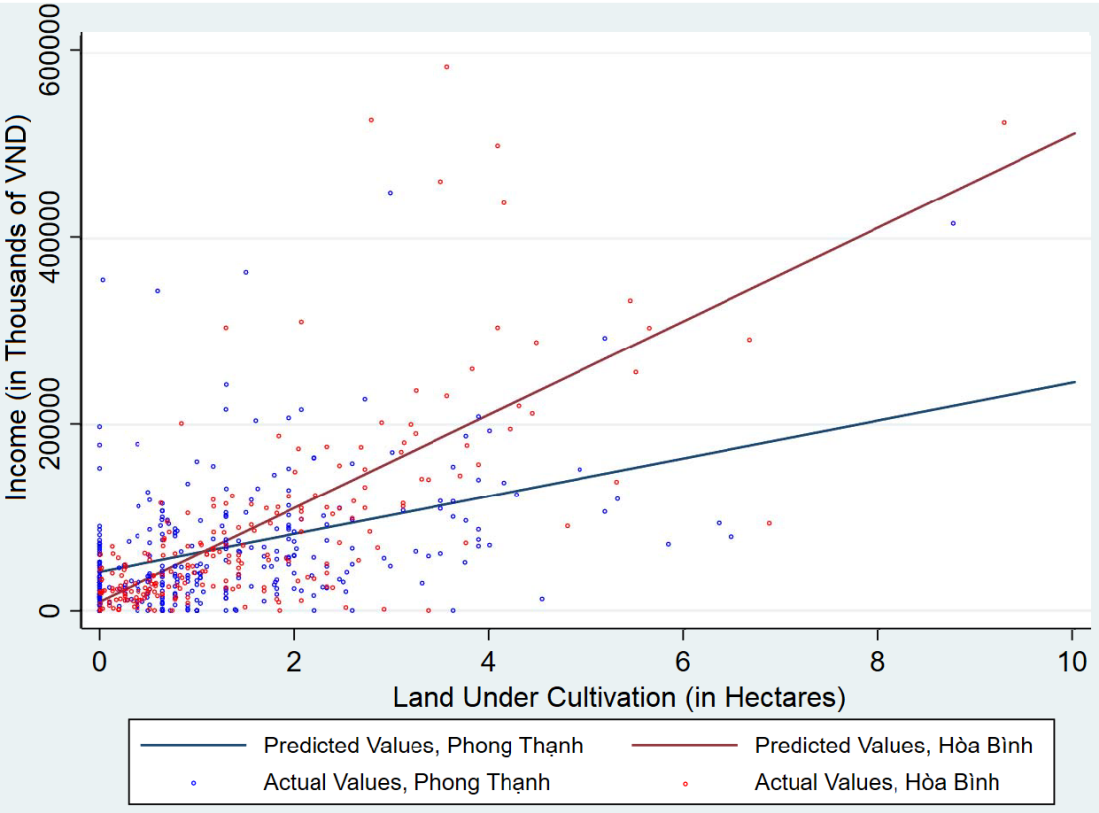
Source: 2001 and 2014 Surveys

Figure 3.4: Household Income by Quintile and Village



Source: 2014 Survey

Figure 3.5: Household Income in 2014 by Land Under Cultivation



Source: 2014 Survey

TABLES

Table 3.1: Characteristics of Renting-in and Renting-out Households by Village

Characteristics of Out-Renting and In-Renting Households in Phong Thạnh Village

	Average Income	Land Under Cultivation	Average Age of Household Head	Average Education of Household Head
HHs Renting-In Land (n=20)	54.0 million VND	1.8 hectares	47.9 years	5.7 years
HHs Renting-Out Land (n=16)	102.1 million VND	3.1 hectares	52.8 years	7.5 years

Characteristics of Out-Renting and In-Renting Households in Hòa Bình Village

	Average Income	Land Under Cultivation	Average Age of Household Head	Average Education of Household Head
HHs Renting-In Land (n=42)	121.8 million VND	2.3 hectares	49.4 years	6.0 years
HHs Renting-Out Land (n=35)	64.1 million VND	1.5 hectares	57.7 years	5.4 years

Table 3.2: Multiple Linear Regression Model for Land Under Cultivation in 2014

	(1) Land in 2014	(2) Land in 2014	(3) Land in 2014
Land in 2001	0.626***	0.641***	0.581***
	(0.000)	(0.000)	(0.000)
Age of HH Head in 2001	-0.0123		
	(0.062)		
Ed. of HH Head in 2001	0.115***	0.107***	0.104***
	(0.000)	(0.000)	(0.000)
Ag. Wage Laborers in 2001	-0.174*	-0.165*	-0.191**
	(0.020)	(0.027)	(0.010)
Young Head		0.372*	0.417*
		(0.024)	(0.011)
Land in 2001 (Hòa Bình)			0.187
			(0.099)
Hòa Bình Village			0.0887
			(0.709)
Constant	0.767*	0.0746	0.0280
	(0.032)	(0.681)	(0.890)
Observations	258	258	258
R^2	0.417	0.421	0.443

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Dependent Variable	**Definition of Dependent Variable**
Land in 2014	Land under cultivation by household in the 2014 survey (in hectares)

Independent Variable	**Definition of Independent Variable**
Land in 2001	Land under cultivation by household in the 2001 survey (in hectares)
Age of HH Head in 2001	Age of household head in the 2001 survey (in years)
Ed. of HH Head in 2001	Education of household head in the 2001 survey (in years)
Ag. Wage Laborers in 2001	Number of household members working for wages in agriculture or aquaculture in 2001
Young Head	Binary variable, coded as 1 if household head was 40 years old or younger in 2001
Land in 2001 (Hòa Bình)	Interaction term for land under cultivation by household in Hòa Bình village
Hòa Bình Village	Binary variable, coded as 1 if household is located in Hòa Bình village

Table 3.3: Multinomial Logistic Regression for Change in Land in Cultivation

Outcome 1: Lost 0.5 Hectares or More

	Rel. Risk Ratio	Std. Error	Z	P>|z|	[95% Conf.	Interval]
Land in 2001	2.87601	.4704826	6.46	0.000	2.087101	3.96312
Young Head	.4303066	.1776587	-2.04	0.041	.1915783	.9665173
Ed. of HH Head in 2001	.9499505	.0668726	-0.73	0.466	.8275226	1.090491
Ag. Wage Laborers in 2001	1.065243	.1699712	0.40	0.692	.7791663	1.456355
_cons	.1405285	.0602772	-4.57	0.000	.0606257	.3257409

Outcome 3: Gained 0.5 Hectares or More

	Rel. Risk Ratio	Std. Error	Z	P>|z|	[95% Conf.	Interval]
Land in 2001	1.256264	.2274709	1.26	0.208	.8809568	1.791462
Young Head	1.41043	.5350713	0.91	0.365	.6705533	2.966673
Ed. of HH Head in 2001	1.229677	.0737114	3.45	0.001	1.093369	1.382978
# of Ag. Wage Laborers	.5839304	.1474164	-2.13	0.033	.356017	.9577486
_cons	.1258008	.0592927	-4.40	0.000	.0499451	.3168646

Observations: 258

Dependent Variable	**Definition of Dependent Variable**
Gained/Lost Land	Categorical variable, coded as 1 if land under cultivation by household *decreased* by 0.5 hectares or more from 2001 to 2014; as 2 if land under cultivation changed by less than 0.5 hectares; as 3 if land under cultivation by household *increased* by 0.5 hectares or more from 2001 to 2014

Independent Variable	**Definition of Independent Variable**
Land in 2001	Land under cultivation by household in the 2001 survey (in hectares)
Young Head	Binary variable, coded as 1 if household head was 40 years old or younger in 2001
Ed. of HH Head in 2001	Education of household head in the 2001 survey (in years)
Ag. Wage Laborers in 2001	Number of household members working for wages in agriculture or aquaculture in 2001

Table 3.4: Multiple Linear Regression Model for Total Household Income in 2014

	(1) Income in 2014	(2) Income in 2014	(3) Income in 2014
Land in 2014	33897.2***	20446.3***	20424.7***
	(0.000)	(0.000)	(0.000)
# of Ag. Wage Laborers	13242.2*	17977.6*	13611.2*
	(0.016)	(0.034)	(0.012)
Education of HH Head	5014.1***	5564.5***	4776.1***
	(0.000)	(0.000)	(0.000)
# of Migrant Members	11604.7**	22809.2***	22628.0***
	(0.003)	(0.000)	(0.000)
Hòa Bình Village		-10985.1	-23713.6*
		(0.498)	(0.030)
Land in 2014 (HB)		30103.2***	30029.0***
		(0.000)	(0.000)
Ag. Wage Laborers (HB)		-8029.1	
		(0.466)	
Ed. of HH Head (HB)		-1805.3	
		(0.407)	
Migrant Members (HB)		-23066.0**	-22609.7**
		(0.003)	(0.003)
Constant	-8408.4	-4590.5	994.3
	(0.307)	(0.657)	(0.910)
Observations	547	547	547
R^2	0.295	0.358	0.357

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Dependent Variable	Definition of Dependent Variable
Income in 2014	Total household income in 2014, as measured in thousands of VND

Independent Variable	Definition of Independent Variable
Land in 2014	Land under cultivation by household in the 2014 survey (in hectares)
# of Ag. Wage Laborers	Number of household members working for wages in agriculture or aquaculture in 2014
Education of HH Head	Education of household head in the 2014 survey (in years)
# of Migrant Members	Number of household members residing outside the village for work or study in 2014
Hòa Bình Village	Binary variable, coded as 1 if household is located in Hòa Bình village
Land in 2014 (HB)	Interaction term for land under cultivation in Hòa Bình village
Ag. Wage Laborers (HB)	Interaction term for # agricultural wage laborers in Hòa Bình village
Ed. of HH Head (HB)	Interaction term for education of household head in Hòa Bình village
Migrant Members (HB)	Interaction term for number of migrants per household in Hòa Bình village

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CHAPTER 4
THE ART OF NOT BEING FRESHENED: ACCUMULATION, RESISTANCE, AND ENVIRONMENTAL TRANSFORMATION IN BẾN TRE

This paper draws on interviews with farmers and rural residents in Bến Tre province — as well as on secondary sources such as articles from Vietnamese media, legal documents and policy papers issued by the Vietnamese government, and technical reports prepared by Vietnamese government agencies and foreign donors involved in large infrastructure projects — to examine the everyday politics of accumulation and environmental transformation in the coastal Mekong Delta.

The first section of the paper argues that there are two different modes of accumulation at work in Bến Tre, each of which is driven by a different set of actors, contingent upon different configurations of the productive forces (namely land and water), and oriented towards a different set of objectives. The first of these modes is a state-driven accumulation strategy that prioritizes the maximization of grain output as a means of ensuring the long-term maintenance of Vietnam's national food security, and which relies upon the construction of large-scale water management infrastructure to achieve this objective. The second of these modes is, in contrast, driven by individual producers and their practices of "everyday accumulation." Such producers are compelled, I argue, by the capitalist relations of production that prevail in post-reform Vietnam to orient their actions towards the maximization of short-term economic returns; as a consequence, many have abandoned rice agriculture, which offers few avenues for accumulation, for marine shrimp farming and invested capital and labor to do so at the level of the individual farm. To access salt water for marine shrimp farming, farmers simply bypassed the salinity-management infrastructures

constructed by the state and drilled wells to tap into sources of saline groundwater, which they pumped into their shrimp ponds.

The second section argues that state accumulation projects in agriculture work through forced disaccumulation (a dismantling of the productive forces) in aquaculture, and that resistance to these efforts has worked through a process that I call "counter-accumulation." In response to the food price crisis of 2007-2008, the Vietnamese government launched a new wave of infrastructure projects in Bến Tre, which was coupled with a campaign to eliminate saltwater shrimp cultivation in the "freshened zone" (*vùng ngọt hóa*). Fanning across the countryside in the summer of 2014, government officials searched farms for saltwater wells and pumps, destroying those they found. To resist this campaign of forced disaccumulation, shrimp farmers engaged in acts of counter-accumulation, as by re-digging wells in secret, concealing pumps in bedrooms and outhouses, and pumping salt water into their ponds under cover of darkness. Such resistance was, I argue, driven by the economic forces impinging on shrimp farmers and compelling them to maximize their short-term economic returns,[1] and served to effectively undermine the broader political project and accumulation strategy of the Vietnamese state.

The third section examines the possible shift away from the long-dominant rice-centered accumulation strategy, as officials soften their land-use policies in the face of both eroding environmental conditions and widespread resistance. It argues that this

[1] The argument advanced here is that the maximization of individual benefit -— and more specifically, the pursuit of economic profit — is not a universal feature of human behavior, but rather one imposed upon producers by the structural constraints and imperatives inherent in an economy that is, as is Vietnam's, organized along capitalist lines. As discussed in the introduction to this volume, this approach is rooted not just in Marxian political economy, but in Max Weber's work on rationality and social action (1978, 2001). As Kalberg (1980:1163) notes in his exegesis on Weber's forms of rationality, "formal rational patterns of action are necessary in order to insure the success of a business enterprise" within a capitalist context, hence they impose upon producers not just the necessity of seeking profits, but of resisting government policies when such resistance can further the pursuit of accumulation.

shift — from restructuring productive forces towards the maximization of agricultural output to the new emphasis on "living with salinity" and maximizing economic returns from shrimp — represents an incipient neoliberalism in Vietnamese food security and climate change adaptation policy. In embracing the practices of "everyday accumulation," such a response serves, I argue, to undermine the capacity of the state to guide adaptation practices towards collective goods and the long-term preservation of the productive forces, both of which risk being sacrificed in the pursuit of immediate economic gain.

Methods and Study Site

Research for this paper was conducted in the coastal portion of northern Bến Tre province between 2014 and 2016. This area (see Figures 4.1 and 4.2) was chosen because it has been targeted since 2000 for "freshening" and agricultural intensification through the construction of large-scale water management infrastructure such as dikes, dams, and sluice gates. Over the same time period, however, the area has also seen the proliferation of alternative practices and technologies of "everyday accumulation" through saltwater shrimp farming.

The initial research design for this paper consisted of an ethnographic study of a single village (located in Bình Đại district), to be conducted over a six-month time frame. In attempting to secure permissions from the provincial authorities to reside in the village and conduct such a study, however, I was repeatedly rebuffed. As a consequence, the research design was altered to consist instead of repeated visits and interviews with interlocutors over a much larger area, consisting of eight villages in both Bình Đại and Ba Tri districts. In total, interviews were conducted with 22 subjects over a period of

10 months (October 2014 to July 2015), during which I conducted seven trips to the research area. Interviewees for the research were selected in an ad hoc, convenience sampling method, and comprise a purposive sample of households engaged primarily in shrimp farming. This research was conducted in the immediate aftermath of the crackdowns on shrimp farming and illicit wells carried out on 2013 and 2014, thus providing a glimpse into the ways in which farmers responded to this campaign of disaccumulation. Additional interviews were conducted in June of 2016, on a brief return visit to Vietnam. When permitted by respondents, interviews were recorded, translated, and transcribed. When recording was not permitted or feasible, detailed notes were prepared after the fact. Both notes and transcripts were coded and analyzed using Nvivio qualitative data analysis software. In order to protect the anonymity of research participants, pseudonyms are used for all interviewees quoted or cited below.

It is worth noting at the outset that the change in research strategy compelled by adverse circumstances encountered in the field introduce some limitations to the study. Chief among these limitations is the inability of the present study to address the intra-village dynamics and tensions, as between shrimp farmers and farmers of rice and other crops, or the everyday interactions between shrimp farmers and village-level authorities, that a more in-depth, ethnographic study of a single village would permit. The other limitation is that, while some effort was made to interview farmers of rice and other crops such as coconuts, the research sample (and by extension, the scope of the analysis) is highly biased towards shrimp farmers. As a result, the findings presented below are primarily based on interviews with members of a particular social group, consisting of those cultivating marine shrimp within the confines of the freshened zone; as a result, no claim can be advanced that the motivations that they evince nor the mode of resistance that they engage in, which works through and is oriented the pursuit of profit and accumulation on the scale of the individual farm, is

representative of the entire rural population in the region.

Another limitation of the research was that, despite an initial plan to conduct interviews with government officials in Bến Tre on the nature and objectives of state infrastructure projects, land-use planning, and climate change adaptation strategies in the coastal districts of the province, such attempts were stymied as well by an inability to obtain official permissions. As a result, field interviews with farmers were supplemented by the collection and analysis of government documents, newspaper articles, and project reports. Where possible these official accounts are used to illuminate the rationale and objectives for state infrastructure projects and attempts to restrain the cultivation of saltwater shrimp, as well as the apparent shift in recent years towards an alternative approach of "living with salinity."

Competing Modes of Accumulation and Environmental Change

This section traces the different considerations and structural imperatives driving two forms of accumulation — the accumulation strategy of the Vietnamese state and everyday accumulation by farmers in Bến Tre — as well as the ways in which these competing modes of accumulation have been inscribed upon and reshaped the physical landscape. I start first with the state-centered accumulation strategy, which has worked through the investment of a public surplus in the construction of large infrastructure projects, which in turn have restructured the material productive forces towards the maximization of agricultural outputs, specifically rice.

Rice production in Bến Tre has historically been plagued by saline intrusion. Due to its proximity to the sea and to the fact that it is transected by numerous distributaries of the Mekong (including the Tiền, Ba Lai, and Hàm Luông Rivers), most of the

province is affected by elevated salinity levels (above the 0.4% concentration beyond which rice crops are adversely affected) for at least part of the year. For this reason, the phenomenon of saline intrusion thus marks a pervasive constraint on rice agriculture in the region, a "law" (*quy luật*) that places limits on both yields and the intensity of rice cropping in Bến Tre (Nguyễn Chí Bền et al. 2001:437).

In the face of these constraints, there is a long history of state infrastructure investment in Bến Tre, designed to make hydrological conditions more amenable to intensive rice cultivation. This trend goes back to the French colonial period and the construction of works at Băng Cung (see Chapter 2), and extends to the Vietnam War period, when a team of American consultants developed an ambitious plan to block off the Ba Lai river from saline intrusion and turn it into a reservoir for year-round rice production. Writing in 1970, the consultants framed the challenges facing the development of agriculture in the province as follows: "Presently salt water intrudes through a large part of the project area for extended periods of the year and creates a major impediment to successful growing. The economy [of Bến Tre] can be greatly bolstered by solving the salt water problems and by exploiting the potential benefits of the new IR8 (miracle) Rice" (PAE International 1970:4-1). With the construction of a dam on the Ba Lai River, the consultants predicted, the province could reach its "ultimate production potential" through the cultivation of "three crops of 'Miracle Rice' per year" (PAE International 1970:4-4). Such large-scale plans were, however, never implemented, due to the adverse security situation in rural Bến Tre, which remained a hotbed of insurgent activity throughout the war.

After the end of the Vietnam War in 1975, Bến Tre experienced food shortages, exacerbated by crop losses, and was dependent on rice shipped in from elsewhere in the Mekong Delta (Nguyễn Chí Bền et al. 2001:457). To resolve this perennial food

crisis, the new authorities invested heavily in the construction of new irrigation systems, which served to convey fresh water from the Hàm Luông and Tiền rivers to coastal districts like Bình Đại and Ba Tri. Thanks to these new canals, as well as the promotion of new seed varieties, by 1985 production of rice had increased to 450,000 tons per year, from just 180,000 a decade earlier (Nguyễn Chí Bền et al. 2001:458). Despite these gains, the cultivation of rice in Bình Đại and Ba Tri remained largely limited to a single crop per year, due to the lack of irrigation water in the dry season, when canals filled with sea water, and crop losses remained a frequent occurrence. As Hoa, a 46-year old from Bình Đại district recalled, thinking back to the 1990s, when she was newly-married, and cultivated rice with her husband: "When we grew rice it was a very difficult time. If the rice succeeded, you could eat, but if the crop failed you would starve."[2] Sitting on the porch of his comfortable concrete house, Lâm, a 50 year-old farmer from Ba Tri, shared a similar reminiscence about that period: "In the past, we used to grow rice, but rice fails a lot, and it doesn't offer any profit" (*không có lợi*).[3]

To address the hydrological constraints that plagued rice production in Bến Tre, the government erected a series of smaller infrastructure projects in the 1990s and then, at the end of the decade, began work on the long-planned dam at Ba Lai (Bến Tre Province People's Committee 2006). Construction on the dam began in 2000 and was completed in 2002. The finished project consists of a metal and concrete barrier that spans 84 meters and includes 10 individual gates and a 554 meter earthen dam, which is connected to the gate complex by a small island in the middle of the channel (see Figure 4.3). In total, these works cost approximately $92 million USD (Nguyễn Minh Quang and Đỗ Hiếu 2006). When the gates are closed, as during the dry season, the Ba

[2] Interview, Bình Đại district, 7/11/2015.
[3] Interview, Ba Tri district, 10/26/2014.

Lai structure is designed to protect 88,500 hectares of agricultural land in Bình Đại, Giồng Trôm, and Ba Tri districts from the impacts of salt-water intrusion by essentially converting the Ba Lai river into a fresh-water reservoir (Bến Tre Province People's Committee 2006:46). The objective of this project was to "fundamentally transform the basic ecology of the upstream region into a freshwater ecological zone," reducing the salinity level so that "areas that grew one crop of rice could now grow two, and areas that grew two could now grow three crops" (Nguyễn Chí Bền et al. 2001:115). In other words, the object of the dam was to dramatically alter the material productive forces in agriculture and expand their productive capacity, at least in the cultivation of rice.

From its depiction in official media sources, this project would appear, at first glance, to have been successful. Not only did the completion of the dam "create a comprehensive change in the appearance of the land itself," but it also "opened up the possibility for conversion to an intensive farming model and increased crop yields" (Bến Tre Department of Science and Technology 2014). Upon completion of the Ba Lai dam, for example, farmers in nearby Phú Long commune who had only been able to produce one "pitiful" crop of rice per year were now were able to produce two crops with a total yield of 10 tons per hectare (Nguyễn Thị Kỳ 2005). The stage was thus set, at least according to one account in a national newspaper, for an agricultural "breakthrough" (*đột phá*) in the province and the pursuit of a new accumulation strategy based firmly on intensive agriculture (Nguyễn Thị Kỳ 2005). As the supposed catalyst for such a transition towards agricultural intensification, the Ba Lai dam had immense symbolic and political value; hence, it was presented for a mass audience in a provincial tourist guide as a symbol of the "potential and future" (*tiềm năng và tương lai*) of the province (Nguyễn Cường Dũng 2003:6-7).

The accumulation strategy that the dam was supposed to set in motion, however, never truly took hold. The structure of incentives and constraints facing farmers in Bến Tre was such that accumulation in agriculture was largely infeasible. Even after the completion of the Ba Lai dam, returns on rice farming were simply insufficient for bare survival and social reproduction, let alone accumulation. While production increased, yields remained low compared to other provinces in the Mekong Delta. Even with fresh water in the canals, salt remained in the soil, a legacy of the saline influence. In 2016, a hectare of rice land yields an average of 5.68 tons per crop across the entire delta, but that figure is only 4.71 tons in Bến Tre (General Statistics Office of Vietnam 2017). Moreover, average farm sizes in Bến Tre were significantly smaller than in other areas of the Mekong Delta. In 2011, for example, the average rice-farming household in Bến Tre cultivated 0.69 hectares of paddy land, compared to 1.41 for an average rice-farming household in the Mekong Delta as a whole (General Statistics Office of Vietnam 2011a:192, 331). This combination of small farm sizes and low yields meant that rice agriculture remained economically nonviable for many small farmers in Bình Đại and Ba Tri. As Đức, a farmer in Bình Đại, put it, "rice is not enough to make ends meet. Rice is just 5,000 VND [or about $0.25] for a kilogram. How can we live on that?"[4]

Many farmers turned from rice to other options. Bến Tre is a major coconut producer, and coconuts are cultivated throughout Bình Đại and Ba Tri districts. Like rice, however, coconuts have a low yield and low value. Sitting in his family's home, Đức pointed to his neighbors, who were piling coconuts on a cart to transport to a buyer for sale. "Coconuts are just 3,000 VND a piece," he exclaimed, "that's just 300,000 [about $15] for a hundred coconuts!"[5] In the late 1990s and early 2000s, farmers

[4] Interview, Bình Đại district, 7/10/2015.
[5] Interview, Bình Đại district, 7/10/2015.

began to turn to other forms of commodity production. Bình, a farmer in Bình Đại district whose land borders the Ba Lai river, then newly freshened, explained how she switched her rice fields over to sugar cane production in the early 2000s. Pointing to her small field, she remarked, "for one year, if we grew rice here, we could only make about 1 million VND [about $50]. But the same field could produce 5 tons of sugar cane, which we could sell for 5 million VND," or about $250. "So," she added, "of course we were more in favor of sugar cane."[6] After a few years, however, the yields from sugar cane began to decline, and Bình, like many of her neighbors, made the switch to a new form of production that offered the potential for even higher profits: salt-water shrimp farming.

While traditional forms of aquaculture have long been practiced in Vietnam, the cultivation of marine shrimp — mainly black tiger prawn and whiteleg shrimp — did not emerge as a significant production sector until the mid-1990s, just as Vietnam's economic re-integration was opening up new export opportunities. In face of the constraints to accumulation in rice agriculture, shrimp aquaculture appeared to many farmers in Bến Tre as a form of salvation, offering incomes that could be exponentially higher than that from rice (Cửu Long 2004). Lâm explained the difference this way: "My shrimp pond is only 1700 square meters [or 0.17 hectares], but in a single year, I can harvest two crops of shrimp and make as much as someone who has 4 or 5 hectares of rice."[7] Converting agricultural land to shrimp farming was however, technically illegal, as it contravened the official land-use plan. But this did not deter farmers such as Lâm and Đức. As the latter put it, "people are hungry, we are poor, we have to bear that without help from the government, so we grow shrimp spontaneously." With shrimp, he explained, "there is still hope to change our life.

[6] Interview, Bình Đại district, 7/9/2015.
[7] Interview, Ba Tri district, 10/26/2014.

Those other ways [growing rice and coconuts] are no way to live."[8]

Land conversion was, however, a costly process, entailing significant investments in transforming the biophysical forces of production. To dig out ponds, for example, farmers had to hire earth movers (called "Kobe" machines, named after their Japanese manufacturer), which could cost between 20 and 30 million VND (or $1000 to $1500 USD) (see Figure 4.4). Add to that sum the fees for shrimp stock and other inputs, and the costs could reach upwards of 50-60 million VND.[9] This gave an edge to wealthier farmers (and those with more land, who could borrow against their holdings), but even modest farmers made the transition. Facing a lack of other pathways to accumulation, many invested all the capital they could muster in this new production system, and in transforming their immediate biophysical environment to make that production possible, even if doing so meant going in to debt or mortgaging land. As one shrimp farmer in Bình Đại explained to a journalist in 2013, "I borrowed 100 million VND [or about $5,000] from the bank, and to do that I had to put up my land- use certificate as collateral. I have a child who is going to school in Hồ Chí Minh City, and I have to use some money to support him. What remains I'm putting into raising whiteleg shrimp. It will never be enough if I just have these coconut trees, which are always failing anyway." "The situation of my family is very difficult," he continued; "it will take 50 million VND to convert the land to shrimp ponds, but my household has six people now, six mouths to feed, and with all the other costs we have to bear, I must take this chance" (Mã Phương 2013).

From the banks of her shrimp ponds, Bình explained that she and her family made the switch in 2011, hiring earth movers to dig out their coconut grove and making two ponds in their place. As Bình puts it, she and her husband got "greedy" (*ham*). "I saw

[8] Interview, Bình Đại district, 7/10/2015.
[9] Interview, Bình Đại district, 7/11/2015.

other people making big profits," of up to several hundred million VND per pond, she recounted, "so I wanted that too. I did not know whether I could make the same profit, but I hoped so and that's why I dug the pond. I hoped I my life could be changed like others." More than anything, she said, she and her husband were determined "not to let ourselves live in the cycle of poverty forever."[10]

It is important to reiterate that this shift from agriculture to shrimp aquaculture took place *after* the completion of the Ba Lai dam, which was designed to transform water conditions in the river and canals so that would be fresh year-round. Marine shrimp, however, need salt water, and thus would-be shrimp farmers had to invest in technologies that would allow them to access salt water sources within the new hydrological conditions created by the dam. Taking advantage of a natural feature of Bến Tre's estuarine hydrology, farmers drilled wells to tap into sources of saline groundwater. They then used diesel-powered pumps and PVC piping to fill their ponds with this saline water, even as the canals and rivers around them were becoming fresh due to the construction of the Ba Lai dam and other salinity-control works (see Figure 4.5).

The story of Cường, a farmer in Bình Đại who now cultivates three shrimp ponds on the banks of the Ba Lai river, just upstream of the Ba Lai dam, is illustrative of this trend. While Cường and his family had previously cultivated rice, they found little success, even after completion of the dam in 2002. In 2004, they hired an earthmover to dig out their first shrimp pond, and then in 2006 they dug out two more. Since the river itself had become fresh year-round with the construction of the dam, he drilled a well to access salt water from underground. "There is only fresh water now," he explained, pointing to the river, "that's why we have to get salt water from the well,

[10] Interview, Bình Đại district, 7/9/2015

since it isn't out there in nature anymore." Ironically, the construction of the dam actually facilitated shrimp farming by making it easier for farmers such as Cường to achieve the hydrological conditions for the development of shrimp fry. As he explained, the whiteleg shrimp in his ponds develop best in water with a salinity concentration of about 1%, which mimics the estuarine habitat of their native forbearers. The water he pumps from underground, however, is twice as salty as he needs. To achieve the ideal conditions in his ponds, he said, "we pump up water [from the wells] and then mix it with fresh water from the canal," at a 50/50 ratio.[11] Thus the construction of the Ba Lai dam has, unintentionally, facilitated the development of aquaculture by providing farmers with ready sources of both saline and fresh water, which they can use to calibrate the ideal salinity conditions for shrimp cultivation.

The cumulative impact of these everyday technologies and practices has been enormous, serving to subvert the infrastructural agenda and accumulation strategy of the Vietnamese state, as embodied in the Ba Lai dam. Even as this structure was being built, both shrimp farming and the technologies necessary to make such production possible were proliferating rapidly. Between 2000 and 2005, the area under saltwater shrimp cultivation in Bến Tre increased from 18,696 hectares to 32,253 hectrares (Bến Tre Province Statistical Office 2007:169) and the value of overall aquaculture outputs increased from 800 billion to 2.1 trillion VND (or approximately $1 billion USD) (Bến Tre Province Statistical Office 2010:180), with Bình Đại district (much of which lies in the scope of the Ba Lai project) being the largest overall producer of farmed shrimp in the province. In 2013, it was estimated by the local government that there were 1,677 saltwater wells in Bình Đại district alone, supporting an estimated 730 hectares of saltwater shrimp ponds (Sơn Tùng 2014). As a district official noted,

[11] Interview, Bình Đại district, 1/6/2015.

however, “those are just preliminary statistics; the actual number could be much higher” (Đức Thịnh and Ngọc Duyên 2013).

Since “rice cannot compete with other crops,” as a 2015 report by the Bến Tre government found, people “spontaneously changed the use of land (and of rice land in particular) in contravention of the prescribed procedures” (Bến Tre Province People's Committee 2015). As a consequence, the area cultivated under rice declined in the years following the completion of the Ba Lai Dam, despite a decade’s worth of investment in water management infrastructure designed to support and protect intensive rice agriculture. In 2000, there were approximately 55,000 hectares under rice cultivation across the province, but by 2010, that figure had dropped to only 35,000 hectares (Bến Tre Province Statistical Office 2010). After reaching a high of 392,100 tons in 2002, after the completion of the Ba Lai dam, rice production fell steadily over the next five years as farmers rushed to convert their land to shrimp ponds, declining to 304,800 tons by 2007 (General Statistics Office of Vietnam 2017).

This wave of “spontaneous” conversion can be conceptualized as a process of disaccumulation “from below” that undermines the productive forces in rice agriculture, built up through years and state investment, driven by a countervailing process of everyday accumulation in shrimp farming. The result was to undermine the accumulation strategy of the state and, by extension, its capacity to pursue broader political goals, such as the maintenance of national food security. As Cao Văn Viết, the vice director of the provincial Department of Agriculture and Rural Development, put it in 2013, “People seek immediate benefits [*lợi trước mặt*] without looking at the long-term negative consequences” of their actions (Anh Đức 2013). This tension between the need — thrust upon them by the structural forces inherent in Vietnam’s newly liberalized economy — of farmers to pursue immediate economic returns and

that of the government to attend to collective, long-term concerns, such as the maintenance of national food security, would serve as an enduring axis of conflict between these two social actors, as described in more detail below. Standing amidst his shrimp ponds, on the banks of the "freshened" Ba Lai river, Cường put the competing perspectives this way: "We just care about the present. You know, that's the farmer… We just care about having money and food to eat, but the government cares about the future, about long-term development." While the timeframe of the individual farmer might be focused on immediate returns, "the government is thinking about hundreds of years in the future," which is why, he reckoned, "they spent a lot of money on this," he said, flicking his finger towards the Ba Lai dam, looming in the distance.[12]

Disaccumulation, Resistance, and Counter-Accumulation

This section examines attempts at disaccumulation (dismantling the productive forces in aquaculture) and the response of farmers, who engaged in a form of resistance through counter-accumulation. In the years between 2010 and 2015, authorities launched a new wave of infrastructure projects, motivated by renewed concerns at the level of the central government over Vietnam's long-term food security. This wave of infrastructure construction was accompanied by a crackdown aimed at reining in "plan-breaking" (*phá vỡ quy hoạch*) as violations of the official land-use plan and acts of everyday accumulation in marine shrimp farming were described in the official parlance of the Vietnamese state.

The proximate cause for this renewed set of interventions into the physical forces and

[12] Interview, Bình Đại district, 1/6/2015.

social relations of agricultural production in Bến Tre was the food price crisis of 2007-2008, which heightened attention at the upper echelons of the Vietnamese state to issues of food security and climate change. As concerns over the preservation of agricultural land and the pernicious effects of climate change rose, Bến Tre — despite its relatively small contribution to overall rice production — came to be a central focus of government infrastructure spending, due to its inordinate exposure to the impacts of climate change, and sea-level rise in particular. On the ground, this heightened concern would take two forms: the more stringent application of land-use planning to protect agricultural land and constrain conversion of rice paddies to shrimp ponds, and the construction of large-scale infrastructure projects aimed at ensuring the long-term viability of intensive rice production in the province, even in the low-lying coastal areas most directly threatened by sea-level rise.

In the immediate aftermath of the food crisis, the Vietnamese government launched a number of new large-scale infrastructure projects aimed at preventing saline intrusion and maximizing rice production in the Mekong Delta. In 2012, the Prime Minister's office issued a new water resources development plan for the Mekong Delta region, which committed 107,700 billion VND (equivalent to over $5 billion USD) to the construction of hydraulic works such as sea dykes, flood control systems, and irrigation canals intended to mitigate the impact of climate change and to maintain the region's high level of agricultural output (Benedikter 2014:115-16). Examples of such projects include the second phase of the South Mang Thít project in Trà Vinh and Vĩnh Long provinces, phase two of the Ô Môn - Xà No project in Cà Mau, and the rehabilitation of sluice gates and dikes in the Tiếp Nhựt system in Sóc Trăng (Government of Viet Nam 2013b:116-18).

Among the largest of these projects was a new set of dikes and sluice gates in Bến Tre,

which was intended to complete the work begun with the Ba Lai dam. Construction of this project, dubbed the North Bến Tre Irrigation System, was launched in 2010 under the direction of the Ministry of Agriculture and Rural Development. The project consists of a network of dikes and sluice gates designed to completely seal off a large portion of northern Bến Tre (namely Bình Đại, Giồng Trôm, and Ba Tri districts) from the influence of the tides. In total, the North Bến Tre project encompasses 133 km of new dikes, 7 large gates, including structures at Định Trung and Sơn Đốc 2 (completed in 2014 and 2015), and 18 smaller gates for an estimated total cost of 7.5 trillion VND (or about $330 million) over ten years (from 2010 to 2020) (Bến Tre Province People's Committee 2011:132-37). The stated objectives of the project were to complete the process of environmental transformation begun with the construction of the Ba Lai dam, to seal off most of northern Bến Tre from the influence of the tides, and to create a freshened zone encompassing 139,000 hectares (see Figure 4.2). As a project document, prepared by Southern Institute for Water Resources Planning, a division of the central government based in Ho Chi Minh City, put it: "The objective of the [North Bến Tre] Project is to protect the major industry, which is agriculture, and the people's life of the North Ben Tre area from the threat of saline intrusion being caused by sea level rise under climate change, whereby [it will] serve for socio-economic development for the Ben Tre Province in general" and in the project site in particular (SIWRP and JICA 2013:Appendix X-1-1).

In the wake of the food price crisis, the government also issued new, more stringent guidelines on land-use planning, in effort to stem the unauthorized conversion of agricultural land to other uses. In 2009, the Prime Minister issued a policy directive that called for 3.8 million hectares of rice-growing land across the country to be preserved as a permanent "fund" (*quỹ*), to be 'kept and strictly protected' (General Statistics Office of Vietnam 2011b, Government of Vietnam 2009:51). According to

these new guidelines, provinces were required develop detailed land-use plans that conform to national land-use targets and submit them to Prime Minister for approval (Government of Viet Nam 2009). In Bến Tre, the rice production target for 2020 was set in 2011 as 33,000 hectares, of which 31,000 were to be devoted to intensive production (of at least two crops per year) (Government of Viet Nam 2013c). These objectives were laid out in a land-use map, produced by the province and approved by the central government, which shows target areas for different forms of production in 2020 (Bến Tre Province People's Committee 2011).

Complying with these directives and realizing the vision of a highly-productive "freshened zone" in North Bến Tre required not just state investments in infrastructure, or the issuing of official guidelines and policy papers. Rather, transforming the province into an area of intensive agricultural production — that is, setting in motion accumulation in agriculture — would require a crackdown on noncompliant land use (i.e. "plan-breaking") and a campaign of *disaccumulation* in marine aquaculture. This campaign was largely carried out by provincial, rather than local (district or commune level) officials, for the simple reason that many local officials were involved in shrimp farming themselves and were thus more than willing to turn a blind eye to violations of the land-use plan.[13] Thus the enforcement of these new restrictions was carried out by public security personnel sent from the province, along with officials from the provincial Department of Agriculture and Rural Development. These campaign were driven by the issuance in 2013 of a new set of guidelines by the national government, which outlined strict punishments for "plan-breaking" in the aquaculture sector (Government of Viet Nam 2013a).

The first of these sanctions was to fine those "plan-breakers" raising seafood outside

[13] Interview, Bình Đại district, 10/25/2014.

designated areas, with potential fines ranging from 20 to 30 million VND (or approximately $1000 to $1500). In 2013 and early 2014, many shrimp farmers in Bến Tre were fined, and forced to sign pledges that they would abandon shrimp production. For shrimp farmers, this was a risk worth taking, given the profits that could be made from shrimp farming. As a 2014 newspaper article reported, many people are "willing to pay these fines because the amount is so little compared to the profit that can be made by growing shrimp" (Tấn Quốc 2014). As Lâm, a shrimp farmer in Ba Tri district explained, "we have to accept it, we can face a fine of 25 or 30 million VND. If we want to make profit, we must spend millions of VND as a fine."[14] Rather than resist paying the fines, shrimp farmers simply complied; that is, they accepted fines as a cost of doing business but then simply reverted to growing shrimp again once the authorities left. This pattern was recognized by officials as well; as Phan Văn Bình, the head of the Agriculture and Rural Development office in Thạnh Phú district explained, "with the level of the fine, people are prepared to pay it, because that amount of money isn't as large as the very attractive profit that they can make from one harvest of shrimp." In his estimation, 80% of shrimp farmers who paid such fines simply continued to raise shrimp anyway (Tấn Quốc 2014).

The second sanction outlined in the decree, however, posed a much more serious threat to shrimp farmers and their practices of everyday accumulation. According to the decree, farmers growing shrimp outside the designated area would be "forced to dismantle aquaculture enterprises that do not conform to the plan or have not been approved by the appropriate authorities" (Government of Viet Nam 2013a). In the summer of 2014, provincial officials fanned out in key communes and physically destroyed illicit wells. Provincial security officials (*công an*) hacked at PVC piping

[14] Interview, Ba Tri district, 10/26/2014.

with machetes, confiscated diesel pumps, and filled in wells with concrete. This campaign is captured in a video report from the provincial television station, which depicted a team of security officials destroying wells, interspersed with clips of government officials explaining that such plan-breaking will no longer be tolerated, alongside shots of dejected shrimp farmers (see Figure 4.6). Like everyday accumulation, the objective towards which this labor is directed was the physical restructuring of the biophysical environment, but unlike such everyday accumulation, here the thrust is to unmake the productive forces in shrimp aquaculture. This campaign can instead be characterized as one of forced *disaccumulation*, or the dismantling of the physical productive forces that have been built up in aquaculture over more than a decade.

In contrast to their attitude towards fines, shrimp farmers actively resisted these attempts to destroy the physical and technological base of shrimp production in the freshened zone. They did so first through the classic repertoire of "everyday politics" (Kerkvliet 2005, Scott 1985): evasion, dissembling, and deception. A journalist pointed to the generalized nature of this practice, noting that "even farmers know how to use a diversion… so they make a fake well for the authorities to fill in, while at the real well still lies hidden in another place" (Tấn Quốc 2014). Sitting on the porch of his comfortable, newly-built home in Ba Tri district, next to a small shrimp pond carved out amidst a sea of green rice paddies, Lâm offered a similar story: "They [the authorities] knew that we had dug a well, but when they asked us about it, we didn't tell them, we said that we hadn't dug any. When they asked whether we were telling the truth, I asked him to find it." "We dug the well deeply," he explained, "and then used a coconut shell to cover it, then we put soil on top to make it flat, whenever we want to use we have to dig and then cover it again so that they can't see it." As a result, his well remained undamaged. "We just pump water at night and during the day

we cover it again," he explained.[15]

The simple act of forced disaccumulation, even when successful, did not automatically direct shrimp farmers' energies back into officially permitted forms of agriculture. Rather, they responded to the destruction of the productive forces in aquaculture by rebuilding them: buying new pumps and re-digging wells that had been filled with concrete, but this time carefully concealing them. Newspaper accounts, for example, describe shrimp farmers hiding wells and pumps under beds or even in outhouses (Tấn Quốc 2014). Minh, a shrimp farmer in his 70s from Bình Đại district, explained:

> "The authorities imposed a ban on using salt water. They don't allow us to build new ponds and they stopped us from pumping salt water. But I have a pump in my house, and they don't control what I do in my house. I drilled a well right inside my bedroom. At night, when everyone's asleep, I run a pipe out to my pond, and then take it back inside at 4:00 AM."

The authorities, he continued, "can control it out there, I still can stay inside my house and pump water into the pond at night." After all, he asked rhetorically, "how we can raise shrimp without salt water?"[16]

In this sense, resistance by shrimp farmers to forcible disaccumulation took the form of surreptitious re-accumulation in aquaculture, a form of resistance that works through what I dub "counter-accumulation." The reason that farmers continued embarked on such a risky strategy, investing resources into the reconstruction of illicit assemblages of wells, pumps, and pipes, was simple: they saw no alternative pathway to accumulation. Converting the shrimp ponds back to fields for agricultural

[15] Interview, Ba Tri district, 10/26/2014.
[16] Interview, Bình Đại district, 1/7/2015.

production, as per the thrust of government food security and land-use policy, would require substantial investments of time and capital that offered little prospect of economic return. As Cường, the shrimp farmer on the banks of the Ba Lai river, lamented, "how can we grow rice with this land?" "If we want to grow rice," he continued, "we need to hire machines [earth movers] to fill in the ponds." "Even then," he continued, "the soil is still salty, and it probably takes 10 more years to grow plants again." Instead of converting his ponds back to agriculture, Cường re-drilled his well after the authorities filled it with concrete, but this time relocated the well to a concealed location. When asked what would happen if were forced by the authorities to finally stop growing shrimp, once and for all, he shrugged: "I don't know what I'd do."[17]

The work of re-accumulation in the face of the government crackdown was not, however, limited to those farmers who had been successful in cultivating shrimp, and thus not solely driven by a lust for profits, but by mounting debts and economic pressures that left farmers with few options. Just down the road from Cường, Bình — the shrimp farmer who attributed her headlong rush into aquaculture to "greed" on the part of her and her husband — sat on the banks of her shrimp ponds and explained that they had fallen deeply into debt as a result of a string of failed shrimp harvests, and now owed 200 million VND (or about $10,000). Despite this debt, however, she continues to invest in shrimp farming, and had just restocked her pond.

> "I have to keep trying, otherwise we have no money to pay off our debts. It is only shrimp which can help to pay off debts now… If we sell [our land] now, we will have nothing left. Working for other people does not pay enough, and so we have to try to pay the debts and keep our land…

[17] Interview, Bình Đại district, 1/6/2015.

> God would not let people fail constantly, and we have been in misery for a long time, so there will be a day that we will earn a lot to compensate for what we have lost… If we succeed once [with a good shrimp harvest], we will earn hundreds of millions of VND and pay off our debts."

In order to carry out this plan, however, she needed to keep farming shrimp. "The authorities banned shrimp farming," she recounted, "but we begged them because we were so poor, we begged them to allow us to raise shrimps for two more years." As a result, she had been able to avoid a fine, for now. With help from her son, who worked in Hồ Chí Minh City and sent money home each month, which they used to buy shrimp stock, and from their neighbor, who had dug five wells and let them tap into one of his to fill their pond with salt water, they were once again rolling the dice and hoping for a successful harvest. "Then," she said hopefully, "we will pay off our debts and we will change to another crop."[18]

Replicating the failure of the Ba Lai dam, but on a larger scale, these everyday acts of counter-accumulation serve to undermine the broader accumulation project of the state, in the form of the North Bến Tre project. This dynamic is illustrated by the case of Hoa, a shrimp farmer in Bình Đại. From her porch loomed a newly-constructed sluice gate, which blocked the flow of salt water from the Mekong into the neighboring irrigation canal. Before the gate, one of series constructed between 2012 and 2015 as part of the North Bến Tre project, she could simply access salt water as it flowed unimpeded into the canal. With the construction of the gate, however, she found herself, and her shrimp ponds, inside the newly freshened zone. "In here," she explained, "we're supposed to farm rice or coconut," but on the other side of the gate,

[18] Interview, Bình Đại district, 7/9/2015.

"people are allowed to keep growing shrimp." She was, however, able to overcome the impact of this massive and expensive piece of infrastructure with a simple bit of ingenuity and everyday accumulation. When asked how she was able to keep raising the shrimp in her pond, despite the construction of the dam, she pointed to a length of PVC piping, which ran, she explained, to a point out beyond the gate, where there was still fresh water. Rather than relying on a well, she explained, "I pump the water in from out there, and into my ponds here."[19]

Like Bình, however, Hoa's resistance to the state infrastructure project through illicit counter-accumulation was motivated not by the attractiveness of shrimp farming *per se*, but by the lack of other viable options for her and her family. She had, she explained, experienced several disease outbreaks in her shrimp ponds, and lost harvests as a result. "In reality," she said, "we don't gain anything [from shrimp farming] but just lose a lot and we keep moving backward." Nevertheless, she was continuing to grow shrimp and had recently spent about 50 million VND (or about $2500) on feed and stock for a new shrimp crop. "We are trying," she explained, "to regain the money we lost" and thus break the cycle of debt with a good harvest. When asked why she did not abandon shrimp farming and switch back to rice, she explained that doing so would be as much or even more expensive than gambling on another shrimp crop. "I would have to hire a Kobe machine [an earth mover] to dig the soil and cover the pond, or pump sand in from the river bed." "Just like when we had to drill wells to get salt water for shrimp farming," she continued, "if we want to grow rice again, we'll have to flatten out the land so that we can scatter rice seed."

Hoa's comments speak to the central role of everyday accumulation practices in restructuring productive forces on ground, and thus driving processes of

[19] Interview, Bình Đại district, 7/11/2015.

environmental change in ways that sometimes conflict with the plans of state officials. Engaging in such practices, as by digging ponds for shrimp or filling them in for rice cultivation, requires, however, both capital and an economic rationale on the part of the individual producer. As Hoa concluded, "no matter what we do," speaking either to the possibility of raising shrimp or going back to rice, "we need money to do it," along with a clear pathway to accumulation to justify the investment.[20]

In recognition of this unwillingness to make such investments in transforming the land back to rice agriculture (and in lieu of official support for such re-conversion), though authorities banned the digging of new ponds, the drilling of wells, and the pumping of saline groundwater, they permitted the adoption of another alternative crop in existing ponds: freshwater prawns (*tôm càng xanh*) (Phương Bình 2015). These can be cultivated in existing ponds, thus sparing shrimp farmers the immediate expense of converting their land back to agricultural production. The cultivation of freshwater prawns thus serves as an intermediate production strategy, balancing the priorities of the state — in halting the degradation of soils and their future agricultural capacity — with the economic needs of farmers.

Freshwater prawn, however, take a much longer time to mature than their saltwater counterparts (six months, as compared to just two) and fetch a lower price, thus offering limited possibilities for accumulation.[21] Correspondingly, few saltwater shrimp farmers have made the switch to freshwater prawn production. Moreover, this compromise makes the business of rooting out and eliminating non-conforming production systems difficult, since saltwater shrimp ponds and freshwater ponds look the same at first glance. Thus, the existence of this intermediate production strategy provides cover for marine shrimp farmers, rendering their counter-accumulation

[20] Interview, Bình Đại district, 7/11/2015.
[21] Interview with Lâm, Ba Tri district, 10/26/2014.

practices “illegible” to the state and its agents (Scott 1998).

From “Freshening” to “Living with Salinity?”

As climate change intensifies, it is impacting the productive forces in agriculture in ways that may be outstripping the capacity of the Vietnamese state to respond. This calls into question the continued pursuit, by the Vietnamese state, of an accumulation strategy — and system of land-use planning and infrastructure construction — so wedded to the intensive production of rice. The alternative, however, is an adaptation strategy predicated on the pursuit of everyday accumulation in the face of changing environmental conditions, potentially setting in motion the transformation of the productive forces in ways that impair long-term productivity (and imperil Vietnam’s long-term food security). Each of these adaptation strategies, as we shall see, has profound implications for future trajectories of accumulation in the Mekong Delta.

Recent years have seen two severe droughts in the Mekong Delta — one in 2013 and one in 2016 — that have brought with them intensified saline intrusion, as the decreased flow of the Mekong allows the tides to penetrate further inland. Bến Tre is particularly exposed to such events, since it lies along the coast and because dry-season agriculture in the province relies on the flow of irrigation water from upstream. When the irrigation canals run dry, or when they fill with salt water because the tides have penetrated to their intake points upstream, rice agriculture in Bến Tre suffers catastrophic damage. In the spring of 2013, nearly one-third of the spring rice-growing area in Bến Tre was affected by saline intrusion, in the context of a severe drought, and 700 hectares of rice-growing land suffered outright crop failure (Khoa Chiến and Giao Hòa 2014). In 2016, an even more severe drought occurred, causing water levels

in the Mekong to drop to historic lows (Nguyen 2017). The consequences of this drought and the ensuing saline intrusion were devastating, at least for rice production. In Bến Tre, 20,000 hectares of rice-growing land was affected (or more than half the total rice-growing area) (Hữu Danh 2016). Consequently, rice production declined precipitously, from 279,000 tons in 2015 to just 161,000 in 2016 (General Statistics Office of Vietnam 2017).

The impact on rice production in Ba Tri district was particularly devastating; there, 11,000 hectares of rice crops were lost, out of a total of 14,000 hectares. Even though the coastal sluice gates held firm against the onslaught of the tides, salt water flowed as far inland as Bến Tre city, allowing it to enter the irrigation canals that feed rice production in Ba Tri. When interviewed in 2016, Hai, a farmer in Ba Tri, recounted what happened next. Looking over the brown stubble of her barren rice field, she explained: "We didn't know it, but by the time we realized, the field had been contaminated." "We didn't taste it [the water]" to gauge its salinity and "it wasn't until it entered that we realized the problem, but it was too late." She and her family had made large investments in flattening out the land for rice production when the nearby Mương Đao gate was constructed in the early 2000s, and after a few years, she had been able, like many of her neighbors, to harvest two crops of rice annually, making Ba Tri a rare success story for rice production in Bến Tre. Now, she said, she had lost an entire crop, and she (along with many of her neighbors), was afraid to plant rice again.[22]

The dominant response of the Vietnamese government to the drought has been to retrench its commitment to an adaptation strategy that prioritizes the preservation of agricultural capacity in coastal areas. This commitment is evidenced by both the

[22] Interview, Ba Tri district, 6/1/2016.

allocation of resources to large infrastructure projects, and by policy pronouncements — most notably Resolution 63, which serves as the primary statement of Vietnam's food policy (Government of Vietnam 2009) — that proclaim the centrality of rice agriculture and the creation and maintenance of a freshwater zone in the coastal Mekong Delta to Vietnam's long-term food security and economic development. On the infrastructure side, the drought provided a dramatic backdrop against which an ambitious new project was launched — with generous funding from a foreign donor — to complete the work begun with the Ba Lai dam and North Bến Tre projects. In 2016, the government of Vietnam signed an agreement with the Japanese International Development Agency, which pledged $216 million USD in loans for the construction of 8 major sluices gates in Bến Tre, including one at An Hoa that is even larger than the existing gate at Ba Lai (VNS 2017).

Meanwhile, the political leadership of Vietnam has cast the drought as evidence of the need for even greater investment in large-scale infrastructure projects and a campaign of mass mobilization to counter the rising threat. Cao Đức Phát, the national minister of agriculture, argued in a 2016 editorial that "the current wave of drought and saline intrusion demonstrates the extremely urgent need to improve the irrigation system in the Mekong Delta" and to make investments in infrastructure such as this new set of sluice gates (2016). Meanwhile, in Bến Tre, the Chairman of the Provincial People's Committee, Cao Văn Trọng, argued that the devastating drought demonstrated the "need for a solution to address and mitigate the damage caused by salinity intrusion," and pointed to the North Bến Tre project as an example of just such a solution. Advocating not just new investment by the national government and foreign donors in physical infrastructure to protect the province from the impact of climate change, he called on local officials and farmers to work together to "adapt to saline intrusion in the spirit of a new awakening" drawing explicit parallels to the province's history of

revolutionary struggle (Phạm Văn Trí 2016). In this spirit, the provincial chief exhorted rural people to "conserve fresh water in the rainy season in all ways to serve agricultural production," and to invest their own labor into adaptation efforts and state-directed projects aimed at fostering accumulation in the agricultural sector, as by digging reservoirs that could supply irrigation water for dry-season rice production.

These efforts to maintain conditions for intensive agriculture in the coastal zone, however, have been tempered not just by everyday resistance and deteriorating environmental conditions, but by shifting attitudes within the state itself. As the memory of the 2007-2008 rice price crisis fades, the central government has been gradually loosening restrictions on land use, and in 2016, the National Assembly authorized a revision to the national land-use plan that reduced the overall target for rice-growing land and authorized the conversion of nearly a half-million hectares of land to other crops (Lam Le 2016). This apparent loosening of restrictions on agricultural land use came, however, with significant constraints. The National Assembly's decree, for example, sets narrow bands on how former rice-growing land can be used, explicitly forbidding its conversion to non-agricultural uses or any other use that would be detrimental to the long-term productivity of the land and prevent its ultimate conversion *back* to rice production. This point is made in an analysis by the Ministry of Agriculture and Rural Development: of the 3.76 million hectares of paddy land, it argues, "it is possible to permit the conversion of about 400,000 ha to the cultivation of other crops without losing the necessary natural conditions, so that, if necessary, the land can be returned to rice cultivation." In this way, an overall "fund" or "reserve" of rice-growing land (*quỹ đất trồng lúa*) could be preserved indefinitely as a hedge against future food insecurity (H.V. 2016).

In Bến Tre, this new, if limited openness to alternative production systems is apparent

in the softening of the formerly rice-centric land-use planning regime. In the aftermath of the 2016 drought, it has become increasingly apparent that intensive rice production is no longer environmentally tenable or economically viable in much of the coastal zone. Emboldened by the new loosening of land-use restrictions at the national level, provincial authorities have promoted "the conversion of inefficient rice land" in the coastal districts of Bình Đại, Ba Tri, and Thạnh Phú to other crops, such as coconut and grass for cattle fodder, "with high economic value and high capacity for adaptation to climate change" (Viết Duyên 2016). In light of this loosening of land-use restrictions, and the devastating impact of the drought, Hai — the former rice farmer in Ba Tri — had converted some of her fields to grass, which she sells as cattle fodder.[23] In total, the provincial Department of Agriculture and Rural Development outlined plans for the conversion of 6,000 hectares of rice fields, or about 20% of the province's total rice-growing land, to alternative uses by 2020 (Viết Duyên 2016).

The softening of land-use restrictions in recent years has thus served to facilitate and legitimize the conversion of rice-growing land to crops that are not seen as undermining future agricultural potential or the broader project of "freshening" the coastal zone through large-scale infrastructure projects. A senior official from the Ministry of Agriculture and Rural Development summed up this shift in policy: "At this time, rice exports are no longer a priority. Farmers should encouraged to convert rice land (not just that with poor and unproductive soils) to other crops and livestock production, with the understanding that converted areas can be used to grow rice again if required" (Kim Nhuệ 2016). There are, however, incipient signs of a much more consequential shift. Recent years have seen the emergence of an alternative paradigm and approach to climate change adaptation that is profoundly neoliberal in its

[23] Interview, Ba Tri district, 6/1/2016.

ideological orientation, and which calls into question the wisdom of infrastructure investments and land-use restrictions meant to bolster accumulation in and through rice agriculture as a means of ensuring Vietnam's long-term food security.

The most direct articulations of this approach have come from prominent figures who are formally outside the state, but have strong connections to the policy apparatus. Võ Tòng Xuân, an academic and one of the most prominent voices on issues related to agriculture and rural development policy has, for example, called for a rethinking of the land-use planning system and the conversion of coastal areas of the Mekong Delta to shrimp aquaculture. "Many farmers in the freshened zones have to grow rice," he argued in an editorial that ran in a special issue of the Vietnamese Agricultural Review (*Tập Chí Nông Thôn Việt*) dedicated to discussions of the drought and extreme saline intrusion of 2016, "but then they see their friends outside the freshwater area growing shrimp and getting richer than themselves, because they destroyed the dikes to get salt water shrimp and got good results in the first few year. Then they were able to build houses and buy lots of luxury items. These households all acted spontaneously and illegally, in ways that were opposed to the food production policy of the state" (Võ Tòng Xuân 2016). Xuân continues: "In a time of 'renewing' [here he uses the word *đồi mới*, evoking the economic reforms of the 1980s and 1990s] the [Communist] party and the state should shift from 'rice output' to 'GDP'" as the central objective of state policy. As a result, he argues "farmers will benefit, processing companies will benefit, and local budgets will benefit. Everything will be directed towards raising 'GDP' on the level of the individual and the nation." Writing in the Saigon Economic Times (*Thời báo Kinh tế Sài Gòn*), the former Chairman of An Giang province in the Mekong Delta took a similar stand: "In the 21st century, the Mekong Delta must once again overcome the challenges of the new millennium — such as climate change and sea-level rise — to survive and develop under the motto of 'living with salinity' (*sống*

chung với mặn)," as by adapting to changing conditions and embracing saltwater shrimp farming (Nguyễn Minh Nhị 2017).

While these criticisms come from outside the state itself, and while work on salinity-control gates continues at a rapid pace in Bến Tre and elsewhere, there are clear signs that such thinking has filtered into the highest levels of the Vietnamese state, especially after a new set of governing officials took office in 2016, resulting from an internal power struggle within the Communist Party (Vuving 2017). The potential implications of this shift for climate change adaptation policies — and for the entire edifice of infrastructure, planning, and accumulation in the Mekong Delta, built up over decades around the maximization of rice production — is striking. In 2017, the new Minister of Agriculture, Nguyễn Xuân Cường, gave an interview to the *Wall Street Journal* in which he stated that "climate change is posing a threat to Vietnam's agricultural production, forcing us to restructure our production to make it more efficient and sustainable." In response to this threat, he announced plans to triple Vietnam's exports of shrimp, which he notes is "now our leading agricultural product." "Natural conditions in the Mekong Delta," he continued, "are very suitable for shrimp, and higher seawater level caused by the climate change will allow us to expand the shrimp farms" (Vu Trong Khanh 2017).

Whether this statement portends a dramatic shift in land-use policy that allows farmers in the freshened zones of Bến Tre and elsewhere to convert their agricultural land to saltwater shrimp ponds, it is clear that thousands of farmers stand ready to make the switch. When asked whether she wanted to change her fields over to shrimp ponds, Hai, the erstwhile rice farmer, replied, "Yes, if the government allowed it, we would do it." "Every household" in the area, she added, "would like to dig ponds and raise shrimp," but were only prevented from doing so by the restrictions put in place by the

government. “If we bring machines in to dig out ponds,” she said, “the authorities won’t let them enter.”[24]

Conclusion

This contrast between the historically dominant approach to climate change adaptation in Vietnam and its neoliberal challenge — however incipient — highlights the intrinsic connection between accumulation and adaptation. Since climate change directly impacts the landscapes, ecologies, and hydrological systems that make production possible, the political economy of adaptation centers on the protection and development of the productive forces in the face of climate change, and to what purposes, in whose interests, and to what ends these efforts are directed. There are thus not just competing modes of accumulation, but of adaptation as well: one centered on large infrastructure projects, which serve as a means to structure environmental conditions in pursuit of a national accumulation strategy, and one animated by the everyday accumulation of individual producers, in which environmental conditions are shaped instead by technologies and practices at the level of the household, farm, or community, and oriented towards the maximization of immediate economic returns over long-term political goals.

The argument being advanced here is not that the pursuit of profit and accumulation through reinvestment of such profit is by any means an essential or universal feature of rural populations, or that the Mekong Delta is, and has always been, inhabited by “rational peasants” (Popkin 1979) and proto-capitalists. What I instead arguing is that the reintroduction of markets and private property in rural Vietnam since the 1990s,

[24] Interview, Ba Tri district, 6/1/2016.

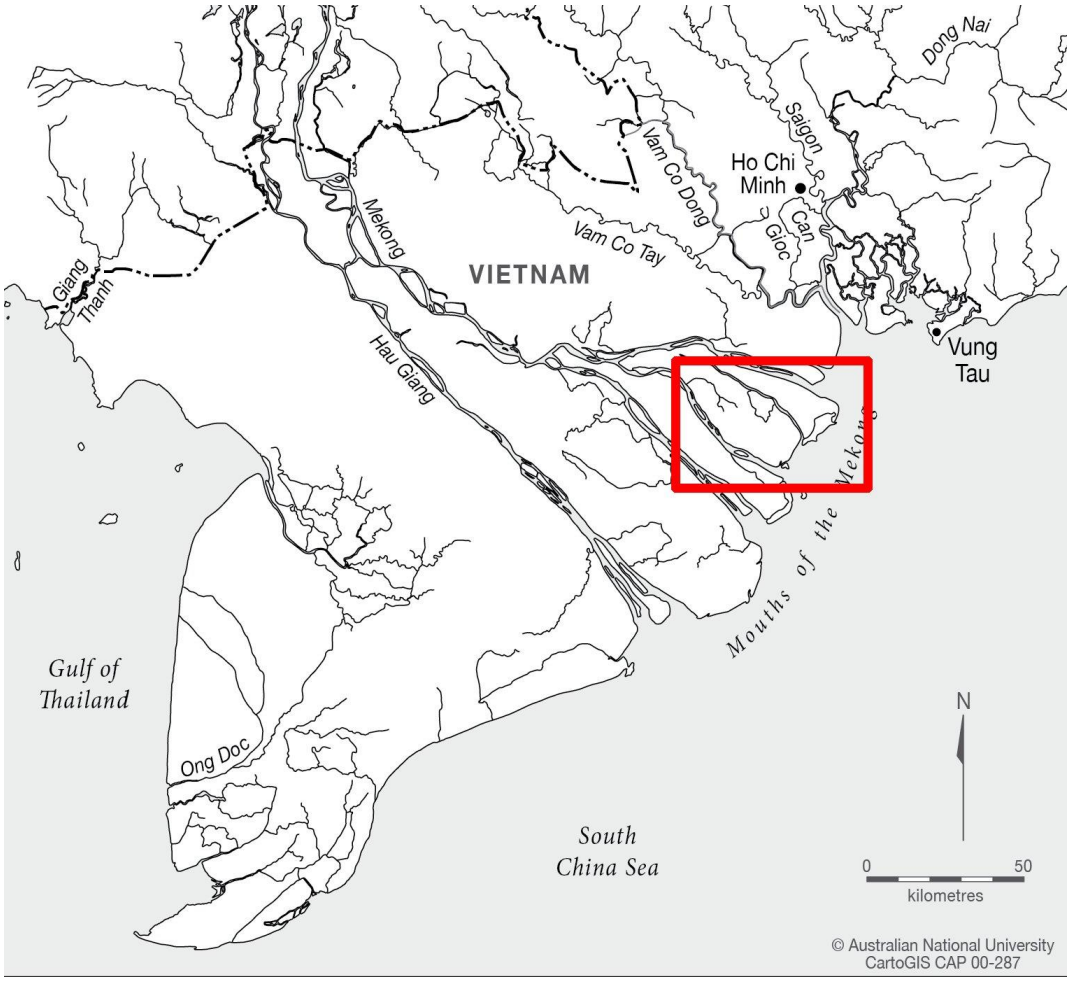
along with the country's reintegration into the global economy, have operated to impose on farmers (or at least the commercially-oriented shrimp farmers with whom I spoke in Bến Tre) an imperative towards accumulation as a matter of survival. In this way, the shrimp farmers of the "freshened zone" have come to be constituted as neoliberal subjects, embodying and internalizing the imperatives of post-reform agrarian capitalism in a sort of nascent "governmentality" (Foucault 2009). It is these farmers who, through their everyday practices of "counter-accumulation," act as the agents of this incipient drive towards neoliberalization; while some actors and institutions within the Vietnamese state now seem to be embracing this tendency, the imposition of a neoliberal mode of economic and environmental governance has not been the dominant objective of the Vietnamese state, at least not yet. Rather, the internalization of neoliberal governmentality is an unintended or unforeseen consequence of a decades-long push towards economic liberalization and market reforms (see Chapter 2) aimed, paradoxically, at saving a state-driven mode of governance, with its emphasis on top-down planning and the direction of accumulation in agriculture towards extra-economic objectives, chief among them national food security.

For this reason, it with great skepticism — rather than a romantic attachment to subaltern politics or peasant resistance — that we must look upon these practices of counter-accumulation by the shrimp farmers profiled above. Not only do these practices of resistance ultimately lead to the further entrenchment of a neoliberal mode of environmental governance, but they also bring serve — one illicit well and one shrimp pond at a time — to accelerate the process of salinization above and beyond the impact of sea-level rise itself, with profound implications for the long-term productivity and agricultural capacity of the region. While the mantra of "living with salinity" may seem attractive, in that it celebrates the adaptive capacity and everyday

ingenuity of farmers, if such a position were to be enshrined as Vietnam's official adaptation orthodoxy, the potential consequences include not just the weakening of the country's long-term food security, but the further transformation of the Mekong Delta's landscape and hydrology towards a production system that promises short-term profits but offers dim prospects for long-term sustainability.

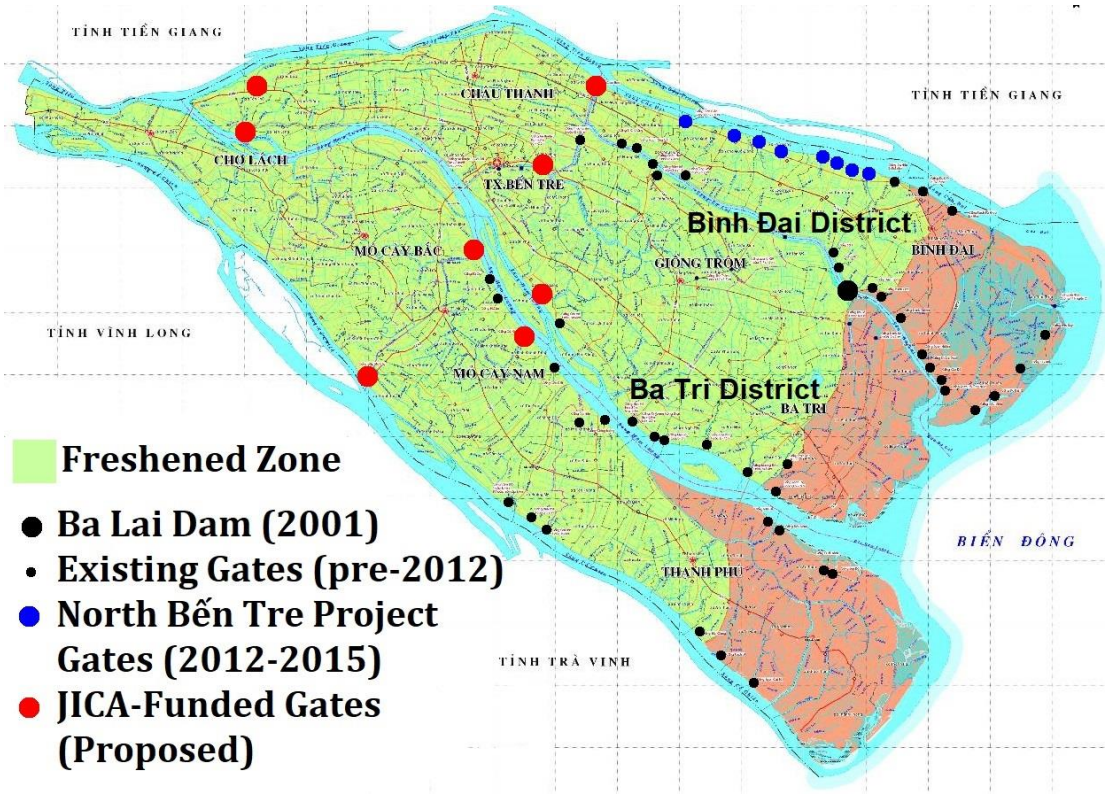
FIGURES

Figure 4.1: Location of Bến Tre Province in Vietnam



Source: Adapted from CartoGIS Services (2018)

Figure 4.2: Research Sites, Land-Use Plan, and Infrastructure



Source: Bến Tre Department of Agriculture and Rural Development (2015)

Figure 4.3: Ba Lai Dam

Source: Author's Photo

Figure 4.4: Construction of Shrimp Ponds

Source: Author's photo

Figure 4.5: Illict Wells and Pumps

Left: Illicit Well and Pump Hidden Behind Fuel Cans; Source: Author's photo
Right: Pumping from Illicit Well; Source: Author's photo

Figure 4.6: Destruction of Illict Wells

Security Officer Destroying Well

Destroyed Well
Source: Bến Tre Television (2014)

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CHAPTER 5
CONCLUSION

The preceding chapters have addressed the interlocking themes of accumulation, environmental change, and resistance, as they have played out in a particular region, the Mekong River Delta of Vietnam, over the past century. The theoretical underpinnings of this study have spanned multiple subfields within sociology — such as the sociology of the environment, of development, and of food and agriculture — as well as contributing to broader interdisciplinary debates around rural development, food security, and climate change adaptation. The research methods and analytical strategies upon which this study has been based have also spanned multiple approaches, ranging from the use of archival sources to reconstruct the various iterations of state accumulation strategies in rice agriculture over successive political regimes, to the collection and analysis of survey data to explore patterns of accumulation and dispossession associated with different production systems and modes of environmental governance in Bạc Liêu province, and finally, interviews and qualitative data collection around the contentious everyday politics of state climate change policies and the counter-accumulation strategies of shrimp farmers in the "freshened zone" of Bến Tre.

This dissertation is part of a larger scholarly project, and builds on previous research (Gorman 2014) conducted by the author into the privatization of land in the Mekong Delta at the advent of post-socialist reforms in the late 1980s. In this research, I argue those upper peasants who were best-positioned to transition to commercial production were able to successfully mobilize for the restitution of lands owned before Vietnam's reunification in 1975 and the ensuing collectivization campaigns. These relatively

large farmers successfully pressed land claims against the rural poor, and were thus able to enter the reform process with relatively large holdings, kickstarting a process of land accumulation and setting in motion the re-emergence of agrarian capitalism in the Mekong Delta in the 1990s. In this way, the process of land privatization created an unequal distribution of resources and provided some households with a sizable base of productive land for future accumulation, especially in intensive, commercially-oriented rice agriculture.

This dissertation also serves as a companion to more recent research conducted with Alice Beban (Beban and Gorman 2017), which looks at how processes of accumulation and environmental transformation transcend political boundaries, focusing geographically on the Cambodian border provinces of Takeo and Kampot. In recent years, thousands of Vietnamese migrants from the Mekong Delta have been crossing into Cambodia to rent land for rice and shrimp cultivation. The attraction for these migrants is the relatively cheap and abundant land available in Cambodia, which provides a fertile landscape for intensive rice agriculture and export-oriented shrimp production, and thus opens new pathways for accumulation that were otherwise constrained by high land prices on the Vietnamese side of the border. In the paper, we argue that the border region has thus come to represent a "hybrid" space characterized by the intersection of different trajectories of accumulation and agrarian change, combining the productive forces that predominate in Vietnam with a set of social relations rooted in the property regime and structures of political domination that prevail in Cambodia.

Summary of Findings

The papers presented above have all revolved around the central concept of accumulation and the processes by which it takes place in agriculture and aquaculture, exploring how these processes have played out over the course of the last century in the Mekong Delta.

The first paper, entitled "Accumulation as Political Strategy: Infrastructure, Property, and Production in the Mekong Delta," drew on archival documents to examine the history of both large-scale infrastructure projects and property regimes in the Mekong Delta over the course of three successive political regimes — from the French colonial period to the independent South Vietnamese state of the Vietnam War era to the post-war socialist republic. Despite the massive political upheaval for which modern Vietnam is rightly known, these three regimes displayed a remarkable continuity in the realm of agricultural development and infrastructure policy, as all pursued a common objective (and overlapping accumulation strategy) predicated on the maximization of rice production. There was, however, marked discontinuity among these three regimes in the realm of social relations, as each applied a different approach to restructuring the property system, in ways intended to unlock the full agricultural potential of the Mekong Delta.

Both sets of interventions — into the social relations and physical forces of agricultural production — eventually reaped, however, unintended consequences, and served to generate counter-dynamics that undermined state accumulation strategies in ways unanticipated by their architects, as through the degradation of rice-growing land or the generation of social forces that diverted resources out of rice production. That dynamic was particularly apparent in the aftermath of market reforms in the 1980s, which were supposed to unleash new productivity in rice but instead prompted many

farmers in the coastal Mekong Delta to abandon rice for salt-water shrimp farming.

The second paper, entitled “Divergent Accumulation Pathways in Bạc Liêu” used longitudinal survey data, collected in 2001 and 2014, to compare the implications of two different modes of production on patterns of accumulation and dispossession. These data were collected in two villages, which were geographically proximate but had come, by the time of the second survey, to be dominated by distinct production systems. The first of these villages, which I dubbed Hòa Bình, lies behind a ring of dikes and sluice gates that seal it off from the influence of the tides; in this village, agricultural production was directed, through the means of land-use planning, towards intensive rice monoculture. In contrast, the other village, which I dubbed Phong Thạnh, lay outside the scope of this protective infrastructure, on the other side of the gates. In Phong Thạnh, rice production had given way — in the period between the two survey iterations — entirely to shrimp aquaculture.

The paper then went on to explore, using the survey data, the distributional implications of these two divergent pathways, paying particular attention to the relationship between accumulation and dispossession within these two different cases. While accumulation -– of capital, land, and other productive forces – was observed to be taking place within each context, in the rice-growing village such accumulation was accompanied by a stronger divergence in the socio-economic position of poor and wealthy households, and by a more pronounced concentration of land in the hands of larger farmers. The reasons given for this difference were twofold. First, given the high level of intensity in existing rice production systems, it was posited that accumulation in rice production can only take place through the acquisition of land by wealthy producers, a mode of accumulation that in turn generates a tendency towards dispossession among smaller producers. In contrast, there existed alternative avenues

for accumulation in shrimp aquaculture, especially through the intensification of existing production systems, that allowed accumulation without the acquisition of land. The second reason for this divergence is that accumulation in the rice sector has not served to generate new wage labor opportunities within the agricultural sector; rather, mechanization has reduced opportunities for supplemental wage labor among landless or land-poor households. In contrast, accumulation in shrimp aquaculture has generated new wage labor opportunities, as in nearby processing facilities and in the trading and transportation of shrimp, that have served to supplement the incomes of poorer households.

Finally, the third paper, entitled "The Art of Not Being Freshened: Accumulation, Resistance, and Environmental Transformation in Bến Tre," drew on qualitative research and interviews to examine the contentious everyday politics of salinity control infrastructure in Bến Tre. In that province, an ongoing effort to create a new freshwater zone through the construction of a network of dikes and sluice gates, designed to preserve the region's capacity for rice agriculture in the face of sea-level rise, has encountered significant resistance from local farmers, who have subverted and sabotaged these infrastructures in order to preserve their access to salt water and thus their ability to farm marine shrimp. In the paper, I sought to draw out the tension between state accumulation strategies (such as that aimed at the maintenance of food security through the maximization of rice production) and the everyday accumulation practices of farmers themselves, whose actions are conditioned by a different set of imperatives and compulsions inherent in the political-economic structures of post-reform capitalism.

In resistance to state projects that entail the forced disaccumulation of the productive forces in aquaculture, as a means of protecting and strengthening productive capacity

in rice, shrimp farmers engaged in surreptitious forms of "counter-accumulation," such as through the construction and operation of clandestine wells and pumps designed to maintaining saline conditions conducive to marine shrimp farming. In the paper, I argued that such efforts represent a challenge to a long-dominant accumulation strategy and pattern of environmental governance in the Mekong Delta. This dominant mode of accumulation, organized towards insuring Vietnam's long-term food security, prioritizes the transformation of environmental conditions, through infrastructure projects, towards the maximization of rice production. In the form of farmer resistance to this strategy and its infrastructural manifestation, I argue, one can trace the emergence of a new mode of accumulation and environmental governance couched in the rhetoric of "living with salinity" but nevertheless rooted in the logic of neoliberalism.

Contributions to the Field

This dissertation has made key contributions both to the discipline of sociology and to wider interdisciplinary conversations around three key areas: the environment and the political ecology of environmental conflicts; the critical study of development in the Global South; and the study of food, agriculture, and agrarian political economy.

In the realm of environmental sociology and political ecology, the preceding study attempts to ground discussion of accumulation and environmental conflict within the biophysical and infrastructural materialities of agriculture and aquaculture in the Mekong River Delta. A fundamental theme running through these three papers is that "accumulation" — that is, the development and expansion of the productive forces — is fundamentally a material process which necessarily entails environmental

transformation, both on the level of the individual farm or homestead and on the landscape or regional level, as with state infrastructure projects. This contribution both builds on earlier studies into the biophysical nature (and inherent crisis tendencies) of capitalism (O'Connor 1998), and seeks to link such a sociological perspective with critical political ecology (Bryant 1997). In this way, I hope not just to bring a more material grounding to the study of accumulation as a process that is both social and biophysical, but to link up with broader discussions on the ecological nature of capitalism (Moore 2015) as well to inform interdisciplinary conversations around the "materiality" of infrastructure (Bennett and Joyce 2010).

In the realm of development sociology and the broader field of critical development studies, this dissertation has attempted to trace the myriad ways in which top-down development "projects" (McMichael 2009) — as embodied in state "accumulation strategies" (Jessop 1990) — can both complement and clash with bottom-up processes of "everyday accumulation." In doing so, I have sought not just to build upon a rich body of work in critical development and agrarian studies on the contrast between accumulation "from above" and "from below" (Byres 1996, Cousins 2013), but also to point to a fundamental bifurcation in development itself as an object of study. In this, I am inspired by Gillian Hart's (2001, 2010) distinction between "Development" (with a "big D") and "development" (with a "little d"); to Hart, the former embodies the top-down strategies of states and international development institutions, and the latter the more spontaneous and unplanned accumulation of capital by individual producers, firms, and even farmers themselves. In doing so, I hope to push some of the conversations around resistance and contentious politics over the meaning and thrust of development policy in the Global South from a simple assumption of farmer or subaltern resistance *to* accumulation to a more nuanced view of resistance that works *through* accumulation (of the everyday variety), or what Hart would deem "small-d

development."

Finally, in the sociology of food and agriculture, and in the wider field of agrarian political economy, this study has attempted to highlight the drivers and potential impacts of the shift from the intensive production of staple grains, associated with the legacies of the Green Revolution and with a high degree of state involvement, to the production of high-value and non-traditional export crops. This shift is closely associated with the increasingly integrated global food system that has arisen since the 1980s and the ascendance of neoliberal orthodoxy in both states and international institutions (McMichael and Schneider 2011). What I have attempted to demonstrate in the preceding papers is that such a shift is not, inevitably, negative in its implications for smallholder farmers in the Global South, nor does it necessarily intensify existing trends towards dispossession, but can rather open up new pathways to accumulation (or at least survival) by smallholders and the rural poor, albeit with uncertain outcomes in terms of long-term environmental sustainability. Of particular relevance to the study the political economy of agriculture and rural development in Southeast Asia, such a perspective elaborates upon the contributions of Li (2002), Hall (2011a, 2011b), and Vandergeest et al. (1999) in demonstrating the capacity of smallholders, through their selective and often spontaneous embrace of new crops and opportunities for export-oriented commodity production, to contest and, ultimately, transform state development policies in the realm of agriculture.

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