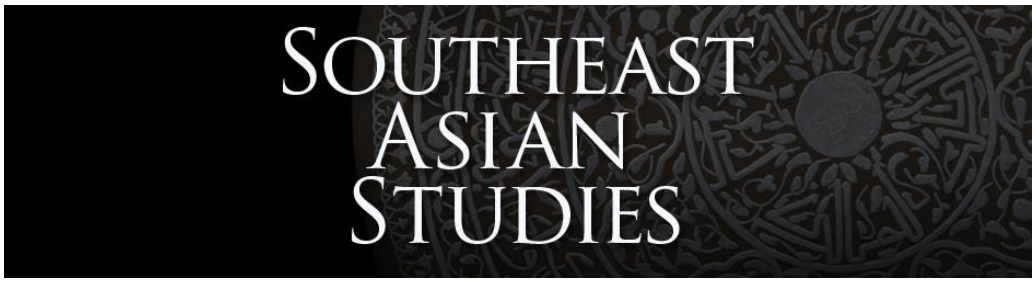

https://englishkyoto-seas.org/

View the table of contents for this issue:

https://englishkyoto-seas.org/2021/12/vol-10-no-3-of-southeast-asian-studies/

Subscriptions: https://englishkyoto-seas.org/mailing-list/

SOUTHEAST ASIAN STUDIES

Vol. 10, No. 3 December 2021

CONTENTS

Ghosts as Political Possibilities: A Review of Instantiations of Haunting in Southeast Asia

Joy Xin Yuan Wang*

In Southeast Asia, instantiations of haunting often disrupt dominant time in ways that force an encounter with the state. This article considers how ghosts disrupt temporality to make new political possibilities. It explores the ways through which ghosts destabilize the linearity of standard time to inscribe heterogenous planes of time that open up to alternative political visions. Through reexamining case studies of haunting in Thailand, Vietnam, and Indonesia, it also considers whether the political possibilities embodied by ghosts are capable of sustaining a political project. This article argues that while ghosts can disrupt time to gesture toward political action, a disruption that contains the potential for new political possibilities, they cannot always fulfill those possibilities. That is, the capacity for disruption always contains the possibility for co-optation. This article suggests, however, that the precarity to haunting is also a precarity proper to hope. Ghosts can suggest that the normal might yet be unsettled.

Keywords: ghosts, Southeast Asia, temporality, politics, potentiality

Introduction: Ghosts and Political Action in Southeast Asia

In 2011 the Singapore government announced plans to repurpose Bukit Brown Cemetery (Huang 2014), which, with its hundred thousand graves, was the last cemetery of significant size in the country. The appropriation of land for redevelopment purposes was not new to land-starved Singapore. But this time it seemed to touch a nerve. Partly because a hundred thousand graves also meant a hundred thousand stories (Hio 2017) filled with the legacies of early Singaporeans (Zaccheus 2017) and war victims (Zaccheus 2018). Exhuming their graves would mean excavating history. Another reason was that the embodied experience of haunting is also part of the narrative of activism in Singapore. As Ruth Toulson's (2012, 99) ethnography suggests, her Singaporean interlocutors "wanted to leave the dead in their graves." Her interlocutors blamed the exhumation of

* Department of Social Anthropology, University of Cambridge, Free School Lane, Cambridge, CB2 3RF, United Kingdom of Great Britain and Northern Ireland
e-mail: xyw22@cam.ac.uk

graves for their nightmares, for their children's lack of performance in school, and for their daily troubles. Immediately, civil society groups called for a moratorium (Huang 2014). Surprisingly, for a quasi-leviathan state where the government maintains a tight hold on power, civil society groups managed to gain traction.

"Singaporeans rallied on social media and showed up in the hundreds for walks in the cemetery," read an article in the *South China Morning Post* (January 3, 2019). "It surged to the forefront of citizenry consciousness and interrogated the fundamentals of governance and national developmental agenda" (Huang 2014, 21). A petition by Dr. Irving Johnson circulated on the Internet and was soon followed by more petitions (J. Lim 2011). The state agreed to delay its plans for land redevelopment but in 2018 continued with its reclamation efforts. The delay was only a temporary stay. Here the threat of haunting appeared to reawaken dormant civic spirit, gesturing toward the link between ghosts and political action. But the state that was once temporarily destabilized by a ghostly intervention ceded ground only to regain it.

How then should we understand the link between haunting and political action in Southeast Asia? There are many possible answers. For some, this speaks to the state's reach, its Hobbesian tentacles ensnaring and encircling any excesses. In this article, I aim to consider yet another dimension to this discussion by exploring the political potential of ghosts through the temporalities they inscribe and make possible. Through a discussion of existing ethnographies in Southeast Asia, my aim thus is to open up the problematic of time in order to begin to understand the ways in which it might articulate new political visions. I argue that ghosts disrupt time to gesture toward alternative political visions, though ghostly intervention cannot always guarantee the fulfillment of the political potential ghosts embody. But while this capacity for disruption contains the possibility for co-optation, I suggest that the precarity of this structure of possibility is also a precarity that is proper to hope. Ghosts can suggest that the normal might yet be unsettled.

Ghosts, Time, and Politics

Ghosts have been viewed in various ways in Southeast Asia. Whether considered a central part of Southeast Asian life—Richard Winsted (2007) saw the endurance of magical beliefs as analogous with the resilience of Malay culture, while for Kirk Endicott (1991) *semangat* or "soul substance" was the primordial point of origin for the existence of Malay life—or as a precolonial leftover, a form of irrationality (Sangren 1991), or a form of resistance—a type of anti-structure (Ong 1988)—the enchanted has often been enmeshed in a structural-functionalist argument that mitigates the agency of ghosts. Ghosts here become "a datum that putatively reveals underlying frictions in social struc-

ture" (Stoller 1995, 17). In Singapore, for example, Jianli Huang (2014) argues that the dead are indices of anxiety over the loss of Singapore's cultural inheritance and the urgency of heritage preservation. For Joshua Comaroff (2007, 65), haunting through ancestral worship has a deeply spatial dimension, which, when forced into an encounter with the state's developmentalist discourse, carves out the possibility for a counter-hegemonic provocation. In Comaroff's work on Singapore, haunting indexes a larger contestation over the use of space (Comaroff 2007, 65). Perhaps in parts of Southeast Asia where civic liberties are often circumscribed, ghosts allow for a disembodied subversion (Wu 2014).

Turning away from ghosts as merely representational or symbolic, Patrice Ladwig (2012) tracks the material traces of ghosts through two festivals for spirits in Laos. He suggests that while ghosts might not be fully knowable as empirical objects, through traces or imprints they leave clues about their presence or immanence. Importantly, he concludes that paying attention to ghosts' materiality or agency is not a rejection of their representational or symbolic efficacy but to allow for the possibility of "the active presence and agency of the object" (Ladwig 2012, 435). In his study, ghosts retain a presence that is not solely indexical but still remains within the social circuits of practice and the contingent nature of social acts (Ladwig 2012, 440).

In short, the supernatural indexes the political and social, but here ghosts are not merely free-floating signifiers, stand-in symbols that act as a proxy for the sociopolitical, but can, in some cases, make possible the sociopolitical. They are thus also Nils Bubandt's (2017, 1) "intensely political beings," able to erupt "awkwardly into politics" and call for a reassessment of the meaning of democracy. Or they are Heonik Kwon's (2008, 2) beings of "concrete, historical identities . . . who continue in present time in an empirical rather than allegorical way" and reshape forms of sociality.

In suggesting that ghosts can make possible the sociopolitical, these authors suggest that the supernatural and the enchanted can pose their own reality. They provide an alternative to a conception of moments of enchantment as temporary fissures that fold back into normalcy; or as purely idioms of distress. Instead, they will us to see them as lasting inversions that could reshape the status quo. Ghosts come to embody political possibilities.

Perhaps one way of looking at instantiations of hauntings is through Walter Benjamin's (1968) discussion of the *Einstände*, or instant, of history. In his 17th thesis, Benjamin writes of the arrested moment "as blasting a specific life out of the era." He notes, "The nourishing fruit of the historically understood contains time as a precious but tasteless seed" (Benjamin 1968, 263). Werner Hamacher (2001), writing on Benjamin, suggests that the instant is not merely "in time": that is, the instant is not just a container carried

along by the circuits of time. Seen in this way, instantiations of haunting are not just attempts at telegraphing time. That is, instantiations of haunting do not just reveal time in a teleological way, but rather time is inside the ghostly instantiations and ghosts are its carriers: "time is in their inside and they are the fruits and carriers of its seeds" (Hamacher 2001, 179). In other words, ghosts perhaps are also agentive beings that carry time within them. Ghosts can flash up at surprising moments and places to carry time toward new directions. Elsewhere, Benjamin (1963), recognizing the forward orientation of ghosts, suggests that ghosts are not located in a vision of pastness but rather reflect horizons of futurity. The idea of ghosts as carriers of time flows also from Jacques Derrida's formulation of ghosts as both "revenant and arrivant," existing in both past and present tenses. They involve what was and announce what is to come. It is in this sense that I refer to heterogenous time, which, following Derrida, I take to be a "temporal horizon in which the past, present, future are integrated" (quoted in Lee 2017, 31). That is, in sum, time that resists the unilateral telos of linearity.

More recently, Avery Gordon (2008, 64) has written about the ways the supernatural can "signify a future possibility and ethereal intervention into what might come to be." The idea that ghosts, through disrupting temporality, give rise to new political possibilities can similarly be seen in Anand Taneja's (2018) work on spirits in India. Taneja shows through the ethnographic example of Feroz Shah Kotla, an abandoned fort from India's precolonial past, that the past delinked from history can gesture toward new forms of political imagination. Historically, the site is linked to regimes of oppression and violence, but Taneja shows through the way it is now remembered as a sacred space that history does not matter. Instead, it is the visions conjured up by the practice of depositing letters for the jinn-saints at Feroz Shah Kotla that are important. When a Hindu man who has always dismissed as spiritual nonsense a visionary dream in which a saint appears and directs him to Feroz Shah Kotla finally acts on the dream and sees his fortunes improve, the spirit vision draws him into the spectral space of a Muslim community in post-partition India—a plea, perhaps, to pay greater attention to the prescriptive ethics of ghosts. The resurrection of precolonial practices here is about intervening in the present, an intervention made possible through haunting.

Ghosts in this case can destabilize the linear hold of time, or what Barbara Adam (1990, 75) calls the modern dominance of "clock time," a temporal plane necessary to the ordering and enactment of capitalist regimes which with their patterned regularity and discipline are undergirded by a narrative of progress. By "forcing the point of non-synchronism" (B. C. Lim 2011, 26), ghosts can disrupt time in ways that might provide succor from the almost tyrannical pressure to see "history as progress in which yesterday is never the same as today" (Weigelin-Schwiedrzik 2013, 160). Ghosts can thus force

a reckoning with the claims of linear time and its laws of progress by introducing alternative motions of time.

Following this line, I am first concerned with the political potential of heterogeneous temporalities as inscribed by the figure of the ghost. Is there a relationship between the temporal orientation of specters and their political potential? What are the ways in which visions of the otherworldly promote counter-hegemonic visions in Southeast Asia? What are their limits?

The ethnographies of Andrew Johnson (2013a) and Jane Ferguson (2014), both situated in sites of modernity in Thailand, suggest that ghosts embody a distinctly heterogeneous temporality that fractures the claims of linear time. But buried in Johnson's ethnography is also a warning about the limits of ghosts and the inability of haunting to sustain a political project. I hope to suggest through reading Bubandt (2017) and Kwon (2008) that while we need to be sober about the realities of haunting, there is still much to be hopeful about. In the end, I conclude that while ghosts in Southeast Asia can, through the disruption of time, give rise to new political possibilities, they cannot guarantee the fulfillment of those possibilities.

The Uncanny Questioning of Modernity in Thailand

Johnson's (2013a) and Ferguson's (2014) ethnographies revolve around the uncanny questioning of modernity in Thailand. Both are situated in heartlands of modernity—the airport in Ferguson's piece, a suburban district in Johnson's—where time presumably unfolds according to a fixed narrative of progress. Time flows through these heartlands of modernity into larger tropes of development—the airport as a demonstration of international ambition, the suburban community as a marker of individual wealth. What, then, to make of this seeming contradiction—the intensity of haunting in places that should preclude it? I suggest that specters of a seemingly foreclosed past come to haunt the present in ways that disturb linear coefficients of time. And, importantly, the resurfacing of the past in sites of modernity is not simply a re-inscription of the past but rather a particular intrusion that forces a re-mediatization of time itself, a re-mediatizing that opens up to new political vistas.

In Ferguson's airport, ghosts are a usual and important part of life. For example, every Saturday a group of workers at Bangkok's Suvarnabhumi Airport gather to pray (Ferguson 2014, 52). The purpose of their worship is to pay their respects to the snakes at Suvarnabhumi Airport that cut off the path of Chotisak Asparíriya when he was attending a ceremony to pay homage to Prince Chakrabongse on the occasion of the 30th

anniversary of the founding of the Airports Authority of Thailand. The hope is that paying respects to the snakes will ward off harmful occurrences. When six fatal crashes involving Fokker F-27 Friendships occurred in the late 1980s, Burma Airways—which had a fleet of such aircraft—decided to change its logo to the Patthana symbol (Ferguson 2014, 58). The logo, part of Buddhist symbology, was placed on the tails of airplanes with the hope of preventing crashes (Ferguson 2014, 56). In a sense, thus, Ferguson's ghosts, echoing the title of her piece, appear almost eternal. They are recursive figures that resurface at various moments within the seemingly modern exterior of an airport. The airport, on the other hand, if I might extrapolate and draw Ferguson's discussion toward temporality, is a modern architectural entity. It "speaks to a kind of progress, development, rationality" (Ferguson 2014, 47) and inscribes a linear, progressive, unidirectional time frame. The introduction of ghosts to this site complicates its temporal narrative.

Time here is thick with multiplicity, indexing both a recurring past and the linear thrust of modernity. Combined in the figure of the ghost, the two twist their way, like intertwined vines, into the future. This, too, seems to be Ferguson's conclusion when she argues that haunting in the airport "is not about a return to a premodern authentic past, but actually a push to amalgamate the past with techno-modernity" (Ferguson 2014, 61). Ferguson's ghosts are a tool to make possible the seemingly modern.

Thus, Ferguson's ghosts resist the essentialism that Dipesh Chakrabarty (1997) saw at the heart of conceptualizations of contemporary time. In contemporary time, traces of the past are seen as carryovers from a dead world (Chakrabarty 1997, 49–50). If ghosts inhabit the same temporality as contemporaneity spatially, they do not share the same future or destination. Thus, even when certain ways of life and behavioral tendencies inhabit contemporary time, this distinction marks traces of the past as backward. Ghosts, frozen and locked in time, are thus seen as residues of another world; and belief in ghosts is viewed as an indication of backwardness. In Ferguson's (2014) ethnography, however, specters of the past inhabit contemporaneous spatial time but also share its orientation. The offerings, the rituals, and the painting of logos are ways to ensure the smooth functioning of the airport. The past folds into the present to push it into the future. With this temporal movement, the offerings, etc., demand a reconceptualizing of contemporary time and pull it toward something more heterogenous and plural. Indexed here, thus, is not the extraordinary resilience of the past in the face of changing times but rather a dialectical sense of time, time that extends in multiple directions. Visions of the future emerge out of rituals that appear to recall the past but which, in turn, are reappropriated for the future project of ensuring the airport's smooth running. This dialectical intertwining is at one with the long-standing occult connections between modernity and magic in Thailand, where "magic and science" share an etymological root

and are seen as "forms of knowledge put into practice" (Johnson 2013b).

Ghosts here are the bearers of time that disturb linear, standard conceptions of time. In doing so, they inscribe heterogenous time. But while Ferguson (2014) opens up the problematic of time by showing how ghosts embody a heterogenous temporality, she leaves open the question of what such a temporal horizon might do for us and, more particularly, what sort of political visions it might give rise to. What sort of political visions do these spirits embody? What sort of provocations do these political questions pose?

To gesture toward this, I turn to Johnson's 2013 ethnography. The study, which took place from 2006 to 2007, predated the protests of 2007–10 in Thailand. What it shows is that "before many embraced a political solution to Thailand's woes, they saw these problems as endemic, as spiritual and often as signs of supernatural involvement" (Johnson 2013a, 305). Johnson leaves us to imagine the ways in which endemic spiritual anxieties in supernatural involvement bled into the protests of 2007–10. It is this gap that I hope to consider.

Chim is an entrepreneur who, through her jewelry shop in a fashionable section of Chiang Mai, realized her dream of living in a community made up exclusively of educated, upper-class professionals (Johnson 2013a, 305–307). Soon after she moved into the gated community in the suburb of San Sai, she left, terrified, having suffered sleepless nights during which "she would wake up multiple times, listening for strange noises from downstairs." Though Chim does not directly reference ghosts, one of her neighbors, Som, confides in the author that she never stays in the house alone. "Ghosts," she says, "there are so many." In another part of town, a Farang (or Caucasian) ghost is rumored to stalk the corridors of the top floor of a high-rise condominium building, urging Thais to commit suicide (Johnson 2013a, 309). The presence of the Farang ghost suggests that the qualities it stands for—wealth, growth—are a chimera, a smokescreen for the depravity that lingers underneath the condominium's gilded veneer. On the streets, ghost stories coagulate around Nimmanahaeminda Road, Chang Mai's most prosperous part. Johnson's ghosts haunt areas and people who have realized the aspirations of progress, who appear to be riding the stream of linear time to its logical embankment. The ghosts are bound with the "idea of stasis, they block correct motion such as rebirth or progress" (Johnson 2013a, 308).

By blocking the forward progress of time and teasing the illusory quality of progress, Johnson's ghosts come to represent an immobilizing force. They suggest that the present, with its delusions of development, is only a mirage. In teasing that the present is deceptive, the haunting described here departs from those of other authors. Haunting in Johnson's conceptualization is neither a representation of occult beliefs (Comaroff and

Comaroff 1999) nor a manifestation of spirit possession as an act of resistance (Ong 1988). The political potential of haunting in Johnson's work does not flow from the way it is used as a strategy by those on the socioeconomic margins like Ong Aihwa's (1988) female Malaysian factory workers or as a protest enacted by those excluded from the fruits of capitalism like Jean and John Comaroff's (1999) interlocutors. Rather, in Johnson's (2013a) ethnography, haunting comes from within. It is the monstrous double of progress, an internal paradox that threatens modernity's dissolution. In both Johnson's and Ferguson's work, the uncanny is caught between slips in translation, the fissures between state- or capitalist-sanctioned ideas of modernity and people's lived dramas. It is in those spaces that the uncanny resurfaces with a heady resurgence. Neither Johnson's nor Ferguson's ghosts bear a stable relationship with the past. But in the ways they reimagine the past in order to gesture toward an alternative future, there are subtle differences. In Johnson's articulation, ghosts block progress or reveal the cracks in progress, seemingly seeking its reversal. This perhaps constitutes a slight departure from Ferguson's ghosts. In Ferguson's airport, the suspicion of modernity is mediated through haunting. Ghosts are moderators that reconcile the workers with the excesses of modernity. They make the excesses bearable. In short, they disrupt the present by invoking the past in order to push it into the future and in the process make the future palpable. Johnson's ghosts, too, disrupt the present but in ways that are slightly less benign. Rather, they suggest entropy—not that everything remains the same but that things rot. What follows logically is that if things are left the way they are, the future would be foreclosed. The message of Johnson's ghosts seems to be that the moment needs to be saved in order to rescue the future. This sense of progress seeping away is a fundamental destabilization that forces something to be done. Rotting demands a recuperation of the present in order to anticipate a possible future; and the only possible future, in the face of a decaying present, is an alternative one.

Thus, while Johnson's ghosts encode what is undesirable—what they do not want and what is lacking—behind the anxiety and the caution there is also something prospective. There is perhaps a certain vision or a political model that these ghosts carry within them. This uneasy sense that progress has a pathological interior, the search for an inner truth undisturbed by superficial markers of progress, points to a longing for virtuous rule that bears a formal similarity with the idea of dharma. What is evacuated and imagined by Johnson's ghosts is a sacred notion of virtuous politics that is a direct rebuke to the existing political order. To explain this, I provide a brief outline of Thai politics below.

In 2001 the businessman-turned-politician Thaksin Shinawatra became the prime minister of Thailand. Thaksin's ascension came on the heels of the economic distress of the Asian financial crisis. With his tremendous personal wealth acting as his capitalist

credentials, he brought with him the promise of financial growth (Ferrara 2010, 31). This, coupled with "populist policies like universal health care, debt relief for farmers and lavish government spending on rural poor gave him broad based support" (*Straits Times*, March 22, 2019). But as Thailand made economic headway through a series of economic reforms known as Thaksinomics, which coalesced around the consolidation of the automobile industry and export promotion, Thaksin was plagued by accusations of conflict of interest (Ferrara 2013). These included corruption allegations over procurement contracts for the new international airport and the 2005 attempt to sideline the attorney general's anti-corruption campaign. Coupled with Thaksin's insensitive handling of the Muslim South, there was also deep unhappiness with his economic policies. These policies included the privatization of state enterprises, decentralizing plans by the Thai Rak Thai party, and the US-Thailand free trade agreement (Lewis 2008, 130).

By favoring economics and a more capitalist, neoliberal order, Thaksin, it was said, ignored dharma "and in his ignorance of this truth that grounds the law and order of the universe fell short of protecting the nation from environmental degradation, sickness and social discord" (Funahashi 2017). While the accumulation of capital itself was not an issue, the means of the accumulation and the ends it secured were. In Theravada Buddhism, wealth gains legitimacy only if it is used for virtuous activities and if the individual holder of wealth "is not overly attached to it" (Ünaldi 2014, 386). To be transformed into something worth pursuing, economic capital requires the symbolic capital of the monarchy and should be used in service of a greater public good, and one nominally defined as being in service of the monarchy. Without the blessing of the monarchy's sacred charisma, accumulation of capital is deemed illegitimate. When, in 2006, a man smashed an idol of the Hindu deity Brahma, the act was interpreted as an omen related to the ongoing political crisis. It was, for Thai people, a clear suggestion that Thaksin, for all his attempts to pacify the gods through offerings and shrine visits, had "lost the mandate of the spirits and the stars" (Keyes 2006, 23). Protesters called for the restoration of a righteous ruler, someone who would embody dharma.

If the protesters sought a spiritual justification, this logic was first apparent in Johnson's (2013a) interlocutors. In Johnson's ethnography, there is too a disquieting doubt among an affluent populace about the legitimacy of the means through which wealth has been accumulated, and a sense that the perceived illegitimacy of the means makes the ends hollow. This similarity, and consistency in moral rhetoric, implies the ways in which the supernatural capacitates the political. Ghosts are not just urban high-rise apparitions that appear out of nowhere; they might also have religious antecedents and religious models behind them. They represent another model of politics, a vision that inheres in notions of dharma and has a long history in Buddhist-majority Thailand.

On the surface, thus, Johnson's ghosts embody stasis and are the very antithesis of progress. But beneath their smooth surface, they point not backward toward a reversal of the present but toward new iterations of the present. The conceptual implications are twofold. By forcing the point of non-synchronism, Johnson's ghosts disturb the narrative of progress that a linear thrust undergirds. They fracture the claim of linear time that undergirds a narrative of economic progress, the very narrative that Thaksin's continued rule was dependent on and which underpinned his attempts at market reforms. (Perhaps this suggests, too, that it is not quite accurate to see the linearity of economic progress as a kind of horizontal time. Rather, linearity is a deep time that often requires a legitimizing anchorage lodged in other temporal orientations, religious time being one particular option.) But this temporal break is not just a circle that retraces itself or a continuous feedback loop that wants to reverse progress. It also gestures toward another type of politics, one that seems to draw on pre-Thaksin models. The visions ghosts generate are thus a throwback to pre-Thaksin models of politics—of the rule of virtuous man, a pre-democratic Thailand—but here they are reconstituted for new political purposes (dharmic politics) and through new (contemporary media) technologies. This longing for dharmic politics is not simply an attempt to turn back time. Rather, ghosts are re-mediatized through contemporary media—"mechanically reproduced images" (Morris 1998, 344), "mass media especially photographs and television" (Jackson 2010)—media that have in fact "led to the proliferation of magico-religious belief in Thailand" (Johnson 2013b). The yearning for a different kind of politics is not just evidence of a recurring past the way a traumatic instant might be, but rather one reformulated in the light of the future. This yearning flares up in the present as a reminder of both what was and what could be, and serves as a threshold of time where past, present, and future meet.

But while ghosts can generate a vision for the future and in part drag the vision into the future, they cannot guarantee its fulfillment. As I write this, not much has changed in Thailand. In 2010 tens of thousands of Thaksin supporters marched in protest, only to be stopped by force. In July 2011, political winds would carry the pro-Thaksin party to power and Thaksin's sister to the position of PM. In 2014, the military returned to power through another coup. The 2019 elections saw the military tighten its grip on power.

The danger of co-optation is latent in Johnson's (2013a) ethnography. Johnson's interlocutors hail from all parts of Thailand, but the forms of haunting the author describes—ghosts stalking a condominium, a prosperous road, a gated community in Chang Mai—share a certain socioeconomic location. The anti-Thaksin resistance, led by monarchists and elites and supported by the middle class, maps onto Johnson's more

affluent demographic. Perhaps what this narrative leaves out is that these groups were not the only ones with grievances. In fact, the deadliest protests Thailand faced were the pro-Thaksin Red Shirt protests in 2009 and 2010.

Part of the reason why the primary haunting of Johnson's interlocutors became so successful was that the army and the monarchists, finding in the notion of dharma a spiritual justification for a return to anti-democratic rule, took up the haunting of Johnson's interlocutors. Dharma is a vision of "natural absolute good" that is distinct from man-made laws. A ruler's charisma or prestige derives from his or her ability to reconcile the divide between man-made laws and dharma under the unifying umbrella of "righteous rule" (Funahashi 2017). It is believed that greatness or superhuman power is required to embody this promise. Once, dharma was seen as justifying the rule of divine kings. In contemporary Thailand, that role has been captured by the military—the overthrowing of Thaksin, the military claimed, was a necessary evil to restore dharma. If the army and the religious elite took up the haunting of Johnson's interlocutors for their purposes, they were only actualizing, or rather co-opting, the political wishes of an elite section of society.

If the Yellow Shirts, the anti-Thaksin protesters, were supported by the upper middle class, the Red Shirts tended to draw their ranks from the poor: villagers who resided in the provinces; and farmers in Northeast Thailand, in the Isan region, who had lived through the failure of successive governments to address their economic realities. Yet, as Serhat Ünaldi (2016) suggests, while Thaksin's redistributive wealth policies which empowered these particular communities could be viewed as a meritorious use of wealth, they also, in part, led to his undoing. Depicting "this worldly strength" (Ünaldi 2014, 381) as charismatic might have legitimized Thaksin's capitalistic policies, but it also turned him into a competing source of *barami* (merit that comes from being close to power, or the king) that threatened royal charisma. The Red Shirts' valiant defense of Thaksin was not necessarily a repudiation of dharmic politics but a competing community of *barami* that presented a challenge to sacred royal charisma and therefore had to be suppressed. In the end, though they managed to immobilize Bangkok for nine months without the support of the old elitist tripartite of military, monarchy, and the wealthy, the Red Shirts were forcefully and fatally crushed. In violent clashes, some 80 civilians were killed and a few thousand injured.

This throws up important questions. Can the disruption of time which gives way to new political possibilities survive into the future? Can haunting sustain a political project? Can ghosts bear the effects of political realities? What does it say about haunting made possible by temporal disruption if it slips against the bulwark of power and structure? Perhaps it is here that it becomes necessary to look closer at the question of possibility.

In Benjamin's (1968, 254) account of a non-linear time, redemption is "a hidden index that is carried by the past." Evocatively, he says that it is the breeze of the air that was not there earlier, the echo of those now silent in the voices of those whom we lend an ear to and the sisters of women we have never met. This is, for him, the secret pact between past and present generations.

This is important because Benjamin's account of redemption, which is also an account of the temporal structure of possibility (Hamacher 2001, 163), offers another way of understanding instantiations of haunting that appear to threaten political regimes but ultimately become co-opted and flattened. One that accommodates the reality of haunting's transience without ceding too much ground to the cynicism of its fragility. For Benjamin (1968), historical time is made up of missed opportunities of the past, so possibilities (even when they are unfulfilled, or precisely because they are unfulfilled) survive into the present as things that could yet be fulfilled (Hamacher 2001). The future, for him, is the progeny of the past, but at the same time it is not just the progeny that has survived the original copy. That is, it is not just a replication of the original intention. What follows is that every possibility contains the possibility for its own negation and thus to a degree is always transient (Hamacher 2001, 167). If the past survives into the present, there is always the chance that it could be realized. That something missed or not fulfilled could still be realized in another time, could yet be redeemed but without the teleological promise of fulfillment.

The very nature of possibility thus rests on this unpredictability. Hamacher calls this a hunchbacked time because it cuts against the reductionism of linearity (Hamacher 2001, 164). It is proleptic (there is still movement) but not proscriptive (no idea where movement will carry us to). To explain the dynamic between past and present, the force that pushes one into the next, Benjamin (1968) coined the idea of a weak messianic force. This is the force that connects generations: it is the demands past opportunities make on us, the way the past survives in our present. It speaks to our sense of obligation and reciprocity, but it is weak because it cannot necessarily compel a response; it cannot force us to act on the obligations it imposes on us (Hamacher 2001, 165). And since the messianic force cannot compel a response, the possibility it inscribes could always yet be missed. If we understand ghosts and the political potential they inscribe through this lens, then we might have a possible explanation for the fragility of spectral alliances. One that holds out the chance that ghosts can inscribe counter possibilities, but which at the same time does not guarantee the fulfillment of the visions it inscribes. This would mean that while haunting can open up space for imagination, and while it can pose a political provocation, it can still go unanswered. Or it might remain, in the face of monumental structures, as in the case of Thailand, simply unanswerable. We see this duality play out

clearly when we look at Bubandt's (2017) Indonesia and Kwon's (2008) Vietnam.

Indonesia

Built into the ghostly sightings of Bubandt's (2017) work on "democracy, corruption and the politics of spirits in contemporary Indonesia" is a structure of negation. Collectively, Bubandt's spirits are multiple and heterogenous, disruptive and often destructive. They can be progressive the way Kyai Muzakkin's anti-corruption spirits are (Bubandt 2017, 37). Or they can be conservative phantoms. They might be sentinels of law and order in the form of spiritual indictments and ancestral restitution (Bubandt 2017, 86). Or they might be bringers of chaos, as in the case of the slain Pak Muhammad (Bubandt 2017, 68). More often than not, Bubandt's spirits capture the disappointment of democracy. Democracy, beyond the coevalness he ascribes to spirit and democracy, is an arrangement in which politics occur, a political praxis that intertwined with the otherworldly calls into question the nature of democracy itself. Bubandt describes his spirits as he finds them: flawed, chaotic, performing the negative labor of a problematic democracy.

Bubandt's account is not about how ghosts perhaps work through a dream, keep a progressive dream alive, and make it possible. It is not about how ghosts can lead to new political articulations that are more benign, compassionate, or ethical. Rather, it is about reconfiguring democracy or smashing the dream machine to fit reality. It is about heavy disappointment that requires an entire overhaul of the existing political system.

It would seem almost as if the ghosts he writes about exceed the reality before us and force us to think about what might lie beyond. Bubandt's account suggests, too, that perhaps we cannot demand too much of ghosts because his ghosts are almost ethically apathetic. Each time they appear in his account they disrupt the normal, but they do so in ways that are difficult to fit into a pattern. Perhaps his account pins down the unpredictability of ghosts, the way we can never quite fix ghosts in a telos, which goes back to the idea that ghosts do not telegraph time. They are not just moved along in a continuum of time, but rather they carry time. Ghosts can bend time in different directions and can explode and exceed history in multiple ways but always while eluding fixity. They are difficult, capricious, hopeful—many things at once, and nothing quite at all.

Vietnam

The seesaw between promise and its falsity, this sense of ghosts being capable of betray-

ing us, runs also through Kwon's (2008) ethnography. There is in Kwon's ethnography a real sense of bleakness, bleakness beyond the perversions of democracy (Bubandt 2017) or modernity (Johnson 2013a; Ferguson 2014). Rather, there is a physical absence. Yet against these structural barriers, in the midst of this absence, imagination leaks on all sides. Poignantly, a mother imagines that adopting a surrogate son might please ancestral specters and oblige them to keep her son alive.

Hanoi's war plan during the Vietnam War "depended extensively on popular support which in turn relied on the success of the strategy, 'children of people' or 'combat mother'" (Kwon 2008, 92). Each southern rural village was to adopt a unit of young freedom fighters from the North, and surrogate mothers from the village would feed and protect these adopted children. These mothers, however, were often part of a revolutionary network of *co so cach mang*, literally men and women who formed the infrastructure of the revolution (Kwon 2008, 69).

Surrogate mothers were thus often activists and members of an underground movement that attempted to undermine the work of the soldiers they were supposed to adopt. Yet Kwon (2008, 94) finds in practices of ancestral worship seeds of a different sociality, one in which enemy mothers and soldiers coexisted. Sometimes local *co so* mother activists who worked in underground revolutionary networks attempted to play on the homesickness of Saigon soldiers to inspire them to desert and helped smuggle them across enemy lines. More often, however, *co so* mothers and mother activists projected their own sense of hope for reunification with their birth children onto their adopted children. One of the popular ways of expressing such feelings of affection and displacement was through ancestral worship:

> The *co so* mothers prayed to their ancestors for the safe return of their birth children and went to the animist temples mentioned above, and sometimes to the Buddhist pagoda further away, to pray for the safety of all their children, including their adopted ones. As a result, the old record book kept in the Tiger Temple of Cam Re, which lists donations and the names for whom the donations were made, shows the names of young people killed on both sides of the war as well as the names of those who people remember were from distant places. (Kwon 2008, 95)

The mothers prayed in the hope of seeing their children again, in the hope that their love for the adopted soldiers "would somehow keep their own children loved and protected by unknown mothers in an unknown battlefield" (Kwon 2008, 96). This belief in distant reciprocal actions expressed through worship and ancestral specters was powerful enough that it circumvented "political violence and surveillance."

This depiction of hope, of a mother pleading with a higher authority, encapsulates Vincent Crapanzano's (2003) formulation, which is that hope when agency has not yet

been found. In Kwon's (2008) ethnography, I find both a critique and an elaboration of Crapanzano (2003). Perhaps hope is passive, but in attempting to achieve the possibility of reunification, Kwon's *co so* mother activists actively protect and adopt enemy soldiers. Similarly, when these enemy soldiers find out about their adoptive mothers' underground activism, they rarely choose to betray them. The hope for reunification acts as a form of ethical compulsion that creates a world in which enemies pray for each other. This is not unlike Taneja's (2018) dream of post-partition Delhi or Bliss Lim's (2011) pan-class Philippines, where Aswang narratives led to trans-class alliances. In order, thus, to achieve their ultimate goal, Kwon's surrogate mothers participate in projects of hope, rearranging their lives in ways that might allow them to achieve their hope of reunification. And in those projects are seeds for a radically different body politic, a form of politics in which enemies might learn to live together.

But Crapanzano (2003) is right that the realizations of the praying mothers' ultimate hopes and dreams rest elsewhere, in circumstances that are not in their control. The hopes indexed by ancestral specters thus have the potential to be something, but they are not yet something. The hopes can press for "something to be done" (Gordon 2008) and can even articulate a vision of "something to be done" as in the case of Thailand (Johnson 2013a), but that does not mean they can necessarily bridge the gap between potential and actualization. What happens in that space, in that gap, can lead, as Bubandt (2017) shows us, to radically different outcomes. In the case of the *co so* mothers, their hope of reunification with their soldier sons more often than not turned out to be false. The realities of war would claim the lives of 882,000 Vietnamese men and women. Of those, 655,000 were adult males. Against those statistics there was nothing much that ghosts or any other spectral authority could do.

Conclusion

It seems right to end with Kwon (2008) because it is in his work perhaps that we capture something of what it is like to live between hope and its absence. It is this that brings me back to Benjamin (1968) and his idea of possibility. In Vietnam, ghosts constitute a field of possibility—the possibility of different kinds of sociality. In fact, it is precisely the emptiness of a son's absence that leads to the generation of new modes of life—a son's absence capacitates imaginary kinship networks that lead a mother to turn to a surrogate son. Ghosts here are generative of multiple possibilities, but they alone cannot guarantee the fulfillment of those possibilities. Often they slip in the face of reality. But if we follow Benjamin (1968), this transience is part of the structure of possibility, and

therein lies some narrow sliver of hope that events may yet turn. After all, if ghostly intrusions are the whispers that Benjamin writes about, there is a chance that even when missed, the possibilities ghostly intrusions encode might still be rescued, or even when these possibilities are deserted they might still survive to be redeemed.

This precarity—that something could always be missed—is perhaps also the precarity of non-linear time. If linear time is a projection, a movement toward a desired future, a projection based on accumulated knowledge, non-linear time invites the impossible and in so doing becomes unpredictable. In all the examples I outline here, ghosts offer the promise of rebirth, the beginning or the hope for a new world. But in all the cases—the capriciousness of Bubandt's (2017) ghosts, the fragile hope of Kwon's (2008), the unevenness of Johnson's (2013a)—the ends are uncertain.

This precarity is a precarity proper to hope because it suggests that the failure of haunting in that particular moment is not a permanent failure. Rather, to imply thus, as this paper has, that haunting can be co-opted and neutralized is not to diminish or invalidate the profoundly important role it plays. After all, ghosts are thresholds of time that, to return to Derrida's heterogenous temporality, mark the past but also announce the future. In this gesturing toward the future, they, as in the case of Kwon's (2008) example, share the orientation of hope. Ernst Bloch (1986, 74–75) characterized hope as an expectant emotion, which implies "a real future; in fact of the Not-Yet, of what has objectively not been there" (quoted in McManus 2015, 175). Ghosts might not be able to single-handedly fulfill the future, but by imagining and conjuring visions of alternative futures—of what has not been there—they resist the essentialism of stasis and point toward an ever-extending, open horizon. They open up multiple lines of flight. They can interrogate and unsettle the present. And perhaps the ends are also potential moments of natality or rebirth, little miracles of accidents that stake out the possibility for a much more permanent dislocation.

Accepted: October 13, 2020

Acknowledgments

This article emerged out of work done at the London School of Economics in 2018–19. My thanks to Professor Mathijs Pelkmans and Associate Professor Nicholas Long at the LSE. In preparing this piece for publication, I am very grateful to the editors of *Southeast Asian Studies* for their support and the peer reviewers whose insightful and rigorous comments were essential to helping this piece find its final shape. My thanks also to Dr. Chow Pei-Sze, Dr. Ivan Kwek, and Rebecca Zhou.

References

Adam, Barbara. 1990. *Time and Social Theory*. Cambridge: Polity Press.

Benjamin, Walter. 1968. Theses on the Philosophy of History. In *Illuminations*, edited by Hannah Arendt and translated by Harry Zohn, pp. 253–264. New York: Schocken Books.

————. 1963. *Origins of the German Tragic Drama*. Translated by John Osborne. New York: Verso.

Bloch, Ernst. 1986. *The Principle of Hope*, Vols. 1–3. Translated by Neville Plaice, Stephen Plaice, and Paul Knight. Oxford: Basil Blackwell.

Bubandt, Nils. 2017. *Democracy, Corruption and the Politics of Spirits in Contemporary Indonesia*. London and New York: Routledge.

Chakrabarty, Dipesh. 1997. The Time of History and the Times of Gods. In *The Politics of Culture in the Shadow of Capital*, edited by Lisa Lowe and David Lloyd, pp. 35–60. Durham: Duke University Press. doi: 10.1215/9780822382317-003.

Comaroff, Jean; and Comaroff, John L. 1999. Occult Economies and the Violence of Abstraction: Notes from the South African Postcolony. *American Ethnologist* 26(2): 279–303. doi: 10.1525/ae.1999.26.2.279.

Comaroff, Joshua. 2007. Ghostly Topographies: Landscape and Biopower in Modern Singapore. *Cultural Geographies* 14(1): 56–73. doi: 10.1177/1474474007072819.

Crapanzano, Vincent. 2003. Reflections on Hope as a Category of Social and Psychological Analysis. *Cultural Anthropology* 18(1): 3–32. doi: 10.1525/can.2003.18.1.3.

Endicott, Kirk M. 1991. *An Analysis of Malay Magic*. Singapore and Oxford: Oxford University Press.

Ferguson, Jane M. 2014. Terminally Haunted: Aviation Ghosts, Hybrid Buddhist Practices, and Disaster Aversion Strategies amongst Airport Workers in Myanmar and Thailand. *The Asia Pacific Journal of Anthropology* 15(1): 47–64. doi: 10.1080/14442213.2013.872698.

Ferrara, Federico. 2013. The Resistible Rise of Thaksin Shinawatra: Crisis, Change and the Collapse of Thailand's Democracy. In *Conjectures and Continuities in Southeast Asian Politics*, edited by Narayanan Ganesan, pp. 151–184. Singapore: Institute of Southeast Asian Studies.

————. 2010. *Thailand Unhinged: Unraveling the Myth of a Thai-Style Democracy*. Jakarta: Equinox.

Funahashi, Daena. 2017. In the Name of the People: Magic and the Enigma of Health Governance in Thailand. *Kyoto Review of Southeast Asia* 22. https://kyotoreview.org/issue-22/magic-enigma-health-governance-thailand/, accessed May 30, 2020.

Gordon, Avery F. 2008. *Ghostly Matters: Haunting and the Sociological Imagination*. Minneapolis: University of Minnesota Press.

Hamacher, Werner. 2001. "Now": Walter Benjamin on Historical Time. In *The Moment: Time and Rupture in Modern Thought*, edited by Heidrun Friese, pp. 161–196. Liverpool: Liverpool University Press. doi: 10.5949/liverpool/9780853239567.003.0009.

Hio, Lester. 2017. Follow New Trail to Bukit Brown Landmarks. *Straits Times*. November 19. https://www.straitstimes.com/singapore/follow-new-trail-to-bukit-brown-landmarks, accessed May 30, 2020.

Huang, Jianli. 2014. Resurgent Spirits of Civil Society Activism: Rediscovering the Bukit Brown Cemetery in Singapore. *Journal of the Malaysian Branch of the Royal Asiatic Society* 87(2): 21–45. doi: 10.1353/ras.2014.0016.

Jackson, Peter A. 2010. Virtual Divinity: A 21st-Century Discourse of Thai Royal Influence. In *Saying the Unsayable: Monarchy and Democracy in Thailand*, edited by Søren Ivarsson and Lotte Isager, pp. 29–60. Copenhagen: NIAS Press.

Johnson, Andrew Alan. 2013a. Progress and Its Ruins: Ghosts, Migrants, and the Uncanny in Thailand. *Cultural Anthropology* 28(2): 299–319. doi: 10.1111/cuan.12005.

————. 2013b. Moral Knowledge and Its Enemies: Conspiracy and Kingship in Thailand. *Anthropo-*

logical Quarterly 86(4): 1059–1086.

Keyes, Charles. 2006. The Destruction of a Shrine to Brahma in Bangkok and the Fall of Thaksin Shinawatra: The Occult and the Thai Coup in Thailand of September 2006. Asia Research Institute Working Paper Series No. 80. https://ari.nus.edu.sg/wp-content/uploads/2018/10/wps06_080.pdf, accessed May 30, 2020. doi: 10.2139/ssrn.1317155.

Kwon, Heonik. 2008. *Ghosts of War in Vietnam*. Cambridge: Cambridge University Press. doi: 10.1017/CBO9780511807596.

Ladwig, Patrice. 2012. Ontology, Materiality and Spectral Traces: Methodological Thoughts on Studying Lao Buddhist Festivals for Ghosts and Ancestral Spirits. *Anthropological Theory* 12(4): 427–447. doi: 10.1177/1463499612471933.

Lee Chia-Sui. 2017. Ghosts Here and There: Spectral Resistance and the Ethics of Ghosts in Postcolonial Literature. PhD dissertation, Leiden University.

Lewis, Glen. 2008. Thai Media and "Thaksin Ork pai" (Get Out!). In *Political Regimes and the Media in Asia*, edited by Krishna Sen and Terence Lee, pp. 122–139. New York: Routledge.

Lim, Bliss Cua. 2011. *Translating Time: Cinema, the Fantastic, and Temporal Critique*. Manila: Ateneo de Manila University Press.

Lim, Jessica. 2011. An Uphill Struggle Saving Bukit Brown. *Sunday Times*, June 19.

McManus, Susan. 2015. *Fictive Theories: Towards a Deconstructive and Utopian Political Imagination*. London: Palgrave Macmillan.

Morris, Rosalind C. 1998. Surviving Pleasure at the Periphery: Chiang Mai and the Photographies of Political Trauma in Thailand, 1976–1992. *Public Culture* 10(2): 341–370. doi: 10.1215/08992363-10-2-341.

Ong Aihwa. 1988. The Production of Possession: Spirits and the Multinational Corporation in Malaysia. *American Ethnologist* 15(1): 28–42. doi: 10.1525/ae.1988.15.1.02a00030.

Sangren, Steven. 1991. Dialectics of Alienation: Individuals and Collectivities in Chinese Religion. *Man* 26(1): 67–86. doi: 10.2307/2803475.

South China Morning Post. 2019. Singapore Digs up Graves to Build New Motorways, including Bukit Brown Cemetery Where Early Chinese Immigrants Rest. January 3. https://www.scmp.com/news/asia/southeast-asia/article/2180501/singapore-digs-graves-build-new-motorways-including-bukit, accessed July 5, 2019.

Stoller, Paul. 1995. *Embodying Colonial Memories: Spirit Possession, Power, and the Hauka in West Africa*. London: Routledge

Straits Times. 2019. Coups, Protests, Prime Ministers: Timeline of Thailand's Turbulent Politics over Two Decades. March 22. https://www.straitstimes.com/asia/se-asia/timeline-of-thailands-turbulent-politics-over-two-decades, accessed July 5, 2019.

Taneja, Anand Vivek. 2018. *Jinnealogy: Time, Islam, and Ecological Thought in the Medieval Ruins of Delhi*. Stanford: Stanford University Press.

Toulson, Ruth E. 2012. The Anthropology of a Necessary Mistake: The Unsettled Dead and the Imagined State in Contemporary Singapore. In *Southeast Asian Perspectives on Power*, edited by Liana Chua, Joanna Cook, Nicholas Long, and Lee Wilson, pp. 93–106. London: Routledge.

Ünaldi, Serhat. 2016. *Working towards the Monarchy: The Politics of Space in Downtown Bangkok*. Honolulu: University of Hawai'i Press.

———. 2014. Working towards the Monarchy and Its Discontents: Anti-royal Graffiti in Downtown Bangkok. *Journal of Contemporary Asia* 44(3): 377–403. doi: 10.1080/00472336.2013.842260.

Weigelin-Schwiedrzik, Susanne. 2013. The Campaign to Criticize Lin Biao and Confucius (批林批孔) and the Problem of "Restoration" in Chinese Marxist Historiography. In *The Challenge of Linear Time: Nationhood and the Politics of History in East Asia*, edited by Viren Murthy and Axel Schneider,

pp. 155–177. Leiden: Brill. doi: 10.1163/9789004260146_008.

Winsted, Richard. 2007. *Shaman, Saiva, Sufi: A Study of the Evolution of Malay Magic*. Charleston: BiblioBazaar.

Wu, Yenna. 2014. *Li Ang's Visionary Challenges to Gender, Sex, and Politics*. Lanham: Lexington Books.

Zaccheus, Melody. 2018. More War Graves beneath Grounds of Bukit Brown? *Straits Times*, May 2. https://www.straitstimes.com/singapore/more-war-graves-beneath-grounds-of-bukit-brown, accessed May 30, 2020.

————. 2017. Forest at Greater Bukit Brown Holds Graves of Early Singaporeans. *Straits Times*, May 3. https://www.straitstimes.com/singapore/environment/forest-holds-graves-of-early-sporeans, accessed May 30, 2020.

Development and Abandonment of Mangrove Paddy Fields and the Impacts Thereof in a Mon Village in Taninthayi Region, Myanmar

Win Maung Aye* and Takeda Shinya**

Paddy-field expansion is a major driver of mangrove deforestation in Myanmar, but it is an unsustainable farming practice due to the abandonment of rice cultivation after some decades. To understand previous and existing paddy-field expansion into mangroves and to plan for sustainable resource use, we studied the process of developing and abandoning paddy fields, and the resulting impacts, in a Mon village in Taninthayi Region. Three conditions were observed: field expansion by local people for subsistence during the period of insurgency, state-imposed field development, and extension of fields with the local authority's support. Although the sustainability of fields depends on their specific geographic setting, the water action, and reasonable protective mangroves cover, paddy-field abandonment may occur within two to three decades after initial rice cultivation due to frequent embankment breaching. Consequently, the complex and long-term changes to the village's agroecology and socioeconomic conditions studied included the onset of out-migration and orchard development following paddy-field abandonment. The previous practice of paddy-field expansion without regulation of the coexistence of mangroves and agriculture could not support sustainable resource use and rural development. Therefore, we recommend that revitalization of mangrove paddy fields at a manageable level should go along with follow-up investment and assessment of environmental challenges.

Keywords: mangrove, paddy field, embankment, out-migration, orchard, abandonment, revitalization

* ဝင်းမောင်အေး, Forest Department, Ministry of Natural Resources and Environmental Conservation, Myanmar, Office No. 39, Director General's Office of Forest Department, Zabuthiri Township, Nay Pyi Taw 15011, Myanmar
Corresponding author's e-mail: winmgaye@gmail.com
https://orcid.org/0000-0001-8250-3135

** 竹田晋也, Graduate School of Asian and African Area Studies, Kyoto University, 46 Shimoadachi-cho, Yoshida, Sakyo-ku, Kyoto 606-8501, Japan
https://orcid.org/0000-0001-7565-5202

I Introduction

Southeast Asia's mangroves, which account for 30.9 percent of the world's area of mangrove, provide multiple ecosystem services upon which millions of people depend. However, the region's mangroves are highly degraded and threatened; more than a hundred thousand hectares of mangroves were lost to aquaculture (30 percent), rice cultivation (22 percent), and oil palm (16 percent) between 2000 and 2012 (Richards and Friess 2016, 346). Within the regional context, national aquaculture and agriculture policies drive mangrove loss. Rice cultivation was the major driver of mangrove loss in Myanmar (Giri *et al.* 2008; Richards and Friess 2016; Estoque *et al.* 2018) due to national plans for food security and food redistribution. In Indonesia, aquaculture was the main driver of mangrove loss due to the country's food export policies (Feller *et al.* 2017). The abandonment of agriculture and aquaculture in former mangroves after decades of land use is an increasingly significant problem (Stevenson *et al.* 1999) that must be considered when planning for sustainable management of mangrove resources in the region. This study seeks to understand patterns of mangrove paddy-field[1)] expansion and abandonment in a key mangrove region of Myanmar, and the consequences of these patterns for people and nature within the context of Myanmar's political changes.

The expansion of paddy fields into mangroves in Myanmar accounted for 22 percent of the total area of mangroves lost in Southeast Asia between 2000 and 2012 (Richards and Friess 2016, 346). Rice cultivation in mangrove areas is achieved through the destruction of extensive mangrove cover for land reclamation and requires huge construction costs for embankments bordering the area to protect the soil and control water salinity, tides, and inundation. Continuous rice cultivation in mangroves in the delta and coastal areas depends mainly on the strength of these embankments, which are exposed to daily tides and inundation, so large investment and resources for follow-up maintenance are required (Bandyopadhyay 1986).

Mangroves in Myanmar survive mostly in three regions (Fig. 1a): the Ayeyarwady Delta (delta agroecological region), Rakhine State, and Taninthayi Region (coastal agroecological region), which together contain 8.8 percent (382,168 ha) of the mangrove area of Southeast Asia (Giesen *et al.* 2006, 2–4). Because of the "rice trauma"[2)] (i.e., the

1) In this paper, "mangrove paddy field" is used as a term for paddy field that expanded into mangrove forests and was developed by cutting mangroves.

2) In response to three outbreaks of social unrest in 1967, 1974, and 1988 (see details in Okamoto [2009]) as a result of sharp increases in the price of rice, the government paid more attention to national subsistence rice production, which led to an expansion of paddy-field areas during the socialist- and military-government periods.

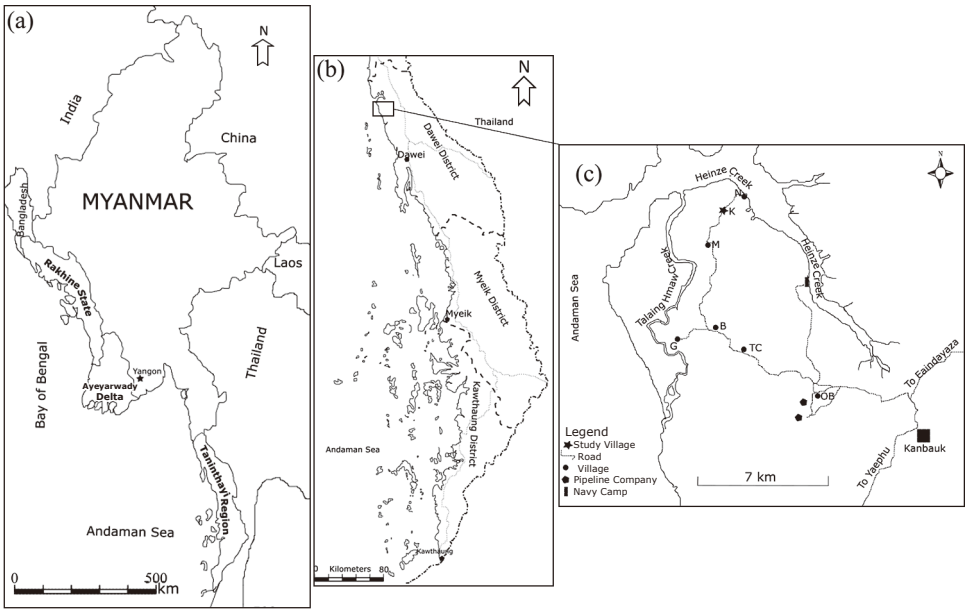

Fig. 1a Main Mangrove-Dominated Regions of Myanmar
Fig. 1b Location of the Study Area in Yaephyu Township, Dawei District, Taninthayi Region
Fig. 1c Map Showing the Location of Village K in the TC Village Tract

emphasis on rice subsistence for the country's population for the government to maintain political power following three periods of countrywide social unrest prompted by increases in the price of rice) of the socialist-government period[3] (1962–88) and military-government period (1989–2010), agricultural development in Myanmar has been achieved mainly by expansion of cultivated area (Myat Thein and Maung Maung Soe 1998; Fujita and Okamoto 2009, ch. 5). To enhance national food security, the government of Myanmar has attempted to increase rice production through engineering assistance and village-level expansion targets. Rainfed lowland rice cultivation has also resulted in the expansion of paddy fields into mangroves of the delta and coastal areas of Myanmar.

3) Following independence, a democratic government ruled the country from 1948 to 1962 based on the constitution of 1947. Although the Revolutionary Council (1962–74) and Burma Socialist Program Party (1974–88) administered the country from 1962 to 1988, we classify this entire period as the socialist-government period due to a party system following the taking of power by General Ne Win. The period of the State Law and Order Restoration Council (1989–97) and the State Peace and Development Council (1997–2010) is classified in this paper as the military-government period under a party system administered by the military government. Although a military-transformed democratic government ruled the country (2011–15), we classify the period from 2011 to the present as that of democratic government based on the administration of the 2008 constitution.

Between 1975 and 2005, 38 percent of Myanmar's mangroves were deforested, mainly due to paddy-field development, which contributed 98 percent of the total mangrove degradation in the three main mangrove-dominated regions of the country (Giri *et al.* 2008). By 2004 almost half of the net agricultural land (total net agricultural land is approximately 11 million ha) in the country was classified as *le*, an agricultural land category used for paddy fields (Matsuda 2009, 17–18).

Since the British colonial period, the Ayeyarwady Delta has been developed into the world's largest source of exported rice following reclamation of the old delta and the associated mangrove swamp of the upper part of the delta and conversion into paddy fields (Matsuda 2009, 19). The reclamation was carried out by the construction of artificial levees and relocation of a large number of farmers from Upper Myanmar for rice cultivation. However, the tidal mangrove swamp of the lower delta was conserved as forest reserves (253,215 ha) (Myanmar, Forest Department 2018). Under the socialist government, the area on the fringe of the mangrove reserves of the lower delta was reclaimed as paddy fields. One example was the Lower Burma Paddy Land Development Project, locally known as the World Bank's embankment project, in the Ayeyarwady Delta. The project was implemented in 1976 with US$54 million in aid to protect existing paddy fields on 11 islands from flooding and saltwater intrusion and to reclaim abandoned paddy fields. The project constructed 659.8 km of earthen embankment to develop 15,378 ha of paddy fields in the middle delta area, about 136.8 km from the sea, and 59,489 ha of paddy fields on 10 islands in the lower delta area, about 80.5 km from the sea (World Bank 1976).

After the government initiated the paddy-field development projects, paddy fields encroached into mangrove reserved forest in the Ayeyarwady Delta from the 1970s. This was due to external forces such as the need for rice for the national subsistence policy, insurgency, redistribution, and weak enforcement of forest laws (Maung Maung Than *et al.* 2006; Toe Toe Aung *et al.* 2011; Ya Min Thant *et al.* 2012). Between 1978 and 2011, 81 percent of the dense-mangrove area was lost to paddy fields, which became the dominant proximal driver of mangrove deforestation in the Ayeyarwady Delta (Webb *et al.* 2014). As the local government strongly supported rice cultivation, paddy fields could be expanded in the reserved forests in the delta from 1998 to 2008 by paying a penalty of about US$0.25 ha/year to the Forest Department. Between 2013 and 2017, 49,114 households in 582 villages and about 125,819 ha of encroached land (including 114,219 ha of paddy fields) were excluded from the reserved forest area of the Ayeyarwady Delta under the de-reservation program of the Forest Department of Myanmar (Myanmar, Planning and Statistics Division, Forest Department 2018). Around the 1990s, an increase in the number of abandoned paddy fields was reported (Maung Maung Than *et al.* 2006; Toe

Toe Aung *et al.* 2011; Ya Min Thant *et al.* 2012) and concerns arose about continuous rice cultivation and sustaining livelihoods in the area. As the agricultural policy was supported by the state without paying attention to the coexistence of mangroves and agriculture, indiscriminate conversion of mangrove forest into paddy fields was observed in the delta (Estoque *et al.* 2018).

In the coastal areas of Rakhine State, *kari* farming is a major driver of mangrove deforestation (Aye Aye Saw and Kanzaki 2015). *Kari* farming is a local practice of collectively building a dike bordering the areas intended for rice cultivation or shrimp farming after the mangroves have been cut for land reclamation. A *kari* farm is usually about 40–80 ha and is developed through the collaboration of 10–15 farmers, with an individual delineation of farming areas inside the dike. Based on crop productivity, the *kari* farm is cultivated with two alternative cropping systems, such as rice cultivation for some years and then shrimp farming after the loss of paddy productivity. During the 2000s (military-government period), extension of *kari* farms into the state's mangroves was promoted by support from the local authorities through a localized program of granting land-use rights for a growing season of paddy or shrimp farming, which is locally called Pazun Ta Thar, Saba Ta Thi (key informant, U Maung Maung Kyi 2018).

As Rakhine State is located at the political periphery of the country, most of the mangrove areas are still in the communal land category,[4] and some areas of mangrove are titled under two reserved forests (the Wunbaik reserved forest [22,905 ha] and the Minkyaung reserved forest [4,451 ha]) (Myanmar, Forest Department 2018). Daniel Richards and Daniel Friess (2016) reported that the percentage of mangrove deforestation by paddy-field expansion in Rakhine State increased between 2000 and 2009 before declining rapidly in 2010. The agricultural expansion occurred in both mangrove reserved forest and in mangrove areas on communal land; by 2014, 75,500 ha of mangrove forest had been lost to deforestation, mainly for rice cultivation (Estoque *et al.* 2018, 5396). An increase in *kari* farm expansion into the Wunbaik mangrove reserved forest from 2.7 percent of the reserved area in 1990 to 25 percent of the area in 2011 was also reported (Aye Aye Saw and Kanzaki 2015). Based on a 2013 record of the Forest Department for the de-reservation program, 2,919 ha of paddy fields cultivated by 736 households encroached into the two mangrove reserved forests of the state. Although data about *kari* farm abandonment have not been accessed, farmers experienced yield diminishment

4) According to the Land Nationalization Act (1953), all land belongs to the nation. In this paper, unclassified land that is not administered by any institutional national body is considered communal land. Additionally, this locally recognized communal land that is not managed by any institution can be made available for agriculture, animal husbandry and aquaculture, mining, and other government activities by the Central Committee for Management of Vacant, Fallow, and Virgin Lands through the Vacant, Fallow, and Virgin Lands Management Law (2012).

over time due to soil acidification and saltwater intrusion (Aye Aye Saw and Kanzaki 2015). The current social unrest (e.g., religious conflicts and ethnic army and government conflicts) in the state may result in more poverty and dependency on unsustainable agricultural practices.

In comparison with other regions of the country, rice production in Taninthayi Region was low during the insurgency period, mainly on account of subsistence use because of the high cost of exporting rice due to poor infrastructure. However, as a result of the promotion of regional subsistence rice projects in the socialist- and military-government periods, there was significant agricultural expansion in Taninthayi Region, with an increase in paddy fields in Dawei and Myeik Districts (Songer *et al.* 2009). By 2017 the region had 442,639 ha of net agricultural cultivated area: 76.2 percent orchards, 21.5 percent paddy fields, and 2.3 percent other cropland; 14.8 percent of the paddy fields in the region had been abandoned (Myanmar, General Administration Department 2017). Mangroves in Taninthayi Region now represent the largest mangrove area in Myanmar. They are generally in good condition; however, some researchers such as Grant Connette *et al.* (2016) considered 66 percent of the mangrove forests in the region to be degraded, with the remaining mangrove areas within protected areas and forest reserves. Because the region is on the political periphery of the country, most of the mangrove areas are still in the communal land category, especially in Dawei and Kawthaung Districts, and some areas of mangroves are titled as reserved forests, mainly in Myeik District. By 2013, the records of the Forest Department under the de-reservation program showed encroachment into mangrove reserved forests by 4,629 households in 54 villages and about 9,408 ha of land, including 3,339 ha of paddy fields and 3,103 ha of orchards. Furthermore, due to the country's economic reforms focused on the development of industrialization and agriculture, the shallow sloping coastal zone of Taninthayi Region became an ideal location for arable land, leading to a frontier of mangrove degradation in the region (Gaw *et al.* 2018).

Because the country still has a large area of cultivable waste land (communal land), which accounts for 5.7 million hectares—half of the net sown area—and because reclamation will be accelerated in the near future under the Vacant, Fallow, and Virgin Lands Management Law enacted in March 2012 (Fujita 2016), the potential for agricultural expansion into mangrove areas still exists, especially in the coastal agroecological regions, even though mangrove paddy-field development has been reported to be an unsustainable agricultural practice based on evidence of its abandonment[5] after one to two decades of

5) For the term "farmland abandonment," we assume that the former paddy farmer maintains his right to the land, he has ceased all agricultural activities on it, and the possibility of reusing the land is unknown.

rice cultivation due to loss of productivity, saltwater intrusion, and weed invasion (Maung Maung Than *et al.* 2006; Toe Toe Aung *et al.* 2011; Ya Min Thant *et al.* 2012) in the Ayeyarwady Delta and Rakhine State (Aye Aye Saw and Kanzaki 2015). Some quantitative studies on mangrove cover changes (Giri *et al.* 2008; Webb *et al.* 2014; Connette *et al.* 2016; Estoque *et al.* 2018) and mangrove plantation and recovery of abandoned paddy fields (Maung Maung Than *et al.* 2006; Toe Toe Aung *et al.* 2011; Ya Min Thant *et al.* 2012) have been conducted with a special focus on the mangroves of the Ayeyarwady Delta. However, studies on paddy-field development in mangroves, abandonment of fields, and the consequences for agroecology and the socioeconomic conditions of local inhabitants have not considered regional development planning and sustainable management for resource use. It is also unclear how ecological and sociopolitical factors combine to influence paddy-field establishment and abandonment in mangroves and the consequences thereof for agroecology and socioeconomics at the community level.

Based on the area's ecological importance as the last frontier of mangroves in Myanmar and its having the highest potential for degradation due to agricultural expansion and economic development projects, we selected a village in Taninthayi Region to study, to clarify the conditions and practices of paddy-field establishment in mangroves and also to address the complexity of paddy-field abandonment processes and the responses of farmers. The consequences for local livelihoods and the socioeconomic situation of local farming communities after paddy-field abandonment were also examined. Through an agroecological timeline and a coupled human–environment timeline, the combined influences of ecological and sociopolitical factors on the system were evaluated to provide a resource for regional planning and management of continuous paddy farming and sustainable local livelihoods in the future.

II Methods of Study

II-1 *The Local Setting*

Taninthayi Region, in the southernmost part of Myanmar, comprises more than 800 islands and covers an area of 43,345 km^2 in three districts (Dawei, Myeik, and Kawthaung) (Fig. 1b). It has a population of 1.4 million people, 30 percent urban and 70 percent rural. It is one of the least densely populated regions (32.5 people/km^2) of the country (Myanmar, Department of Population 2015). The land use of the region is 56.8 percent forested area, 8.2 percent agricultural land, and 35 percent other land uses. In the total forested area (24,638 km^2), approximately 50 percent is titled under forest management and the remainder is in the untitled land category of state control (Myanmar, Forest Department

2015). The region has a tropical monsoon climate with abundant rainfall (5,594 mm/year) and an average temperature of 26°C. It has abundant natural resources and an economy driven by agriculture, forestry, mining, and fisheries, with an increasing amount of tourism. The security of the region has improved because of the ceasefire agreement with non-state armed groups such as the Karen National Union in 2012 and the New Mon State Party in 2018. The huge area of land in the communal land category and the improved security indicate that the region has much potential for economic development projects, especially in coastal regions, which are currently becoming a new deforestation frontier in Southeast Asia (Gaw *et al.* 2018).

By the year 2017, 95,266 ha of paddy fields[6] had been developed in the region: 42 percent in Dawei District, 53 percent in Myeik District, and 5 percent in Kawthaung District. Of these paddy fields, 12,366 ha—71.6 percent in Dawei District, 17 percent in Myeik District, and 11.4 percent in Kawthaung District—had been abandoned. Dawei District, which is the most accessible part of the region, includes four townships and two sub-townships with an area of 14,004 km^2; this includes 44 percent forested area, 12.1 percent agricultural land, and 43.9 percent other land (Myanmar, Forest Department 2015). The district has a total net cultivation area of 152,864 ha, including 71 percent orchard land, 26 percent paddy fields, 2 percent nipa farms, and 1 percent *ya* (upland farming). Of the total area of paddy fields in the district (40,002 ha), 25 percent (10,094 ha) has been abandoned. Since the socialist-government period, coastal mangroves have been cut and converted into paddy fields through government development projects and local subsistence activities in the district.

Yaephyu Township is an agriculturally developed township in Dawei District that has 45,473 ha of agricultural land: 80.7 percent orchard land, 18.7 percent paddy fields, 0.3 percent *ya* cultivation, and 0.3 percent nipa farms. As of 2017, 8,502 ha of paddy fields were producing and 29 large-scale polder fields (18 government and 11 private fields) had been developed (Myanmar, General Administration Department 2017). Consequently, 39.7 km of soil embankment had been constructed to benefit 1,577 ha of rice cultivation in the coastal areas of the township. In general, the paddy fields were established by cutting mangrove forest and building embankments to control saline water, tides, and inundation. Since 1998, embankment breaching has become the major hindrance for rice cultivation in the coastal areas. The demands for assistance to rehabilitate sluice gates and embankments have been increasing each year, and this has become a concern for regional developers, policy makers, and nongovernmental organizations (Yadanar

6) The data pertaining to net sown acreage and the area for each type of cultivation in the region were collected from reports for the year 2017 of the General Administration Offices of all townships in the region. The downloaded area data are available at http://themimu.info/.

Corporation 2017). In 2017, 45.3 percent of the total area of paddy fields in the townships (approximately 3,849 ha) had been abandoned.

This study was conducted in village K of the TC village tract (anonymous designations), a mangrove rice cultivation area in Yaephyu Township. The village tract includes nine villages comprising 1,299 households and 6,855 inhabitants. Rice cultivation and orchard farming are the most common livelihoods; 1,741 ha of paddy fields and 949 ha of orchards are under cultivation. Four villages inhabited by the Mon ethnic group—namely, villages K, M, B, and G—cultivate rainfed lowland paddy fields established in mangrove areas of the village tract.

Village K is connected by a 12 m-wide earth road to village N to the north and village B to the south (Fig. 1c). There are 19 households in the village, and the total population in 2017 was 126 inhabitants. Village K was developed in a fringe region between small mountains and the coastal floodplain. The village is neighbored by two small mountains with elevations of 60 m and 147 m above sea level, respectively, in the southern and southeastern parts of the village. There are large areas of tidal flat plain, once dominated by mangrove, in the northern, western, and southwestern parts of the village. Village K was established in connection with the development of a mangrove paddy field (named field A) by three landless families in the 1960s. Then, a 283 ha large-scale paddy field was established under the government paddy development program in 1965 (named field B). As a consequence of this project, local-scale encroachment by another paddy field (named field C) into the mangrove cover of the existing embankment followed. Thus, between 1959 and 1987 three paddy fields were developed in the tidal flat plains of village K. These paddy fields were abandoned 10–20 years ago.

II-2 *Field Surveys and Socioeconomic Assessment*

This study was conducted through surveys of mangrove paddy fields and socioeconomic assessments during two field visits in November and December 2017 and December 2018. Before the study area was selected, reconnaissance surveys in the TC village tract and in village tracts in its vicinity were conducted through interviews with village leaders and experienced farmers, and observations were made in the mangrove paddy fields of each village. Additionally, the agricultural experts of the Yadanar Corporate Social Responsibility (CSR) program were interviewed to clarify the conditions of agriculture development and the transition of the study area based on their 30 years of experience in assisting agricultural sectors as part of a CSR program for a natural gas transportation project in the area. After the reconnaissance survey, we selected the TC village tract and performed an in-depth study of village K. During the field survey in 2017, the structure of mangrove paddy fields and the conditions of currently cultivated paddy fields,

fallow paddy fields under embankment repair, and abandoned fields were assessed in village K and the TC village tract. Background information, such as maps and official data concerning paddy-field development in the TC village tract, was collected from the Department of Agriculture Land Management and Statistics (formerly known as the Land Records and Survey Department), and officials from the department were interviewed. In addition, maps of paddy-field development in mangrove areas of village K and the TC village tract and the reconstructed structure of embankment breaches in the government-imposed paddy field of village K were developed. These were based on time-series data from the Google Earth basemap (satellite images, 1984–94, 2003, 2010, 2011, 2012, 2014, and 2016) combined with information from a one-inch map (95 F/14) survey, H. Q. Twelfth Army 3rd edition (1945), and a kwin map, field no. (497–498), by survey team (2) Yangon (1967–68) of the Department of Agriculture Land Management and Statistics. A ground truth check of these maps was conducted during the second field survey at the TC village tract in 2018.

Through the questionnaire survey, six aspects of household information were assessed: basic household information and livelihoods, paddy-field conditions, orchard development, out-migration, fisheries, and potential mangrove rehabilitation. Among the 19 households of village K, the questionnaire survey was conducted in 18 (95 percent of total households). The remaining household, consisting of a single man who had been left by all his family members for social reasons, was not willing to participate in the survey. The survey participants included 13 male and 5 female heads of household ranging in age from 18 to 67 years. Among the 18 households interviewed, 14 were Mon ethnic group households and 4 were Burma ethnic group (2 Dawei and 2 Burma) households. Twelve of the households interviewed owned paddy fields that had been abandoned. A participatory village profile assessment was also conducted to develop a human–environment timeline and assess the agroecological changes. Establishing a complete overview of the village from the time of paddy-field development to the present involved the participation of second-generation members of the three pioneer families who had developed field A, village heads, experienced farmers, orchard owners, former migrant workers, and casual laborers. The results are presented through narrative analysis methods with reference maps.

III Results

III-1 *Local Paddy-Field Development Practices*

People from the Mon ethnic group followed three fundamental steps when converting

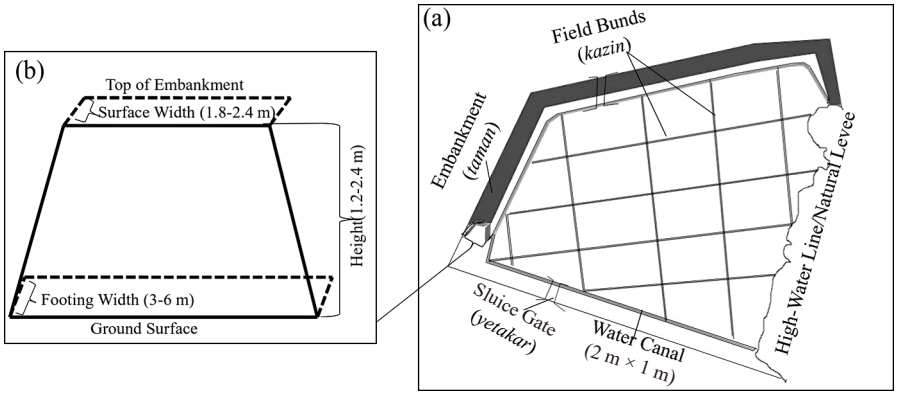

Fig. 2a Structure of a Mangrove Paddy Field

Fig. 2b Cross-sectional Structure of an Embankment (*Taman*) in Village K

Note: The illustration of the common structure was developed based on field observations in six paddy fields in the TC village tract and key informant interviews with experienced local farmers from village K.

mangrove areas to paddy field. First, they built soil embankments (*taman*) around the area intended for paddy-field development to protect the field from inundation and salt-water intrusion (Fig. 2a). Depending on ground levels and tide conditions, the embankments usually had a 3–6 m footing at the base with an embankment 1.2–2.4 m in height and a top width of 1.8–2.4 m, built by compacting soil layers (Fig. 2b). Thicker and higher embankments than the common structure were constructed to block creeks. The embankments were usually built manually through the collective work of farmers on neap-tide days (6–12 waxing and waning days of the lunar calendar) between October and mid-May. Depending on the area intended for use and the availability of resources, embankment construction took about three to five years to complete.

The second step of paddy-field development was land reclamation, including mangrove cutting and land preparation for rice cultivation. This step began with allocating an area inside the embankment to each farmer who had participated in embankment building. The mangroves inside the embankment were killed by waterlogging (i.e., maintaining the water level above the height of the aerial roots of the mangrove) from May to September, the entire rainy season in the year following embankment building. Based on workforce and resource availability, the farmers subdivided their individual areas into annual-basis mangrove cutting plots. The mangroves in these plots were cut on neap-tide days between October and March/April. The cut trunks, branches, and leaves were dried in the field through the summer and set on fire before the monsoon. In the rice cultivation season (June to July), early-maturing rice, *kaukyin*, such as *Eicalae* and *Eaemahta*,

was broadcast onto the cleared area, where there was still partially burned mangrove debris. The major aim of sowing the rice was to have subsistence rice for the next year of mangrove cutting and to use the rice straw as tinder to burn the residual mangrove parts and debris as part of preparing the plot. In the second year of land preparation, the mangrove stumps were dug out during the dry season and the mangrove debris and rice straw were burned again in December. Cattle were used to trample the burned debris and soil, thereby mixing them, early in the rainy season, which is usually after mid-May, as land preparation for the second year of rice cultivation. Then, early-maturing rice was sown again in the rice cultivation season. In this way, the paddy field was prepared year after year until it attained a plowable condition.

The final step in permanent paddy-field development was the building of field bunds (*kazin*). Based on ground levels, the bunds were built to grow various varieties of rice, control water levels during the growing season, and delineate each individual border of ownership inside the embankment. After a permanent paddy field was established, the farmers commonly grew a medium-maturing rice, *kauklatt*, such as *kaukgyi* or *mitone*. In the study area, late-maturing rice, *kaukgyi*, was grown only on very low land or in flooded plains. Early-maturing rice was grown only during the land-preparation processes, when the farmers grew the rice using the Malayan practice of cattle trampling and broadcasting (Takaya 1987). After permanent paddy-field development, the rice cultivation practice of plowing the field with cattle and broadcasting rice was implemented in the study area. The agricultural calendar began with *taman*, *kazin*, and sluice gate repair from February to May, followed by field plowing from May to the end of June. Rice was sown in July. Depending on the growing period of the rice variety (e.g., *kaukyin*, 140–150 days; *kauklatt*, 150–170 days; or *kaukgyi*, 170–200 days), weeding and grass cutting were carried out until harvesting (October–December). After the harvest season, the paddy fields were left fallow through the summer.

III-2 *Conditions for Paddy-Field Development in Mangroves*

Paddy-field development in a mangrove area of village K was started as subsistence cultivation by three landless families from village M in 1959. When field A was developed in the mangroves (locally considered common land), there was no settlement at the site, which was difficult to access from village M. Based on the high-water line at the foot of a hill, above which the tide seldom rises, an embankment facing the major waterway was constructed by connecting to a natural levee consisting of a sand ridge inside the mangrove area. Field A was not developed like a polder field, for which at least three sides of a field are bordered with embankments. In this case, the local geographic setting (i.e., the natural levee and high-water line) was taken into consideration for field development,

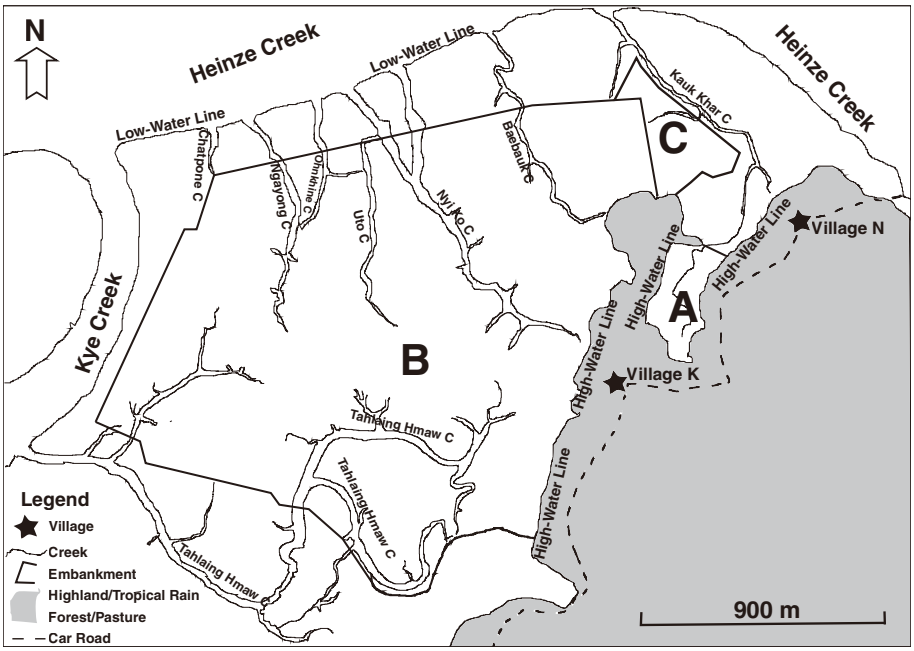

Fig. 3a Map of the Three Paddy Fields Developed in Village K (1959–87)

Note: The map was developed by adding the information from the one-inch map (95 F/14), survey H. Q. Twelfth Army 3rd edition (1945), the kwin map, field no. (497–498), by survey team (2) Yangon (1967–68) of the Land Record and Settlement Department, Myanmar, and the field surveys of 2017, to the geo-reference Google Earth basemap.

and only a short length of embankment was constructed. Field A, with an area of 8.4 ha, covered only the end of a small creek, with minimal mitigation of the water action of tides and inundation (Fig. 3a). The development processes took about 14 years (1959–72): embankment building five years, mangrove cutting and land preparation two years, and permanent field development seven years. During the time of embankment building, the three families relied on swidden cultivation in the hill areas around field A.

Based on information indicating high yields from field A, and the national rice subsistence policy of the government, the government-supported paddy-field development project was started in the mangroves of village K in 1965. In the development of field B, 283 ha of mangroves were bordered with embankment and reclaimed for paddy fields. Field B was established as a polder field by constructing embankments from the high-water line on the east side to the mangroves in three directions (north, west, and south) to border the entire area of the paddy field. The waterways of seven creeks and their floodplains were blocked by the embankment during field B development (Fig. 3a). The embankment was constructed with manual labor from 1965 to 1970. The government

provided financial support of US$0.17–0.21[7] for each 0.03 m^3 of embankment constructed and US$0.50–0.67 for each 0.03 m^3 of creek-blocking embankment. After embankment construction, the government allocated 283 ha of paddy to one hundred landless households from three villages in the TC village tract. The Land Records and Settlement Department of Yangon surveyed the individual areas (2.83 ha) allocated to each farmer and registered the land in the category of paddy field (*le*) between 1967 and 1968. Land reclamation was carried out by the allocated farmers until the permanent paddy-field development stage without government support. The development of field B took about 16 years (1965–80): six years of embankment building, five years of mangrove cutting and land preparation, and five years of permanent paddy-field development.

After the government paddy-field-development project in the study area, extension of paddy fields into the mangrove cover by local people accelerated. Based on the existing embankment of field B, five farmers extended 16.2 ha of paddy field (field C) into the mangrove cover by constructing embankments to develop a polder field. The embankment of the field was built near the low-water line to which the tide rises every day, with very little mangrove cover outside the embankment (Fig. 3a). Within five years, from 1983 to 1987, the farmers developed field C into permanent paddy fields.

During the 1990s, individually based small-scale paddy fields were also extended from the existing embankment of field B into mangrove cover in village K (Fig. 3b). This practice reduced the strength of the existing embankment as a result of reducing the floodplain area outside the embankment at high tide, thereby increasing the intensity of water action and accelerating erosion of the embankment. The individually extended fields had a very short cultivation lifespan of no more than five years. The interview with the key informant and the analysis of satellite images of the land use of different time series showed that about four paddy fields, ranging in area from approximately 12 to 121 ha, were also developed collectively into the mangroves of the TC village tract in the 1990s (Fig. 3c), after the government paddy-field-development project. The extension of paddy fields into the mangrove cover of the communal land of the village tract was supported by the local authority under the agricultural development policy of sown acreage expansion.

The analysis of the map developed by the British military (1945), key informant interviews, and field observations indicated that the extended paddy field areas were once

7) Until 1988, the kyat–US dollar exchange rate was 6 kyat = US$1, per the official rate of the socialist-government period. In 1999, especially in the embankment reconstruction period, the exchange rate used was 1,000 kyat = US$1 (i.e., the estimated currency exchange rate on the black market at the time). A rate of 1,329 kyat = US$1 (Central Bank of Myanmar, http://forex.cbm.gov.mm/index.php/fxrate, accessed on February 6, 2018) was used for estimating income.

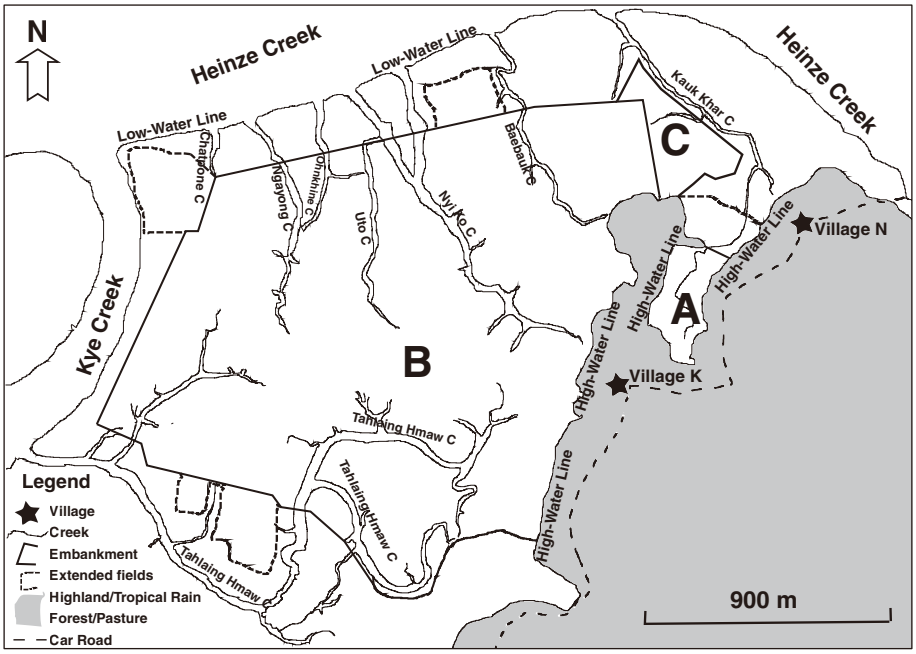

Fig. 3b Map of Individually Executed Local-Scale Extension of Paddy Fields from the Embankment of Field B

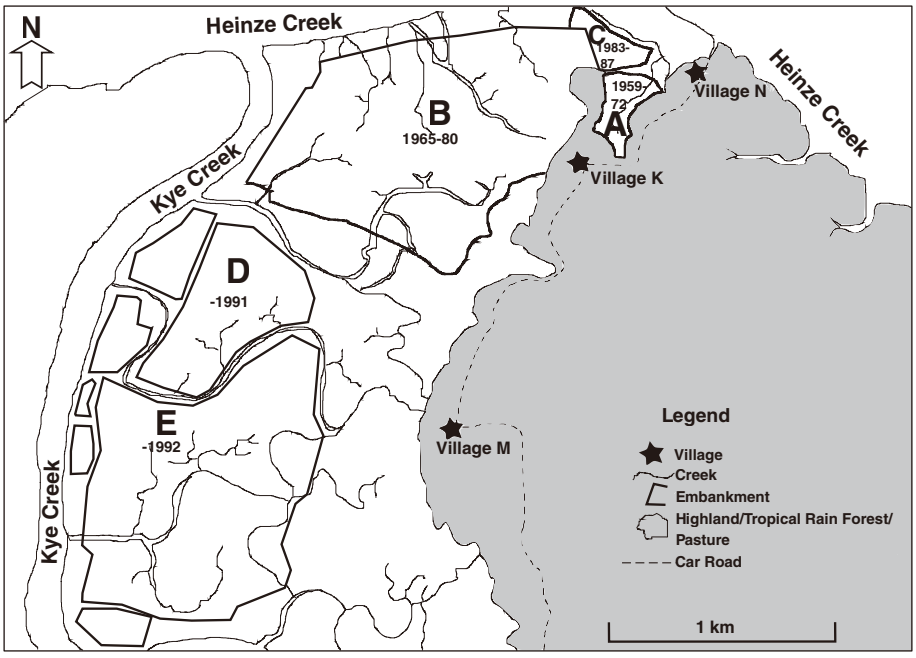

Fig. 3c Extension of Paddy Fields in the TC Village Tract (1959–92)

covered with extensive mangrove forests dominated by *Sonneratia* species (Laba), *Avicennia* species (Thamae), *Xylocarpus* species (Kyana, Pinle Ohn), *Rhizophora* species (Bue Chaetaut), *Bruguiera* species (Bu), and *Nypa fruticans* (Da Ni). The interviews revealed that mangrove trees with a girth of 2–3 m were removed for the paddy-field-development processes in the area of village K. After the 1990s, encroachment of paddy fields into mangrove cover was promoted more extensively; even mudflats dominated by *Nypa fruticans* were developed into paddy fields. *Nypa fruticans* is the most highly adapted species, other than mangrove, to resist fast-running water and has the highest survival at the lowest water levels (Giesen *et al.* 2006). Thus, the natural floodplains of the existing creeks in the TC village tract were severely damaged, and the waterways were blocked by embankments (Fig. 3c). With the extreme emphasis on paddy-field development in the area, no attention was given to sustainable coexistence of mangroves and agriculture, and extensive areas of mangrove were cleared.

III-3 *Causes of Paddy-Field Abandonment and Responses of Farmers to Embankment Breaches*

Among the paddy fields in village K, the embankment of field C, located nearest the low-water line, was the first to be breached. In 1992, five years after field C was permanently developed, large-scale breaching[8)] of the embankment occurred at the sluice gate during the March spring tides. In coastal areas of Myanmar, the highest tide levels every year are on the spring-tide days of Tabaung (March) and Tawthalin (September). Local farmers know that these spring-tide days bring a high possibility of embankment breaching. In the case of field C, the farmer reconstructed the aforementioned breached embankment before the rice-growing season, and paddy was grown that year. However, the paddy could not be harvested because of frequent embankment breaching during the growing season. Further repair of the embankment was beyond the ability of the five farming families, which led to the abandonment of field C in 1992.

The first large-scale embankment breach in field B occurred before paddy harvesting in September 1996. The creek-blocking embankments were breached, mainly in three places between the water gates and the creeks. The hundred farmers who shared field B collectively reconstructed the embankment by contributing manpower and financial resources equally. However, the yield of field B was significantly diminished; this caused the farmers to lose their profits for the year due to both the decreased yield and the costs of the embankment repair. After two growing seasons, the embankment was

8) Large-scale embankment breaching resulted in the breaching of the embankment blocking the major waterway or creek. The length of the breach ranged from 25 m to 100 m, based on field observations in village K and the TC village tract.

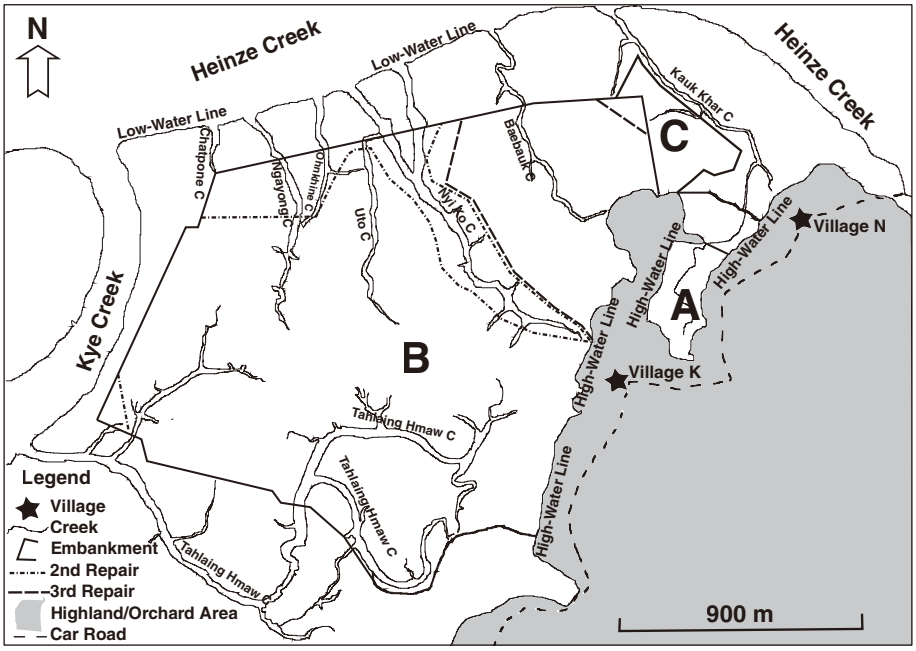

Fig. 4 Map Showing the Frequent Repair and Reconstruction of the Embankment of Field B by the Government (1959–2017)

breached again in two locations in September 1998. The embankment could not be rebuilt quickly after the breach, and rice production was lost for the year. A new embankment structure was then built by dividing the field into two parts along the main creek, where most of the embankment breaching had occurred (see structure of second repair in Fig. 4). With a loan of US$40,000 and machinery from the General Administration Department of Yaephyu Township, as well as an additional financial provision of US$300 per individual farmer, the embankment was reconstructed in 1999. After the construction work, field B was resurveyed and 2.63 ha of field were allocated to each farmer. Although paddy was grown that season, the yield was significantly diminished. Faced with diminishing yield[9] and repaying the loan for embankment reconstruction (US$400/farmer) to the General Administration Department, some farmers began to sell their paddy fields. Others grew paddy for the next two growing seasons, but yields were diminished. In

9) Based on key informant interviews, the yield of paddy fields was generally more than 250 baskets/ha in the early period of mangrove paddy-field development but decreased over the period of rice cultivation in the TC village tract. After the second repairs on field B, the yield diminished to 100 baskets/ha in village K. In the cultivated fields, the yield of mangrove paddy field in the TC village tract was generally 162.5–212.5 baskets/ha in 2018. A basket is a basic unit of rice weight in Myanmar. One basket of rice is equal to 46 lb, or 20.86 kg.

2002 the field B embankment was breached again, and the farmers stopped growing rice. However, large-scale rebuilding and maintenance of the embankment were carried out in 2003 with government funding and machinery assistance. Because the government could not afford to rebuild the entire area of field B, only part of the embankment was rebuilt (see the structure of the third repair in Fig. 4). Construction work was completed by the start of the rainy season, but a new reallocation of land could not be made, so the farmers could not grow paddy because of the limited time for clearing weeds and regrowth of mangroves in the field. Late in the rainy season of 2003, the embankment was breached again. Within two decades of the start of cultivation after the permanent paddy-field development processes, field B was abandoned.

In March 2011, the embankment of field A was breached. However, three farming families sharing manpower and resources equally rebuilt it immediately. Paddy was sown in time for the growing season, but the embankment was breached again in September, before the paddy was harvested. The farmers could not afford to rebuild the embankment, having had no paddy production for the year, so field A was abandoned. However, at 38 years, field A had the longest cultivation span after the implementation of the permanent paddy-field development processes.

Frequent embankment breaches and limited financial resources for embankment repairs were the two major causes of mangrove paddy-field abandonment. Based on observations at the site, the field developed closest to the riverbank or water channel (low-water line) with relatively little mangrove cover had the soonest potential of embankment breaching and the shortest lifespan. Within two to three decades of rice cultivation, the mangrove paddy fields in the study area were likely to be abandoned because of frequent embankment breaching. The practice of paddy-field extension from existing embankments into protective mangrove cover was inappropriate because it weakened the embankments and accelerated breaching. However, local-scale paddy-field development with an understanding of specific site conditions and water levels, as in field A, might be a possibility for continuous rice cultivation in mangrove areas.

III-4 *Demographic and Livelihood Changes*

In 1965, there was no permanent settlement in village K. During the paddy-growing season, three farming families settled around field A in temporary tents, but they still maintained their homes in their native village (M), which was connected to the field by a footpath. When the embankment of field B was completed in 1970, about 10–15 households, including the three pioneer farmer families, relocated from nearby villages to village K and settled permanently to develop the paddy fields they had been allocated by the government. Migration from other villages to village K increased in 1975 with the

Table 1 Changes in the Number of Households with Paddy-Field Development and Abandonment in Village K

Year	Paddy-Field Area (ha)	Number of Household Settlements	Status of Paddy Fields in Village K
1965	8.4	3	Field A developed
1970	291.4	13	Start of field B development
1980	291.4	60	Field B developed
2009	8.4	31	After field B abandonment
2010	8.4	26	After field B abandonment
2014	0.0	21	After all field abandonment
2017	0.0	19	After all field abandonment

Note: The population data up to 1980 were collected through a village profile survey, and the data from 2009 to 2017 were collected from the household registration records of the village head of village K and the administrative office of the TC village tract.

development of the government paddy field. Approximately 50 households, including the field owner and laborer families, moved to village K. A cart road from village K to village M was also developed. In the 1980s, the settlement in village K increased to 60 households due to the development of the rice cultivation business. A self-financed primary school and village monastery were established in 1980. The village primary school was declared a government-supported primary school in 1986. The number of households in the village was stable through the paddy-cultivation period, but it changed distinctly after paddy-field abandonment. The number of settled households in the village decreased steadily, to 31 in 2009, 26 in 2010, 21 in 2014, and 19 in 2017 (Table 1).

In 2017, 31 percent of the population of village K was economically inactive (i.e., 25 percent under 15 years of age and 6 percent over 60 years of age); thus, 69 percent of the population was between 15 and 60 years of age. The average annual household income of the village was US$2,531, from nine sources of income: out-migration (US$852), casual labor (US$617), orchard farming (US$285), crabbing (US$234), shopkeeping (US$225), home gardens (US$79), nipa production (US$78), livestock breeding (chickens and pigs) (US$56), and others (e.g., transportation) (US$88). The highest percentage of income was contributed by remittances from out-migrants working in Thailand.

Out-migration from the TC village tract to Thailand started in 1998, but it became common in village K around 2004, after the abandonment of field B. In the 18 households studied, 44 percent of the interviewees had experience as migrant workers in Thailand as a consequence of paddy-field abandonment. This study showed that 22 percent of laborers from the total population (126 people) of the households in the study worked in Thailand, and this work supported the subsistence of 67 percent of the total households in village K (Table 2). The out-migrant workers included 7 percent under 18 years old, 71 percent 18–30 years old, and 22 percent 31–40 years old. Based on the questionnaire survey, 39 percent of the out-migrant workers were illiterate and 43 percent had less

Table 2 Ages and Educational Status of Out-migrant Workers in Village K

Age	Sex				Education Level of Out-migrant Workers			
	Male Present	Male Abroad	Female Present	Female Abroad	Illiterate	Primary School	Middle School	High School
<18	19	1	20	1	–	1	1	–
18–30	10	11	11	9	8	8	2	2
31–40	3	5	6	1	3	3	–	–
41–50	6	–	5	–	–	–	–	–
51–60	5	–	5	–	–	–	–	–
>60	3	–	5	–	–	–	–	–
Total	46	17	52	11	11	12	3	2

than a primary-school education. The out-migrant workers worked mainly as wage laborers in Thailand, in the so-called 3D jobs—dirty, dangerous, and demeaning—typically in sectors such as agriculture, fisheries, processing of fishery products, forestry, construction, and domestic work (Fujita *et al.* 2010), which require physical strength and stamina. After the age of about 40 years, almost all of the migrant workers returned from Thailand because of the limited age preference of employers for wage laborers and the greater difficulty of finding a job after the age of 40. Because remittances by out-migrant workers contributed greatly to village income and subsistence, the sustainability of these workers' livelihoods was important for the village.

III-5 *Orchard Establishment to Safeguard Livelihoods*

At the time of field A's development, swidden farming (*taungya*) with a mixed-crop cultivation system (i.e., cultivation of *taungya* by mixing annual crops such as upland paddy, sesame, groundnut, etc., and perennial trees such as cashew nut, jackfruit, betel nut, etc.) was practiced in the TC village tract. This cultivated land was locally recognized as being the orchard of the *taungya* cultivator, and the products of the perennial trees were harvested after the swidden lifespan. Commercialized orchard development in the TC village tract, producing a boom crop for the region, started in the 2000s under regional development projects such as the Oil-Pot Project (oil palm plantations) and White Gold Project (rubber plantations). However, in village K orchard development began in the 2010s, after the paddy fields had been abandoned for 10–20 years. The villagers developed their orchards as a strategy for an alternative means of livelihood because of the limitations of sustaining their livelihoods through out-migration and because of market demand for orchard crops. By saving remittances from out-migrant workers and investing these funds in orchard establishment, the villagers converted former swidden fallows, traditional orchards, pasture lands, and degraded forests around the higher ground in the village into

Table 3 Orchard Cropping Patterns and Areas of Orchard Development in Village K

Orchard Crop	Area (ha)	% of Total Cropping Area	Original Land Condition (ha)	
			Degraded Forest	Swidden Fallow
Rubber	4.1	15.2	1.6	2.5
Betel nut	3.2	12.0	3.2	–
Rubber & betel nut	13.1	48.6	8.7	4.4
Rubber & cashew nut	0.4	1.5	0.4	–
Betel nut & cashew nut	4.5	16.7	4.5	–
Betel nut, cashew nut, & coconut	1.6	6.0	–	1.6
Total	26.9	100	18.4	8.5

commercial rubber plantations and betel nut and cashew nut orchards (Table 3).

In total, 26.9 ha of land around village K were transformed into commercial orchards between 2002 and 2017. In 2010 the swidden fallows, traditionally recognized as the orchards of the ancestors, were shared without cost among family members, relatives, and friends with the agreement of generations of the three families that developed field A, who had inherited the land-use rights for those fallow lands. However, in 2012–13, these fallow lands were sold among the villagers for the establishment of orchards. In village K, after the paddy fields had been abandoned for 10–20 years, 87 percent of the former paddy-field owners had established orchards, ranging in size from 0.8 ha to 5.7 ha. There was no production from the young plantations of rubber and betel nut until 2017. Even though legal approval for orchard land had not been granted by the government, the villagers had already established orchards and there was no more land available for the extension of orchards. The orchard lands were part of land acquisition by the military (the navy camp in the area), so legal recognition of the orchards by the government was uncertain due to conflicts over land-use rights between the military and the local people.

IV Discussion

IV-1 *Sociopolitical Support for Paddy-Field Development*

External sociopolitical conditions, such as national politics, agricultural policy, insurgency, and land management, supported the expansion of paddy fields into mangrove areas. This expansion can be understood through the associated human–environment timeline (see the section on external drivers in Fig. 5). As Taninthayi Region experienced the longest period of civil conflict, village K was under conditions of insurgency from 1950 to 2004, including the countrywide civil conflict (1950–70), Pyi Chit Group (local insurgents) (1970–80), and New Mon State Party (1980–2004) periods. According to the

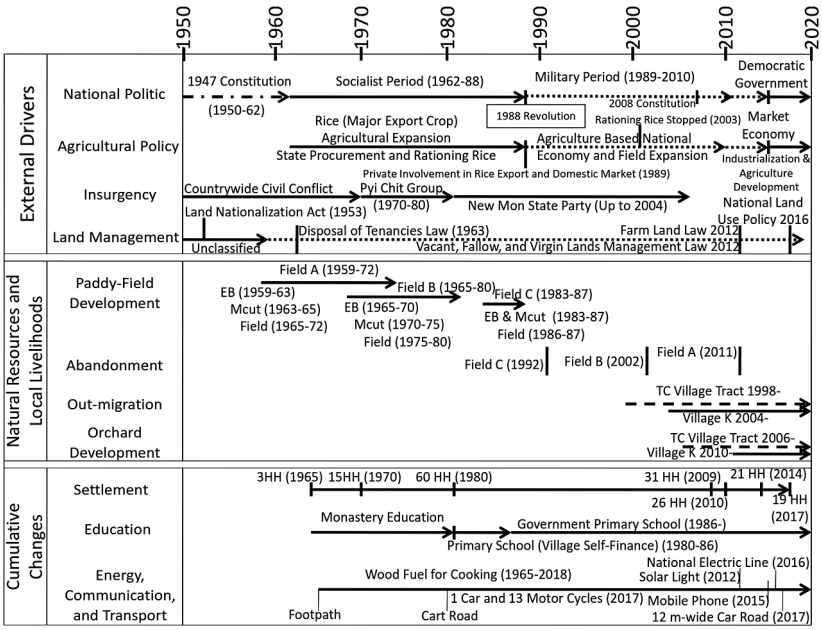

Fig. 5 Human–Environment Timeline of Village K (1950–2017)

Note: EB: embankment building; Mcut: mangrove cutting and land preparation; Field: permanent paddy-field development; HH: households.

Land Nationalization Act (1953), all land was state property; however, this law was weakly enforced under the insurgent conditions. Because mangroves were locally considered communal land, the three landless families in village M expanded the paddy field (field A) into mangrove forests in the study area for household subsistence. The paddy-field expansion into mangrove forests in village K and the TC village tract became better defined during the socialist-government period (1962–88) and at the beginning of the military-government period (1989–2010). The state's economic policy during both periods was "development of agriculture as the base and overall development of other sectors of the country as well" (Kyaw Myint 1999). During the socialist period, the agricultural policy was one of agricultural exploitation, with a heavy emphasis on rice production under the state procurement and rationing system (Myat Thein and Maung Maung Soe 1998; Fujita *et al.* 2009; Fujita 2016). Throughout the socialist-government period and at the beginning of the military-government period (up to the late 1990s), the country's first priority had been to increase rice production through expansion of agricultural land (Myat Thein and Maung Maung Soe 1998; Fujita *et al.* 2009; Matsuda 2009). As the agriculture sector was given priority in the national economy, with a growing population,

the socialist government developed the 20-year Long-Term Plan (1974–75 to 1994–95) with the goal of expanding the country's rice-growing area by 5.87 million hectares, with total rice production of 1.86 million metric tons (Kyaw Myint 1999). Therefore, state-imposed paddy fields, such as field B in village K, were expanded into mangrove areas. As field B in village K was expanded by the government into tidal mangrove swamps, considered locally to be communal land, local-scale paddy-field expansion, such as field C and other individually expanded fields based on the embankment of field B, accelerated into the far more marginal mangrove areas nearest the low-water line, leaving no mangrove cover. The "rice trauma" of politicians due to the frequent national crises concerning rice shortages supported the expansion of agricultural land until the military-government period (Fujita *et al.* 2009). Furthermore, the immediate changes in agricultural policy in 1987–89 allowing privatization of the foreign and domestic rice trade, relaxation of the government's monopoly in domestic rice marketing, and a reduction in the quota per paddy basket per 0.4 ha in the military period (Myat Thein and Maung Maung Soe 1998) also encouraged local people in the study area to extend paddy fields into mangroves. The mangrove areas were considered communal land, with the support of the local authority under the political forces, as part of target acreage allocations set by the government under agricultural extension programs (Matsuda 2009). In the 1990s, the extension of paddy fields into mangroves was very distinct in the TC village tract, with less focus on sustainable rice cultivation and environmental perspectives.

IV-2 *Changes in Agroecological Settings Resulting from Paddy-Field Development and Abandonment*

The natural mangroves in the study area were changed in 1959 by the development of local-scale paddy fields for subsistence rice production during the period of insurgency. At the time of paddy-field expansion, the specific local geographic setting and ecological conditions were taken into consideration for field development. Based on the existing natural levee, the shortest length of embankment was constructed to block one creek, and only the end part of a natural waterway was destroyed by the development of 8.4 ha of fields. When state-imposed paddy-field development was implemented in the mangroves, extensive areas of tidal mangrove swamps were cut and the natural waterways of seven creeks were blocked by constructing hugely expensive embankments. No attention was given to mangrove–agriculture coexistence during the development of field B in village K, and 283 ha of mangroves with an average girth of 2–3 m were removed and considerable species diversity was lost. In the 1980s, the deforestation of mangroves in village K became clear. Following the state-imposed paddy-field development into mangrove forests, the much more marginal land nearest the low-water line was damaged

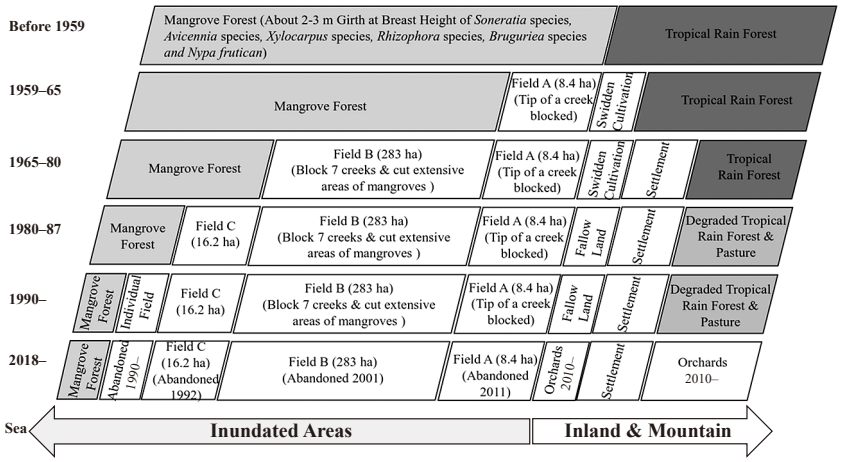

Fig. 6 Changes in Agroecology of Village K (1950–2018)

through local-scale paddy-field development in village K and the TC village tract in the 1990s. Based on the agroecological timeline (Fig. 6), more than 300 ha of natural mangroves around village K were completely converted to paddy fields in the 30 years between 1959 and 1990.

Except for the development of field A, paddy-field expansion in the study area was not focused on the sustainable coexistence of mangroves and agriculture; therefore, areas of mangrove were destroyed indiscriminately, similar to the conditions of paddy-field development in the Ayeyarwady Delta (Estoque *et al.* 2018) and Rakhine State (Aye Aye Saw and Kanzaki 2015). The paddy field developed nearest to the low-water line, with the least mangrove cover, had the shortest lifespan of the paddy fields developed for cultivation. The first paddy fields to be abandoned were those that individuals developed based on the embankment of field B and the paddy field developed nearest the low-water line (field C); the cultivation lifespan of these fields was not more than five years. The state-imposed paddy fields were developed with little consideration for their local geographic setting, the actions of water, or the protection of mangroves, and they could not achieve continuous rice cultivation and production. Within two to three decades of rice cultivation, this type of mangrove paddy field had high potential for abandonment and frequent embankment breaches. Field A, developed by local practices based on the specific geographic setting, minimal destruction by water action, and maintenance of reasonable protective mangrove cover outside the field, had a longer cultivation lifespan and higher potential for continuous rice cultivation. Since the 1990s, the paddy fields in village K have gradually been abandoned; and the production of rice in the study area

from more than 300 ha of paddy fields was completely lost within 21 years. As the strength of the embankments was directly correlated with the sustainability of the fields, all of the individual fields within an embankment were impacted when the embankment was breached. Mangrove paddy-field development had been based on the collective action of building the embankment, so abandonment of the embankment caused abrupt changes to the environment and the livelihoods of local people. After the extensive paddy-field abandonment in the area of village K, combined with external factors such as the introduction of boom crops in the region, the market demand for these crops, and the livelihood uncertainty of out-migration work, the old swidden fallows and degraded tropical rainforest around the village area were converted to orchards from 2010, and the cultivation of orchard trees intensified. By 2017, 26.9 ha of orchards had been developed around village K, but legal recognition as orchard land by the government was uncertain because the orchards were part of land that had been acquired by the military. Because the coexistence of mangroves and agriculture was not regulated during paddy-field development, alternative types of production could not easily be achieved when the fields were abandoned. Existing natural resources (degraded tropical rainforests and old swidden fallows) were consequently impacted again for orchard development.

IV-3 *Consequences of Abandoned Paddy Fields on Demographic Conditions and Livelihoods*

The major goal of paddy-field development is to increase national rice production and promote rural development. However, the development of paddy fields in mangrove areas needs to take into consideration the possibility of abandonment due to the high risk of embankment breaches and the high cost of embankment maintenance. Unlike paddy fields in other regions, paddy fields in the mangrove areas of village K were developed collectively inside an embankment. Thus, demographic conditions and local livelihoods were severely impacted by embankment breaches and subsequent abandonment. Demographic conditions in village K were fairly stable during the period of rice cultivation but changed greatly after field abandonment, with the number of households decreasing from 60 at the time of rice cultivation to 19 by six years after all paddy fields had been abandoned.

The livelihoods of the local population, which had been agriculture based—especially rice cultivation—also changed completely to non-farming livelihoods after paddy-field abandonment. Out-migration to Thailand from the TC village tract began in 1998; however, in village K it began in 2004, the year after paddy-field abandonment due to frequent embankment breaches. By 2017, the subsistence of 67 percent of village K households was supported majorly by remittances from out-migration, which contributed the highest portion of the average annual income of the village among nine income sources. Out-

migrant workers from village K worked mainly as wage laborers in 3D jobs in Thailand. From this study, we discovered that most out-migrant workers over the age of 40 returned to the village because of difficulties in finding a job due to the restricted age preference of 3D employers, since the work required physical strength. Fujita Koichi *et al.* (2010) also reported a wide range of serious problems faced by migrant workers from Myanmar in everyday life in the Ranong area of Thailand,[10] such as harsh working conditions, low income, heavy indebtedness, risk of falling victim to human trafficking, harassment by police and the military (especially of sex workers), high risk of illness (malaria and HIV/AIDS), limited access to affordable medical facilities, and a poor educational environment for their children. Therefore, the villagers in village K assumed that livelihood sustainability through out-migration was also uncertain and invested savings from out-migration in orchards as an alternative strategy to sustain their livelihoods. Orchard development impacted the conversion of degraded forests and old swidden fallows around the village, even on land where the legal right of use for orchard farming was uncertain due to land acquisition by the military. Even though orchard farming still faced uncertain sustainability and the market prices and conditions of boom crops in the region fluctuated, the upland forest resources were heavily converted to orchards.

As a result of national political changes, there were improvements in local education, transportation, and communication conditions (see the cumulative changes in Fig. 5). These improvements included middle-school access in the nearest village (a 30-minute walk); the construction of a 12 m-wide road in 2017 to the nearest sub-township, which had a high school, hospital, market, and pipeline companies; together with the provision of telecommunications in 2015. In 2017 the village had 13 motorcycles and one truck, and the sub-township could be accessed within an hour. Therefore, potential non-farm work became more accessible for villagers.

IV-4 *Revitalization of Abandoned Paddy Fields*

Even though rice cultivation in the mangroves of the coastal area was a resource-demanding practice in terms of sustainable cultivation and livelihoods, all of the interviewees were eager to revitalize the paddy fields in village K. Following the frequent embankment breaches and reconstruction efforts, the paddy-field area allotted to individual farmers decreased (e.g., in field B it was 2.63 ha/farmer in 1999 [second repair] and about 1.62 ha/farmer in 2003 [third repair]; see Fig. 4). During the period of rice cultivation, farmers in village K owned an average of nine heads of cattle per household,

10) The interview results revealed that most of the migrant workers from village K worked in the Ranong area, in the southern part of Thailand.

ranging from a minimum of 2 heads to a maximum of 70. When orchards were developed in the fallow lands, including the pastures, around the village, cattle farming became difficult and farmers began selling their cattle in both village K and the TC village tract. According to local regulations, a fine of US$11.30, approximately equal to two days' wages in 2010, was payable if cattle entered an orchard and destroyed a rubber tree. Thus, the villagers started to sell their cattle in 2010, and by 2017 the farmers in village K owned no cattle. One to two decades after paddy-field abandonment, there were no rice seed stores in village K and farmers had no seeds reserved for rice cultivation.

The information gap pertaining to rice cultivation and associated business as a result of two decades of paddy-field abandonment needs to be resolved in the interest of revitalization. A cost–benefit analysis attained through the participation of farmers who cultivated paddy in the fields nearest village K showed that the resource input for a hectare of paddy field ranged from US$570 to US$652.50. If the yield was lower than 162.5 baskets/ha (1 basket = US$3.80), the farmers made no profit. If the highest yield per hectare of the study area, 212.5 baskets, could be harvested, the farmer made a profit of US$155–237.50 per hectare for the rice-growing season of about six months. However, the farmers reported that high yields were uncertain due to increased damage to paddy fields by rodents in recent years. They believed that this increase in rodent damage was associated with the development of orchards on degraded forest and fallow land and the decreasing number of cattle in the fields, the former because of reduced rodent habitat in the forest/fallow lands and the latter because of the lack of compacted soil for holes that was previously provided by cattle trampling. No cattle grazing was practiced in the fields at the time, and small tractors were used for plowing in the TC village tract.

The market demand for local rice was also decreasing due to increasing demand for quality rice produced by the high-tech rice mill in the city. Therefore, the market for local rice from the village mill was lost, and farmers had to sell unhusked rice. Interviews with agricultural experts indicated that the trend of rice cultivation in the study area changed from commercial to subsistence use after the large-scale orchard development. Moreover, the high probability of embankment breaches due to the nature of the tides and inundation in the context of climate change highlights the insecurity of continuous rice cultivation and the low potential for paddy-field revitalization in village K.

Through the household survey, perceptions about two alternative livelihood options for the abandoned fields were assessed: fish/shrimp farming and mangrove plantations. Fish/shrimp farming was totally rejected by all interviewees because of the large-scale alteration of land conditions; the high investment required for pond making; the labor-intensive work; and especially their strong belief in Buddhism, which resulted in a reluctance to be responsible for ending many lives when killing shrimp. Natural regrowth of

mangrove on the abandoned paddy fields was observed, and the farmers assumed that the mangrove plantation business could be an alternative opportunity. However, the farmers showed little willingness to invest in mangrove plantations because of the complex procedures required to register crop changes in paddy fields and the lack of successful examples of this business in the area.[11)]

Both local-scale and state-imposed paddy-field development had the goals of subsistence and rural development. From the perspectives of sustaining livelihoods, maintaining stable demographics, and subsistence rice production, an attempt should be made to revitalize paddy fields at a manageable level rather than leaving them fallow for 10–20 years. Based on our field observations and interviews, we learned the advantages of an integrated farming system comprising a manageable area of paddy field with maintenance of reasonable mangrove cover outside the embankment to utilize mangrove resources. Open-space fishing and livestock breeding could be developed to sustain natural resources and rural livelihoods in the area. Furthermore, our study indicated the importance in mangrove areas of balancing paddy-field development with environmental protection, because a one-sided focus on paddy-field development through indiscriminate conversion of mangroves cannot achieve sustainable rice production. Therefore, future agricultural development in mangrove areas should focus on the coexistence of mangroves and agriculture through locally optimized farming systems.

V Conclusion

The local practices of paddy-field development in mangrove forest through the three fundamental steps of embankment (*taman*) building, land reclamation (mangrove cutting and land preparation), and permanent field development (field bund [*kazin*] building) have been discussed in this study. Unlike agricultural expansion in inland areas, the development of paddy fields in mangrove forests—which has a long cultivation lifespan and high potential for continuous rice cultivation—requires an emphasis on the local geographic

11) In village K, farmers continue to take loans from the Myanmar Agricultural Development Bank for rice cultivation, even though the paddy fields have been abandoned since 2004. The defined loan amount since the 2016–17 fiscal year is US$282.50/ha. https://www.mopf.gov.mm/my/blog/47/149/151/2525 (accessed on September 29, 2019). For the loan amounts per 0.4ha from 2004 to 2016, see World Bank (2014, 22). If the farmers change their crop (e.g., from paddy to forest trees), the loan from the bank cannot be applied. Moreover, it is prohibited to use the farmland for a non-agricultural purpose without permission, due to the Farmland Law of 2012. If the paddy field is to be changed to some other land use (forest plantation or shrimp farming), permission is required from the Central Farmland Management Body (national level) through an application process via the Farmland Management Body of the village tract, township, district, region, and national levels.

setting, the action of water, and protective mangrove cover. We showed that the field area nearest the low-water line with the least mangrove cover had the shortest lifespan for rice cultivation. Paddy fields established in mangrove areas were likely to be abandoned within two to three decades of initial cultivation, due to frequent breaching of embankments. To attain rural development and increased rice production through continuous rice cultivation in mangrove areas, we need to be aware of the demands posed by the huge costs of investment for embankment construction and the required follow-up maintenance. Instead of developing large areas of paddy field through the indiscriminate conversion of mangrove forests, the government should focus on field development at a level that is appropriate for the resources available for long-term maintenance by farmers, with an emphasis on the coexistence of mangroves and agriculture, to achieve continuous rice cultivation and production. Through our study, we understood the importance of paying attention to the coexistence of mangrove and development activities (agriculture/aquaculture) for further development planning in the coastal regions. The indiscriminate conversion of mangrove forest into areas for development activities (paddy fields, shrimp farms, industrial areas) without considering mangrove conservation will not support sustainable resource use and rural development. The consequences of paddy-field abandonment on the agroecological setting and on the socioeconomic conditions (e.g., demographics, livelihood changes) of farming communities should also be considered in future regional planning and in the management of rural development through paddy-field expansion into mangrove areas in coastal regions. The consequences may vary by locality; therefore, we encourage further community-level research on mangrove paddy-field development in other coastal regions to contribute to sustainable development planning for coastal regions where mangrove forests are converted to other land uses such as agriculture and aquaculture.

Accepted: November 5, 2020

Acknowledgments

We thank Worldwide Fund for Nature (Russell E. Train Education for Nature) and International Tropical Timber Organization (ITTO Fellowship Programme 2018) for their supports to conduct the research work. This study was in part supported by Grants-in-Aid from Center for On-Site Education and Research (COSER), ASAFAS, Kyoto University. We appreciate the officials from Myanmar's Forest Department, the agricultural experts of Yadanar Corporate Social Responsibility Program, and villagers from TC village tract and village K for their participation and assistance in our research work. We thank anonymous reviewers for sharing their time to develop this manuscript with their valuable comments.

References

Aye Aye Saw; and Kanzaki Mamoru. 2015. Local Livelihoods and Encroachment into a Mangrove Forest Reserve: A Case Study of the Wunbaik Reserved Mangrove Forest, Myanmar. *Procedia Environmental Sciences*, The 5th Sustainable Future for Human Security (SustaiN 2014) 28: 483–492. doi: 10.1016/j.proenv.2015.07.058.

Bandyopadhyay, A. K. 1986. Management Techniques to Overcome Soil Salinity Problems in Coastal Rainfed Lowland Rice. In *Progress in Rainfed Lowland Rice*, pp. 285–294. Los Baños: International Rice Research Institute.

Connette, Grant; Oswald, Patrick; Songer, Melissa; and Leimgruber, Peter. 2016. Mapping Distinct Forest Types Improves Overall Forest Identification Based on Multi-spectral Landsat Imagery for Myanmar's Tanintharyi Region. *Remote Sensing* 8(11). doi: 10.3390/rs8110882.

Estoque, Ronald C.; Soe W. Myint; Wang, Chuyuan; Ishtiaque, Asif; Toe T. Aung; Emerton, Lucy *et al.* 2018. Assessing Environmental Impacts and Change in Myanmar's Mangrove Ecosystem Service Value Due to Deforestation (2000–2014). *Global Change Biology* 24(11): 5391–5410. doi: 10.1111/gcb.14409.

Feller, Ilka C.; Friess, Daniel A.; Krauss, Ken W.; and Lewis III, Roy R. 2017. The State of the World's Mangroves in the 21st Century under Climate Change. *Hydrobiologia* 803: 1–12. doi: 10.1007/s10750-017-3331-z.

Fujita Koichi. 2016. Agriculture and Rural Development Strategy in Myanmar: With a Focus on the Rice Sector. In *The Myanmar Economy: Its Past, Present, and Prospects*, edited by Odaka Konosuke, pp. 97–127. New York: Springer. doi: 10.1007/978-4-431-55735-7_5.

Fujita Koichi; Endo Tamaki; Okamoto Ikuko; Nakanishi Yoshihiro; and Yamada Miwa. 2010. Myanmar Migrant Laborers in Ranong, Thailand. Discussion Papers No. 257. Chiba: IDE-JETRO.

Fujita Koichi; Mieno Fumiharu; and Okamoto Ikuko, eds. 2009. *The Economic Transition in Myanmar after 1988: Market Economy versus State Control*. Singapore and Kyoto: NUS Press in association with Kyoto University Press.

Fujita Koichi; and Okamoto Ikuko. 2009. Overview of Agricultural Policies and the Development in Myanmar. In *The Economic Transition in Myanmar after 1988: Market Economy versus State Control*, edited by Fujita Koichi, Mieno Fumiharu, and Okamoto Ikuko, pp. 169–215. Singapore and Kyoto: NUS Press in association with Kyoto University Press.

Gaw, Leon Y. F.; Linkie, Matthew; and Friess, Daniel A. 2018. Mangrove Forest Dynamics in Tanintharyi, Myanmar from 1989–2014, and the Role of Future Economic and Political Developments. *Singapore Journal of Tropical Geography* 39(2): 224–243. doi: 10.1111/sjtg.12228.

Giesen, Wim; Wulffraat, Stephan; Zieren, Max; and Scholten, Liesbeth. 2006. *Mangrove Guidebook for Southeast Asia*. Bangkok: FAO Regional Office for Asia and the Pacific and Wetlands International.

Giri, C.; Zhu, Z.; Tieszen, L. L.; Singh, A.; Gillette, S.; and Kelmelis, J. A. 2008. Mangrove Forest Distributions and Dynamics (1975–2005) of the Tsunami-Affected Region of Asia. *Journal of Biogeography* 35(3): 519–528. doi: 10.1111/j.1365-2699.2007.01806.x.

Kyaw Myint. 1999. *Study on the Changes of Rice Production in Myanmar*. Myanmar Agricultural Service, Ministry of Agriculture and Irrigation.

Matsuda Masahiko. 2009. Dynamics of Rice Production Development in Myanmar: Growth Centers, Technological Changes, and Driving Forces. *Tropical Agriculture and Development* 53(1): 14–27. doi: 10.11248/jsta.53.14.

Maung Maung Than; Mochida Yukira; and Kogo Motohiko. 2006. Survival and Growth Performances of Some Mangrove Species Replanted in the Ex-Agricultural Land of the Ayeyarwady Delta in Myanmar. *Tropics* 15(1): 85–96. doi: 10.3759/tropics.15.85.

Myanmar, Department of Population. 2015. The 2014 Myanmar Population and Housing Census (Myanmar Census 2014): Tanintharyi Region, Census Report Volume 3-F. Ministry of Immigration and Population, Myanmar.

Myanmar, Forest Department. 2018. *Diyeidaw Hsaing'yā Achet'alet-myā Akyingyout* ဒီရေတောဆိုင်ရာ အချက်အလက်များ အကျဉ်းချုပ် [Information on the mangroves of Myanmar]. Myanmar Ministry of Natural Resources and Environmental Conservation.

———. 2015. *Taninthāyi Taingdeithagyi i Khayaing Thittaw Outchout Loutkainghmu Simankein-myā 2016–2017 khuhnit hma 2025–2026 khuhnit ahti* တနင်္သာရီတိုင်းဒေသကြီး၏ ခရိုင်သစ်တောအုပ်ချုပ်လုပ်ကိုင်မှု စီမံကိန်းများ (၂၀၁၆-၂၀၁၇ ခုနှစ်မှ ၂၀၂၅-၂၀၂၆ ခုနှစ်အထိ) [District forest management plans for Taninthayi Region 2016–17 to 2025–26]. Myanmar Ministry of Natural Resources and Environmental Conservation.

Myanmar, General Administration Department. 2017. *Taninthayi Taingdeithagyi shi Myone-myā i Deitha Hsaing'yā Achet'alet-myā* တနင်္သာရီတိုင်းဒေသကြီးရှိ မြို့နယ်များ၏ ဒေသဆိုင်ရာ အချက်အလက်များ [Information on the Townships of Taninthayi Region]. Naypyitaw. Myanmar Information Management Unit (MIMU). 2017. http://themimu.info/, accessed September 13, 2018.

Myanmar, Planning and Statistics Division, Forest Department. 2018. *Simankein-hnin Zayin'in Htāna i Kyowaing Kyugyaw Zayin (Pounhneitchin ma pyu ba)* စီမံကိန်းနှင့်စာရင်းအင်းဌာန၏ ကြိုးဝိုင်းကျူးကျော်စာရင်း (ပုံနှိပ်ခြင်းမပြုပါ) [Planning and Statistics Division's Statistics on trespassing settlements in forest reserves (Unpublished)]. Naypyitaw.

Myat Thein; and Maung Maung Soe. 1998. Economic Reforms and Agricultural Development in Myanmar. *ASEAN Economic Bulletin* 15(1): 13–29.

Okamoto Ikuko. 2009. Transformation of the Rice Marketing System after Market Liberalization in Myanmar. In *The Economic Transition in Myanmar after 1988: Market Economy versus State Control*, edited by Fujita Koichi, Mieno Fumiharu, and Okamoto Ikuko, pp. 216–245. Singapore and Kyoto: NUS Press in association with Kyoto University Press.

Richards, Daniel R.; and Friess, Daniel A. 2016. Rates and Drivers of Mangrove Deforestation in Southeast Asia, 2000–2012. *Proceedings of the National Academy of Sciences* 113(2): 344–349. doi: 10.1073/pnas.1510272113.

Songer, Melissa; Myint Aung; Senior, Briony; DeFries, Ruth; and Leimgruber, Peter. 2009. Spatial and Temporal Deforestation Dynamics in Protected and Unprotected Dry Forests: A Case Study from Myanmar (Burma). *Biodiversity and Conservation* 18: 1001–1018. doi: 10.1007/s10531-008-9490-5.

Stevenson, N. J.; Lewis, R. R.; and Burbridge, P. R. 1999. Disused Shrimp Ponds and Mangrove Rehabilitation. In *An International Perspective on Wetland Rehabilitation*, edited by W. J. Streever, pp. 277–297. Dordrecht: Kluwer Academic Publishers. doi: 10.1007/978-94-011-4683-8_28.

Takaya Yoshikazu. 1987. *Agricultural Development of a Tropical Delta: A Study of the Chao Phraya Delta*. Translated by Peter Hawkes. Honolulu: University of Hawai'i Press.

Toe Toe Aung; Maung Maung Than; Ono Katsuhiro; and Mochida Yukira. 2011. Assessing the Status of Three Mangrove Species Restored by the Local Community in the Cyclone-Affected Area of the Ayeyarwady Delta, Myanmar. *Wetlands Ecology and Management* 19(2): 195–208. doi: 10.1007/s11273-011-9211-9.

Webb, Edward L.; Jachowski, Nicholas R. A.; Phelps, Jacob; Friess, Daniel A.; Maung Maung Than; and Ziegler, Alan D. 2014. Deforestation in the Ayeyarwady Delta and the Conservation Implications of an Internationally-Engaged Myanmar. *Global Environmental Change* 24: 321–333. doi: 10.1016/j.gloenvcha.2013.10.007.

World Bank. 2014. Myanmar Agricultural Development Bank: Initial Assessment and Restructuring Options. Bangkok: World Bank. https://www.lift-fund.org/myanmar-agricultural-development-bank, accessed September 29, 2019.

————. 1976. Burma: Appraisal of the Lower Burma Paddy Land Development Project. Report No. 1129-BA. Irrigation and Area Development Division, South Asia Projects Department. http://documents1.worldbank.org/curated/en/784801468279902742/pdf/multi-page.pdf, accessed June 28, 2018.

Ya Min Thant; Kanzaki Mamoru; Ohta Seiichi; and Maung Maung Than. 2012. Carbon Sequestration by Mangrove Plantations and a Natural Regeneration Stand in the Ayeyarwady Delta, Myanmar. *Tropics* 21(1): 1–10. doi: 10.3759/tropics.21.1.

Yadanar Corporation. 2017. *Yadanā Luhmu Sibwā Thadinhlwā Ahmat 31, Zun la 2017 khunhit* ရတနာလူမှုစီးပွားသတင်းလွှာအမှတ် ၃၁၊ ဇွန်လ ၂၀၁၇ ခုနှစ် [Yadanar Corporate Social Responsibility Newsletter No. 31 June 2017].

Soeara 'Aisjijah Magazine and the Preparation of Indonesian Muslim Women to Anticipate the Arrival of Japanese Occupation Forces (1941–1942)

Muhammad Yuanda Zara*

This study discusses how *Soeara 'Aisjijah* magazine, the official publication of the Indonesian Muslim women's organization 'Aisyiyah, prepared its readers to anticipate the arrival of Japanese occupation forces in 1941–42. From this study it is clear that *Soeara 'Aisjijah* did not only contain progressive religious advice for Muslim women, as has been thought so far. The magazine also displayed an awareness of the global political map that changed quickly between 1940 and 1942. This magazine gave its Indonesian Muslim women readers information about the latest events in the international world so that they were aware of what was happening outside Indonesia. In addition, the magazine's hatred of ruthless Japanese troops led it to prepare readers with various strategies for dealing with the possible arrival of Japanese forces, including calls such as the following: (1) women must be able to keep their safety and honor during wartime; (2) women must participate in defending the nation and the motherland; (3) women must teach their children how to protect themselves from the enemy; (4) men must protect their wives and sisters; and (5) Muslims must always have faith in Allah in the midst of war. This study shows that Indonesian Muslim women had an attitude of resistance against the Japanese even before the Japanese reached Java and that *Soeara 'Aisjijah* magazine was dedicated to calling upon Indonesian women to take part in efforts to defend themselves, their families, their nation, and their homeland from foreign enemies in the Southeast Asian theater of World War II.

Keywords: women, war, occupation, media use, 'Aisyiyah, gender role, nationalism, Islam

Introduction

Founded in 1917, 'Aisyiyah is the oldest women's organization in Indonesia that still exists today. With its slogan, "Progressive Muslim women's movement," 'Aisyiyah has

* History Study Program, Faculty of Social Sciences, Yogyakarta State University, Jalan Colombo, Catur Tunggal, Depok, Sleman, Special Region of Yogyakarta 55281, Indonesia
e-mail: m.yuanda@uny.ac.id
https://orcid.org/0000-0002-9278-9410

participated in various ways to advance Muslim women over the last hundred years. It manages numerous charitable services, including in the health sector (hospitals, maternity clinics, pharmacies), education (educational institutions at various levels, from kindergarten to university), welfare (orphanages), the economic sector (for example, cooperatives), and law and human rights (for example, in the form of legal assistance) in various parts of Indonesia (‘Aisyiyah 2019; Anonymous n.d.[a]).

Its influence has been widely recognized by researchers, as seen from various studies on ‘Aisyiyah. A number of studies, both in their entirety and in passing, examine the organization’s ideas and activities, for example, its views on education and social progress for women (It 2005), social services for the poor and displaced (Latief 2010; Sciortino *et al.* 2010), views on women’s leadership in a male-dominated social and political space (van Doorn-Harder 2002; Blackburn 2008; Kurniawati 2008), and views on monogamy and polygamy in Islam (Locher-Scholten 2000). A few studies on *Soeara ‘Aisjijah* are concentrated primarily on its role as ‘Aisyiyah’s internal medium and as a medium for spreading the ideas of Islamic reformism of Muhammadiyah and ‘Aisyiyah among Indonesian Muslim women (Syukmaweti 2010; Sely 2016), while several other studies use the magazine as a source to understand ‘Aisyiyah’s Islamic reformist thinking (Hatley and Blackburn 2000; Blackburn 2004; White 2004; van Doorn-Harder 2006; Krida 2016).

The above studies have helped us to better understand ‘Aisyiyah and the rise of reformist Muslim women in Indonesia. However, to my knowledge, no serious studies have been conducted to understand ‘Aisyiyah’s participation in anticipating the arrival of Japanese occupation forces in 1942, one of the key events that changed Indonesia and Southeast Asia in the twentieth century. In Indonesian historiography, especially on the theme of women and the Japanese occupation, the topics generally discussed are sexual slaves (*jugun ianfu*) and the participation of Indonesian women in Japanese-formed organizations (Hicks 1997; Siti 2010; Horton 2010; Anna 2015). Indonesian women, therefore, are depicted more as passive victims of war, in contrast to Indonesian men, who in some studies are portrayed as brave individuals facing Japanese forces.

The Dutch historian J. M. Pluvier (1953) paid great attention to political changes in the Dutch East Indies during the late colonial period (1930–42), including the deteriorating relations between the colonial government and the leaders of the Indonesian nationalist movement—a situation that he believed made it easy for Japan to conquer the Indies. However, he did not discuss the role of women’s organizations in responding to the arrival of the Japanese in Indonesia. In addition, studies of the Japanese occupation in Indonesia have generally focused on the period between March 8, 1942 (when the Dutch East Indies surrendered unconditionally to Japan) and August 17, 1945 (when Sukarno and Hatta proclaimed Indonesian independence) (see, for instance, Benda 1955;

1956; Notosusanto 1979; Kurasawa 1987; Post *et al.* 2010; Baird and Sangkot 2015; Mark 2018). There are hardly any studies on the views and position of Indonesian women, especially Muslim women, in the crucial months leading up to the Japanese arrival in Indonesia. This study aims to fill this gap in the existing literature. I argue that Indonesian Muslim women, especially in the form of 'Aisyiyah through its official publication, *Soeara 'Aisjijah*, showed their opposition to the cruel acts of Japanese forces in the Japanese-occupied territory and carried out various efforts to protect the dignity of Indonesian women even before the Japanese troops reached Java. This study shows that the news and views of *Soeara 'Aisjijah* between August 1941 and February 1942 provided an overview of the knowledge, opinions, and attitudes of Indonesian Muslim women on war, on the Japanese occupation of Southeast Asia, on the role and position of women in war, on family safety in war, and on the question of self-defense and defense of the homeland.

On the one hand, there have been many studies on women and war, especially in the context of World Wars I and II, but they have generally focused on women in the United States and Europe (for instance, Miller 1980; Greenwald 1990; Smith 1999; Diamond 2013; Grayzel 2013; Hallet 2016). On the other hand, studies on women and war in Indonesia are rare (for example, Manus 1985; Reni 2011; Muhammad 2018). The situation experienced by Indonesian women, especially Muslim women, in the crucial two years leading up to the arrival of the Japanese, 1941–42, has barely been revealed.

One way to understand the views of Indonesian Muslim women toward the Japanese occupation is to study *Soeara 'Aisjijah*, a magazine that has thus far been examined only for its Islamic reformist ideas. The lack of study on this magazine prevents us from fully understanding how 'Aisyiyah disseminated its ideas about women and war, an issue hardly addressed in studies on Indonesian women during the late colonial period. I am of the opinion that Indonesian Muslim women, especially those belonging to 'Aisyiyah, through *Soeara 'Aisjijah* had a strong geopolitical awareness about what was going on in the international world in the early 1940s. The magazine reminded its readers to keep calm when the war was approaching and avoid actions considered incorrect and risky, such as fleeing in a hurry or hoarding food. *Soeara 'Aisjijah* even warned about Japanese atrocities and a call for Indonesian women to take part in a war that might soon come. This study, therefore, will show that 'Aisyiyah and *Soeara 'Aisjijah* were not only concerned with matters of women's emancipation, as scholars have repeatedly stated, but also engaged in efforts to preserve women's safety when war seemed inevitable.

Study of *Soeara 'Aisjijah* is needed also to provide further insights on women's Islamic journalism in Indonesia, especially in the late colonial and immediate post-independence period, whose historical studies are dominated by studies of print media managed by male journalists and editors (Basilius 2009; Hill 2010; Mahayana 2013;

Muhammad 2019). To my knowledge, *Soeara 'Aisjijah* was the only Muslim women's magazine in the Dutch East Indies during the late colonial period and shortly before the arrival of the Japanese occupation forces, so research on this magazine is vital. I hope this study will contribute significantly to our understanding of the importance of Islamic print media as a crucial channel for spreading ideas to preserve the safety of Indonesian women in an atmosphere of war.

It would also be interesting to know how other women's magazines in Indonesia in 1941–42 responded to the deteriorating situation. Unfortunately, in Yogyakarta, the location of this research, there were no other women's magazines published in 1941–42, so a comparison of the views between women's magazines in Indonesia in these two crucial years could not be made. In addition, it should be remembered that print media from and for women were very limited in number compared to general print media. Several print media in Indonesia closed their operations shortly before the Japanese troops arrived, and once the Japanese troops finally arrived the rest of the print media in Indonesia were forcibly closed by Japanese troops, to be replaced with print media controlled by the Japanese.

Using the historical method, this study focuses on three important aspects: *Soeara 'Aisjijah*'s views on the development of global conflicts that occurred in Europe and Asia in the early 1940s, its views on calming people in the midst of war, and its advice to Indonesian women in anticipation of the arrival of the Japanese in Indonesia. The sources used are issues of *Soeara 'Aisjijah* published between 1941 and 1942, which were kept at the *Soeara 'Aisjijah* office in Yogyakarta. These were the editions of August 1941, November 1941, January 1942, and February 1942 (the English translations of *Soeara 'Aisjijah* articles, as well as the insertions in square brackets, in this study are mine unless otherwise stated). The decision to choose these four editions was based on the fact that for the two-year period analyzed in this study (1941–42), only these four editions were kept in the editorial office of the magazine in Yogyakarta. The remaining monthly issues of 1941–42 could not be found. There were no issues of this magazine during the Japanese occupation (from March 1942) until the end of the Indonesian war of independence in 1950 available in the library, which is understandable given that the magazine temporarily stopped publication during those eight years. It was only in the early 1950s that it restarted regular publication.

A Glimpse of *Soeara 'Aisjijah*

Soeara 'Aisjijah was first published in 1926 as the official organ of 'Aisyiyah (Anonymous

n.d.[b]). In that first year the magazine was published nine times, with a circulation of 600–900, while in 1938 the circulation reached 2,500. In its early years, the magazine concentrated mainly on providing information about the development of the 'Aisyiyah movement, both in its hometown of Yogyakarta and in other cities in the Indies where the organization opened branches. It published, for instance, reports on public meetings held by 'Aisyiyah, with some of the contributors being members of the organization at the branch level. In addition to organizational issues, other themes included the Islamic view of women and ideas for advancing women, especially through education and health care, as well as the activities of 'Aisyiyah's parent organization, Muhammadiyah (*Soeara 'Aisjijah*, Rajab 1927; August 25, 1941; January 30, 1942).

As of 1930, *Soeara 'Aisjijah*, which previously used only the Javanese language and the Latin alphabet, now combined both Javanese and Indonesian languages. The pages were still largely filled with developments and activities of 'Aisyiyah in Yogyakarta and throughout the Indies. The columns on religion had special space, for example, on the study of the *shahada* (testimony of faith) (*Soeara 'Aisjijah*, October 1930) and the need for someone to count their deeds and sins before these were counted in the afterlife (*Soeara 'Aisjijah*, October 1930).

In the 1930s the magazine focused on disseminating an idea of what its parent organization, 'Aisyiyah, saw as the ideal Indonesian Muslim woman. The magazine defined the concept of "ideal" as traits that an Indonesian Muslim woman must have, namely, being obedient to Islamic teachings; being educated; and participating in social activities, especially through 'Aisyiyah, for the development of the family and society. The theme of political changes in Europe and Asia began to be discussed only in 1941 and 1942, when Germany had invaded the Netherlands and Japan began moving south.

The magazine was published in the middle of each month, but in the early 1940s the regularity of its publication was threatened by a lack of financial support from its subscribers. There are no statistical data on where exactly the magazine was distributed in the late colonial era. However, by noting the origins of readers and contributors who sent articles and photographs to the magazine, it can be concluded that in the early 1940s readers were scattered based on the spread of 'Aisyiyah itself, which meant at least Yogyakarta, Central Java, East Java, West Sumatra, North Sumatra, South Sumatra, South Kalimantan, and Gorontalo. Women outside 'Aisyiyah also seemed to read the magazine, given that on one occasion the magazine's editor asked readers to distribute the magazine to their families and colleagues. The money for running the magazine came from subscriptions and donations (*Soeara 'Aisjijah*, November 30, 1941). On the cover page of the magazine was brief information about its editorial staff. There were three names listed on the cover of the February 16, 1942 issue: Sitti Hajinah (*Hoofdredactrice*, chief

editor), Sitti Alfijah (*Redactrice*, editor), and Mevr. Pardjaman (*Pembantoe*, assistant).

An Awareness of Global Dynamics in Europe and Asia

The 1940s was a critical decade for almost all nations, including the Dutch East Indies. Conflict erupted in various places and in a matter of years would reach the Indies. In Europe, Nazi Germany occupied the Netherlands in May 1940, while the Nazi ally in Asia, Japan, began to attack southward. The Indies was clearly targeted because of its natural resources, which were very important for the Japanese war effort, such as oil, rubber, bauxite, tin, and others (Ricklefs 2001, 243). Thus, the Japanese invasion of the Indies was just a matter of time (Sato 2006). On December 7, 1941 Japan attacked the US naval base at Pearl Harbor, then continued with an attack on the Philippines on December 8, 1941. The Japanese occupation of Indonesia began with the occupation of Tarakan (East Kalimantan) in January 1942. Less than two months later, Java fell into Japanese hands.

Global awareness of the rapidly changing world was evident in *Soeara 'Aisjijah* from 1941. In its 1920s and 1930s editions, the magazine generally spoke only of social developments in the Indies, especially from the perspective of the progressive women's movement. However, the swift changes that took place in various other parts of the world from the early 1940s, and the possible hostile effects that would be felt in the Indies, encouraged the magazine to begin paying attention to global dynamics outside the Indies. Readers of *Soeara 'Aisjijah*, who might also read other newspapers that brought more up-to-date news or listen to foreign radio broadcasts, would of course also await 'Aisyiyah's and *Soeara 'Aisjijah*'s responses to events that appeared to be geographically distant from the Indies but might soon have a significant impact on their lives.

One such event was the rise of the ideology of National Socialism in Germany, marked by the rise of the Nazi Party in the country from 1933. Led by its *führer* (leader), Adolf Hitler, the Nazi Party controlled almost all aspects of German life (Childers 2017). Nazi ideas, such as anti-Semitism, German racial superiority, and the need to expand German territory to neighboring countries, also began to threaten Germany's neighbors. World War II finally broke out on September 1, 1939, marked by the German invasion of Poland. On September 27, 1940 Germany, Italy, and Japan signed the Tripartite Pact, marking their formation of a coalition to establish a new world order. All three countries had an expansionist nature, which represented a threat not only to their neighbors but also to colonies in Asia and Africa that were then under European control.

In an edition published in mid-1941, *Soeara 'Aisjijah* discussed the importance of studying history, both world history and Islamic history. History, according to *Soeara*

'Aisjijah, was useful not only for knowing about events that occurred in the past but also to serve as lessons for the present. At that time, the Dutch colonial government planned to compile a history book for school students, especially related to world political change, with one focus of its attention directed at the emergence of the totalitarian ideology of National Socialism in Germany. The German military had just invaded the Dutch East Indies' mother country, the Netherlands, in May 1940. *Soeara 'Aisjijah* supported the preparation of this new history book because it realized the urgency for Indonesian students to understand the danger of the Nazis. For *Soeara 'Aisjijah*, history had not only a scientific function but also a moral dimension, to distinguish between good and bad, including in terms of ideology. One important aspect of this book was "objective and critical discussion of various things that could jeopardize the peace of the world that emerged from the National Socialism movement" (*Soeara 'Aisjijah*, August 25, 1941).

Readers of *Soeara 'Aisjijah* were among the earliest groups of Indonesian Muslim women to get information about the movements of Japanese troops occupying East and Southeast Asia, especially between 1941 and 1942, although not as detailed as the daily newspapers. When Japanese troops began to move south to establish their Greater East Asia Co-prosperity Sphere and destroy Western imperialism, *Soeara 'Aisjijah* reported it, though not in detail; the purpose of this kind of reporting was to warn women in the Indies about Japanese cruelty. The Japanese occupied French Indochina in mid-1941, then entered British Malaya in December 1941; and in February 1942 they managed to conquer the entire Malay Peninsula, including Singapore (Kratoska 1997).

Readers of *Soeara 'Aisjijah* knew from mid-1941 that the world, including the Indies, was on the brink of war. The war did not just affect military men but also civilians, including 'Aisyiyah and its parent organization, Muhammadiyah. There was concern within 'Aisyiyah and Muhammadiyah that the war could disrupt their activities and even stop them. The seriousness of the situation was seen in the August 1941 issue of *Soeara 'Aisjijah*, which contained an announcement by Muhammadiyah (which also applied to 'Aisyiyah) about public activities during wartime. This announcement was made based on a decree of the Yogyakarta police chief on December 9, 1941 regarding Staat van Oorlog (State of war), which banned all *openbare vergadering* (open meetings) and *besloten vergadering* (closed meetings, especially those with a political orientation) (*Soeara 'Aisjijah*, February 16, 1942). Muhammadiyah then explained that it had temporarily stopped organizing any *openbare vergadering* (the Muhammadiyah congress fell within this category), but that activities such as *tabligh* (the act of preaching Islam), recitation of Al-Qur'an, and Islamic courses could continue. Closed meetings could still be held (because Muhammadiyah was not involved in politics), but each participant had to bring an invitation letter to avoid legal charges. Limiting such public activities was difficult for

Muhammadiyah and 'Aisyiyah considering that their popularity had been built through public meetings and public parades on a massive scale (*Soeara 'Aijsijah*, November 30, 1941; January 30, 1942).

The Indonesian women's movement as a whole also felt the devastating effects of the war, as seen in a *Soeara 'Aisjijah* report on the Kongres Perempoean Indonesia ke-IV (The Fourth Congress of Indonesian Women) held in Semarang on July 25–28, 1941 (*Soeara 'Aisjijah*, August 25, 1941). The congress, although attended by many participants, had a pall of gloom because the German occupation of the Netherlands in May 1940 caused public concern in the Dutch East Indies. The Dutch government, including Dutch Queen Wilhelmina, was forced to flee to London. The news that Queen Wilhelmina, as a woman, had to leave her homeland to go into exile caused sadness among the women attending the congress, as reported by *Soeara 'Aisjijah* (August 25, 1941).

In its January 1942 edition, *Soeara 'Aisjijah* referred to the situation in Southeast Asia as the *zaman perang* (war era), which had been going on for two months (*Soeara 'Aisjijah*, January 30, 1942). In its February 1942 issue, the magazine briefly reported about the fall of Kowloon (Hong Kong) into Japanese hands and the cruelty inflicted by the Japanese upon the local population (*Soeara 'Aisjijah*, February 16, 1942; Tarling 2001). News was also circulated in the same edition about the Japanese occupation of Malacca, British Malaya. Like in Kowloon, according to *Soeara 'Aisjijah*, in Malacca Japanese troops also committed various atrocities toward the civilian population, especially women (*Soeara 'Aisjijah*, February 16, 1942). The information and news above, of course, immediately gave readers the impression that the world had fallen into war and that the Indies would soon be drawn into it.

Japanese Cruelty and the Need to Protect Oneself and the Indonesian Nation

Hong Kong fell into Japanese hands on December 25, 1942, after two weeks of air strikes. Japanese atrocities over the next three and a half years were directed mainly at the two groups that had previously been dominant in Hong Kong, the British and the Chinese. Some British people in Hong Kong were put into Japanese camps, while others died due to execution or illness and malnourishment. Some Chinese were repatriated to China, and others were tortured, raped, and killed (Carroll 2007, 119–123). A number of Chinese were even used by Japanese troops as targets for shooting and bayonet training.

Soeara 'Aisjijah's coverage of the Japanese occupation of Hong Kong showed its abhorrence of Japanese actions. There was no praise for the movement of Japanese troops or for the ideals of Japan, which wanted to build the Greater East Asia

Co-prosperity Sphere and destroy Western imperialism in Asia. The magazine did not specifically mention the alliance of Japan and Germany as Axis powers, but it was clear that in 1941–42 *Soeara 'Aisjijah* saw that there were two enemies outside the Indies that were very dangerous for the Netherlands and the Indies, namely, Nazi Germany and fascist Japan.

In fact, at first Japan's Pan-Asian idea was appreciated by Indonesian Islamic leaders who longed for an Indonesia where the political expression of Islam had a more prominent place than it did in the Dutch colonial era. Although Japan was not a predominantly Muslim country, in the late 1930s it was friendly toward Muslims in the Western colonies of Southeast Asia. This can be seen from the visit of two Muhammadiyah leaders at the inauguration of a mosque in Kobe in 1939. However, Japanese Pan-Asianism began to be vehemently opposed by Indonesian Muslims in 1941–42, when it sacrificed non-Japanese civilians in Hong Kong, Malaya, and Singapore. The atrocities committed by the Japanese in these places caused horror in Java, which as of February 1942 had not yet been occupied by Japan. An antipathy toward the cruel actions of Japanese troops began to appear in mid-February 1942 in the Indonesian public sphere, one channel of which was *Soeara 'Aisjijah*.

Soeara 'Aisjijah helped spread the image that the Japanese occupation forces were brutal and ruthless, committing atrocities on the civilian population in the places they occupied. This idea could be seen in a column whose title illustrated what Japanese cruelty was like: "*Neraka doenia*" (Hell on earth) (*Soeara 'Aisjijah*, February 16, 1942). At the beginning of the article was a quote from another Indies newspaper, *Tjaja Timur* (Batavia), which obtained information from the Singapore Free Press. The article discussed the situation in Kowloon (Hong Kong) when Japanese forces entered. Kowloon was described as having transformed into "a hell on earth." To show how cruel the Japanese occupiers were in Kowloon and to endorse the opinion of the newspaper it was quoting, *Soeara 'Aisjijah* quoted a paragraph from the *Tjaja Timur* report:

> Then, Kowloon turned into "a hell on earth" when the Japanese raped women and robbed shops and people's homes, while members of the fifth column [Japanese intelligence] and robbers asked for "protection money" from each family. Between December 12 and 15, what people heard every night was only the sound of people screaming and the sound of police whistles. (*Soeara 'Aisjijah*, February 16, 1942)

Responding to the news from *Tjaja Timur*, *Soeara 'Aisjijah* wrote that what happened in Kowloon was *soenggoeh mengerikan* (really terrible). Other news, obtained from Reuters news agency in Singapore, informed that robberies of houses and shops owned by local residents as well as rapes also took place in Malacca, a region very close to the Indies

(*Soeara 'Aisjijah*, February 16, 1942). This news made readers aware of the possibility that such horrible events could occur also in the Indies. Such concern was felt also by *Soeara 'Aisjijah*, which wrote that before the war, when the war broke out, and even when the foreign troops had won the war—or were defeated—they would *mentjemari* (pollute) women. Women were thus almost always victims of war.

Soeara 'Aisjijah expressed the hope that the incidents of Hong Kong would not occur in Indonesia. However, the magazine also provided important advice for Indonesian women on surviving war. The suggestions applied not only to women but even to men, who also had a great responsibility in protecting women. In wartime women were often helpless, while men were expected to be responsible for protecting them. The Japanese troops were described as a threat and a brutal enemy who used harassment, rape, robbery, and murder against civilians as methods of control:

> So, we also hope that what happened in Kowloon will not reach our country or our villages, and we must strengthen our religious groups and organizations in order to defend the honor of women and protect our property rights. Oh men and young men, get ready to defend the honor of your mother and your gentle and weak sisters and daughters. Do not let us go to hell in this world and get punishment in the afterlife. We, including the women, must defend our honor and help all movements and organizations that will protect us. (*Soeara 'Aisjijah*, February 16, 1942)

The narratives of Japanese atrocities toward civilians in the countries they conquered did not only spur warnings to Indonesian women on how to protect themselves. The idea of resistance as a form of war to defend oneself from the enemy had increasingly gained a place in *Soeara 'Aisjijah* since February 1942, when the Japanese arrival in Yogyakarta seemed to be a matter of time. In the February 1942 edition, *Soeara 'Aisjijah* in its *Pedoman soetji* (Holy guide) column quoted Prophet Muhammad's *hadith* narrated by Bukhari and Muslim. Someone asked Prophet Muhammad about the definition of "those who fight in the way of Allah." Prophet Muhammad answered that a war in the way of Allah involved those who fought so that the religion of Allah was in a high place (*Soeara 'Aisjijah*, February 16, 1942). *Soeara 'Aisjijah*, which had earlier introduced the idea of Indonesian nationality, began to see war based on religious zeal as an option that might ultimately need to be undertaken in the face of the foreign occupation army, although it was not yet clear what form it would take. What was clear was that hatred against the Japanese and the urgency to defend the Indonesian people from foreign occupation were already evident in *Soeara 'Aisjijah* about a month before Java fell into Japanese hands.

The idea of defending the Indonesian nation and homeland appeared also in the form of a poem in *Soeara 'Aisjijah*. In the August 1941 edition, a poem by a writer with the

initials Ach. Bd. (it is not known who this author actually was) was placed in the *Bingkisan soeksma* (A gift of soul) column. Titled *"Ah keindahanmoe . . ."* (Ah, your beauty), the poem was a tribute to the natural beauty of Indonesia as well as a call to defend the country, an appeal that reflected the magazine's response to the great war that might soon engulf Indonesia. It reads:

As high as a mountain
My fantasy rose
For the sake of my memory
The beauty of Indonesia in nature.
    In the morning . . .
    fascinate
    Dawn radiates . . .
    shining
    Birds chirping, chasing each other . . .
    with noise
The leaves are waving
gracefully
The wind blows gently
soft and cool
    Oh, Indonesia . . .
    Your beauty is in fantasy,
    push my heart,
    For moving
    forward storming,
    in the arena of struggle (*Soeara 'Aisjijah*, August 25, 1941)

Advice to Calm the Public

In the January 1942 edition, there was one crucial piece of advice from *Soeara 'Aisjijah* that was useful in dealing with the atmosphere of war that was already pervading Indonesia: a call to avoid public panic (*Soeara 'Aisjijah*, January 30, 1942). It stressed that Indonesia had been in the "war era" for several months and that such an era was not pleasant. *Soeara 'Aisjijah* underlined the importance of being alert and always ready and adaptive in such situations. It asked rhetorically: "Are we still surprised, shocked, confused, lost our minds, and hectic in facing the war era that has been two months and will enter its third month?" *Soeara 'Aisjijah* regretted that there were people who were not yet *insaf* (aware) of the situation, especially if the war was to go on for years—"which we did not expect"—and expressed pity for those who "could not calm down, could not appropriately place themselves, could not strengthen their mind and could not remember

and obey Allah more and more" (*Soeara 'Aisjijah*, January 30, 1942).

In addition to "war era," there was another term that *Soeara 'Aisjijah* used to describe the situation: "modern war." This term gave readers an idea of a new war that was different from traditional warfare. *Soeara 'Aisjijah* wrote that in modern warfare the fight was no longer between soldiers but also involved children and women. Modern warfare not only destroyed enemy bases but could also damage people's homes, barns, and even religious schools and mosques (*Soeara 'Aisjijah*, January 30, 1942).

The magazine gave a number of suggestions for dealing with the worsening situation, in an article titled "*Ketenangan dan persediaan*" (Quietness and readiness) by an author with the initial "M" in the January 1942 edition. It is not known who exactly "M" was, but the article clearly represented the views of *Soeara 'Aisjijah*'s editorial team. First, there was an exhortation for readers to be calm, not panic, but at the same time be prepared for all possibilities. The author emphasized some attitudes that were useless, namely, "being confused, hectic, rowdy, and chaotic," and advised that one must have "a clear and firm mind." The people must also follow the authority's instructions in dealing with the situation, especially regarding what should and should not be done (*Soeara 'Aisjijah*, January 30, 1942).

Second, the author asked the people not to rush and flee to distant places. The author wrote that some urban dwellers had already fled to the villages thinking those would be safer. However, apparently the villages were also severely affected by the war, so moving there had made people frantic; panicked fleeing like this was clearly not the right solution. The author suggested that people wait for instructions from those who had a better understanding of the situation before deciding to move, where to move, and in what way the movement should be carried out (*Soeara 'Aisjijah*, January 30, 1942).

Third, the author expected people not to hoard goods, especially food items such as rice, vegetables, and oil as well as clothing. The hoarding of goods was driven by fears that the stock of goods would run low in the market due to the war. But the author stressed that this was an unfounded concern. The thing to avoid was that if the stock of goods was actually sufficient, the hoarded goods would be damaged or even unused (*Soeara 'Aisjijah*, January 30, 1942). The author recommended that people eliminate feelings of worry about the scarcity of food, drinks, and clothing. The selfish attitude of hoarding food for oneself must be avoided because "it is an act that endangers the community and causes public shortages."

The author called on readers to participate in efforts to protect public safety. In an atmosphere of war, the author's view was that selfishness must be eliminated and mutual assistance intensified:

> Do good to reduce others' misery, help the public interest, take care of displaced people, and treat the sick. Please provide energy and means to increase good deeds, because when the war occurs there will be so many people that will need to be given help. Such help seems to be given for other people, friends, neighbors, and distant relatives. In fact, it is actually for us too. Who knows, we ourselves may be affected by the calamity and misery. Thus, by doing that, we help ourselves too. (*Soeara 'Aisjijah*, January 30, 1942)

The author emphasized that physical efforts alone were not enough. The above efforts would, of course, be useful to protect the body. But as Muslims, there was one more thing that needed to be done so that hearts were assured, namely, to increase the act of remembrance of Allah both when the danger had not yet come and when the danger had arrived. In addition to remembering Allah, Muslims were urged to ask for forgiveness and salvation and for the protection of Allah from confusion and calamity. Muslims should not abandon praying five times a day, wrote the author. To further soothe readers' hearts, the author quoted a fragment of the Qur'anic verse stating that remembering Allah would calm the heart (Ar Ra'd: 28). The author sought to persuade readers of *Soeara 'Aisjijah* so that this advice would also be passed on to their families and neighbors. Thus, more and more people were expected to be calmer in dealing with the situation, and finally public panic would be eliminated. Some other acts suggested by the author were to conduct a variety of good deeds, hold Al-Qur'an recitations, and enliven mosques and *langgar* (small mosques) (*Soeara 'Aisjijah*, January 30, 1942).

Soeara 'Aisjijah paid great attention to what it called *evacuatie* (evacuation). This can be seen from a special editorial column responding to current events in a critical but satirical manner, *Soekkoende* (literally meaning "hairpin"). Panic fleeing would only create another confusion in a new place. *Soeara 'Aisjijah* cautioned those who were willing to do everything to evacuate in order to be saved from the war but did not sacrifice enough "to survive hell and the torment of the afterlife." For *Soeara 'Aisjijah*, evacuation needed to be done not only to a safer place, but also to the afterlife, something it called "an evacuation that is bound to happen." Thus, efforts needed to be made to save oneself from war, but good deeds and worship also needed to be multiplied so that one day a Muslim could return to the afterlife in peace because he or she had done many good deeds during their life (*Soeara 'Aisjijah*, February 16, 1942).

Calling Upon Indonesian Women to Take Part in the War

Although in some of its writings *Soeara 'Aisjijah* showed that women were helpless in the midst of the modern war targeting civilians, on another occasion it underlined that

women should not be passive during wartime. There was always something women could do. *Soeara 'Aisjijah* noted that *negeri kita* (our country) had entered the war on December 8, 1941. This was the date on which the Netherlands, the United States, and Britain declared war against Japan, which the day before had bombed the US naval base at Pearl Harbor. This war, wrote *Soeara 'Aisjijah*, was a *sebenar-benarnja perang* (a real war) and no longer just an empty term or prediction. In the past, *Soeara 'Aisjijah* added, *negeri dan bangsa kita* (our country and nation) had only been spectators, but now they were taking part in the war (*Soeara 'Aisjijah*, February 16, 1942).

Soeara 'Aisjijah analyzed the differences between past wars and the current war, especially in relation to the position of women during conflict. In wars in ancient times, women experienced only the bad consequences, for example, the loss of a husband "whom they and their children depended on" (*Soeara 'Aisjijah*, February 16, 1942). This may have referred to wars in traditional or pre-modern times in Indonesia, when wars were fought only by professional soldiers or mercenaries and broke out in places far from human settlements so that women were not directly involved. In this context, women were victims in the sense that they lost their husbands. But today, according to *Soeara 'Aisjijah*, what was happening was a "total war," and in such a war women were also a part and were called upon to participate in defense (*Soeara 'Aisjijah*, February 16, 1942).

Interestingly, *Soeara 'Aisjijah* felt that instead of being merely passive victims as in past wars, women today were participants in war. War, which was already unavoidable in Indonesia, could be seen as a place for women to realize their ideals of being able to do more in society:

> This [women's participation in the war] is a real test, where for a long time Indonesian women have always moaned and lamented to ask for a broader position and place for them to show their sacrifice as members of the community. Our women have long raised their fingers to convey their demands, that they are able to fight as they should . . . (*Soeara 'Aisjijah*, February 16, 1942)

The idea introduced by the magazine in this context was the defense of the motherland by Indonesian women. In *Soeara 'Aisjijah*'s view, there were various examples in other parts of the world of women taking part in wars in order to defend their nation, state, and homeland. They could be role models for Indonesian women. For example, there were women in the United States and Britain who "dared to jump into the fires of war, to defend their country and kingdom" (*Soeara 'Aisjijah*, February 16, 1942).

From this, then, the question arose as to what was the right attitude for Indonesian women when they were finally caught in the midst of war. *Soeara 'Aisjijah* realized that every Indonesian woman would answer this question differently, according to their own understanding and conditions. However, there were several factors that needed to be

considered. One was that women in the United States and Britain had long received education and training to prepare them to defend their nation. In Indonesia the situation was much worse. Indonesian women had not been taught how to defend their nation; in fact, even Indonesian men had only recently had the opportunity to see and touch weapons to defend themselves from foreign enemies (*Soeara 'Aisjijah*, February 16, 1942).

However, that did not mean Indonesian women needed to remain silent when the war came. They did not need to be envious of their counterparts in the United States or Britain. *Soeara 'Aisjijah* then called upon Indonesian women to defend the nation and homeland from enemies:

> We will fight. We will soon be prepared to help in building the safety of our nation and brothers, by not forgetting the order and position of the women and their womanness. We will show our ability to safeguard the safety of our nation and our homeland, and not others, because this is our duty to others who live. The things that now really need to be done are: (1) For the sake of mutual need and mutual aid, we must be able to make sacrifices, by way of courage to defeat and minimize the needs of ourselves for the common good; (2) Taking lessons from this event, and using it as a warning to those who neglected God's rules and guidelines, namely, religion. (*Soeara 'Aisjijah*, February 16, 1942)

In the end, *Soeara 'Aisjijah* hoped that Muslims would strengthen their commitment to Islam. Muslims must believe that Islam was a bridge to glory and a guide to life: "Indeed, life and death with Islam will lead to glory" (*Soeara 'Aisjijah*, February 16, 1942).

There was another wartime role for women that *Soeara 'Aisjijah* considered very important. Above, it was explained that women were expected to take part in defending the larger social community, in this case the nation and homeland. But that did not mean women should forget the smaller community in which their role was vital: the family. Therefore, *Soeara 'Aisjijah* advised women to also save their families, especially the most vulnerable group in war: children.

The magazine gave helpful advice to mothers about what children should do to stay safe from enemy air strikes (*Soeara 'Aisjijah*, February 16, 1942). It reminded readers that children were undoubtedly happy when they saw a plane passing by. As the most modern transportation technology of the time, airplanes quickly attracted children's curiosity. That attitude would, of course, be very dangerous if it turned out that the passing plane was an enemy aircraft that dropped a bomb. According to *Soeara 'Aisjijah*, mothers must teach some important lessons to their children. First, children must be told not to be shocked at the sight of enemy planes preparing for an air strike. Curiosity to see enemy aircraft could have a bad consequence on the safety of children. So, children must be able to hold their interest (*Soeara 'Aisjijah*, February 16, 1942).

Second, children must be taught to immediately look for *loebang perlindoengan*

(shelter) when the enemy launched an air attack. That meant when they were on the move they must always be close to a shelter; if they went to school they must find a path that had such a shelter. If they were in a place with no such shelter, children must be taught to ask for protection in people's homes nearby. There could be a situation where there was neither a shelter nor a house nearby. What should children do then? *Soeara 'Aisjijah* explained that there was another way to stay safe: by hiding in a ditch by the side of the road (*Soeara 'Aisjijah*, February 16, 1942).

Third, children must be taught how to hide in a safe place. A strategy needed to be used so that children were truly safe and not victims of air attacks in a supposedly safe place. *Soeara 'Aisjijah* wrote that children must be taught to lie down in order to withstand strong wind pressure. Not only that, during the attack they must remain in the shelter and must not run or come out until the attack was over (*Soeara 'Aisjijah*, February 16, 1942).

"Your ears are not made of iron," wrote *Soeara 'Aisjijah* to emphasize the importance of protecting the ears from enemy air strikes (*Soeara 'Aisjijah*, February 16, 1942). Bombardment from the air causes very strong wind pressure. Therefore, the ears must be gagged with fingers, with cotton, or if necessary with a pillow: "Even though the ear may not be torn, the impact [of wind pressure] will be very troublesome."

Interestingly, *Soeara 'Aisjijah* delivered special advice for those who wore glasses, an instrument generally used by literate people in the Indies. Some people in the Indies used glasses every day, but there were others who used them only when reading print media or books. Glasses, in other words, were a symbol of modernity and literacy for indigenous people. Readers who wore glasses appeared to be one particular segment among *Soeara 'Aisjijah*'s readers as a whole, so special attention needed to be given to them. *Soeara 'Aisjijah* wrote that if there was an air strike, glasses had to be removed immediately: "There are many cases when people's eyes were damaged because their glasses were shattered by very strong wind pressure [caused by an air strike]" (*Soeara 'Aisjijah*, February 16, 1942).

Conclusion

Although *Soeara 'Aisjijah* was an internal magazine for 'Aisyiyah members, this study shows that the magazine, especially between 1941 and 1942, also paid great attention to major international events. World War II broke out in 1939, and its impact reached Indonesia. *Soeara 'Aisjijah* was a channel for its Indonesian readers to find out what was happening in Europe and Asia. The magazine built readers' awareness about the worsen-

ing world situation and the possibility that in the near future Indonesia could be badly affected. Another awareness developed by the magazine was that the imminent war was a modern war, or a total war, in which civilians could become victims; and that Indonesian society, especially women—who were vulnerable in such conflicts—must be prepared.

The Yogyakarta-based magazine opposed the presence of Nazi Germany in Europe and Japanese expansion in Asia even before Japanese forces arrived in Yogyakarta. The magazine noted how the ideology of National Socialism was a threat to the world, especially the Netherlands, which fell into Nazi hands in May 1940. In Asia, Japan was depicted by the magazine as a menace to Asian nations, as could be seen from the number of news articles circulating about Japanese atrocities in the countries they occupied. *Soeara 'Aisjijah* initially did not expect war to reach Indonesia, but it slowly realized that war was inevitable when one region after another in Asia became occupied by Japanese troops. In addition to showing its hatred for the Nazis and the Japanese, *Soeara 'Aisjijah* prepared its readers to anticipate the arrival of Japanese troops in Indonesia. Through reading *Soeara 'Aisjijah*, Indonesian Muslim women were one of the earliest groups of Indonesian people to get information about the movements of Japanese forces in East and Southeast Asia between 1941 and1942, although not in detail.

Soeara 'Aisjijah conveyed various types of information about the atrocities of Japanese troops toward civilians in Hong Kong and Malaya. Such news certainly raised concerns among Indonesians. However, since it was a magazine by and for women, which for more than a decade had strived to serve and advance the cause of Indonesian Muslim women, *Soeara 'Aisjijah*'s instinct was to protect the safety and honor of Indonesian women when the war broke out. *Soeara 'Aisjijah* immediately responded to Japan's rapid expansion toward the south. One of the magazine's striking attempts was to continually calm society by emphasizing the importance of a calm mind in the midst of the chaotic situation. The magazine also encouraged several other attitudes, namely, avoiding panic fleeing and not hoarding food and clothing. It believed that panic and selfishness would only create disorder and stressed that what was really needed was mutual assistance among community members.

As an Islamic-oriented magazine, *Soeara 'Aisjijah* called on Muslims to always remember Allah during the chaotic situation. Muslims must pray more, keep organizing Al-Qur'an recitations, enliven the mosque, and finally submit themselves to Allah. These acts were believed to calm the hearts of Muslims so that they could be more resilient and rational.

On the one hand, *Soeara 'Aisjijah* emphasized that in modern warfare women and children were usually victims. However, that did not mean women had to be passive. *Soeara 'Aisjijah* repeatedly called on women to participate in war, especially in order to

protect themselves, their family, their nation, and their homeland from foreign enemies. The magazine made an example of American and British women who participated in battle, even though Indonesian women did not have to fully emulate them. For *Soeara 'Aisjijah*, women's involvement in war was a manifestation of their aspiration over the last few decades to do more for society. *Soeara 'Aisjijah* underlined that one attitude Indonesian women must have was a spirit of sacrifice and fighting against cruel foreign enemies. In addition to fostering a spirit of struggle, *Soeara 'Aisjijah* conveyed various ways in which Indonesian women could protect themselves and their loved ones during war, including by focusing on the protection of women's honor and safety, eradicating selfishness, sacrificing for the common good, teaching children to save themselves from enemy air strikes, and remembering Allah. An appeal was also addressed to men, so that during this war they protected their women.

This study shows that *Soeara 'Aisjijah*'s dedication to the advancement of Indonesian women was not only in the form of the idea of *kemajuan* (progress)—for example, through news about the establishment of schools, courses for women, and public meetings to discuss women's emancipation. This study demonstrates that when the situation in the world and in Indonesia worsened, the magazine paid great attention to efforts to save Indonesian women from the horrors of war. The news and views of *Soeara 'Aisjijah* shortly before the arrival of Japanese troops in Indonesia showed efforts by an Islamic-oriented female magazine to calm the Indonesian people while at the same time wisely guiding them as to what should be done in the midst of a situation they had never experienced before. From this study it is also known that Indonesian Muslim women already opposed the Japanese occupation before the Japanese reached Java. Put simply, *Soeara 'Aisjijah* magazine participated in efforts to call upon Indonesian women to defend themselves, their families, their nation, and their homeland from cruel foreign troops in the Southeast Asian theater of World War II.

Accepted: November 30, 2020

Acknowledgments

I would like to express my thanks to the *Suara 'Aisyiyah* editorial office in Yogyakarta for allowing me to use its collection and to the two anonymous reviewers of the original version of this paper for their insightful comments and suggestions.

References

Magazines

Beberapa peringatan oentoek mendjaga bahaja bom kepada anak-anak [A few warnings to keep children out of danger from bombs]. *Soeara 'Aisjijah*, February 16, 1942.

Berhalangan [Absence]. *Soeara 'Aisjijah*, August 25, 1941.

Berita redaksi: Langsoenglah terbitnja S.A.! [Editorial news: S.A. is coming soon!]. *Soeara 'Aisjijah*, January 30, 1942.

Bersedia pajoeng sebeloemnja hoedjan [Prepare the umbrella before it rains]. *Soeara 'Aisjijah*, October 1930.

Bingkisan soeksma: Ah keindahanmoe . . . [A gift of soul: Ah, your beauty . . .]. *Soeara 'Aisjijah*, August 25, 1941.

Deradjading tijang estri wonten ing agami Islam [The position of women in Islam]. *Soeara 'Aisjijah*, Rajab [circa December] 1927.

Evacuatie [Evacuation]. *Soeara 'Aisjijah*, February 16, 1942.

Hal 'Aisjijah [Matters related to 'Aisjijah]. *Soeara 'Aisjijah*, Rajab [circa December] 1927.

Jaarvergadering H.B. Moehammadijah ing Ngajogjakarta [Annual meeting of The Central Board of Muhammadiyah in Yogyakarta]. *Soeara 'Aisjijah*, Rajab [circa December] 1927.

Kalimah sjahadah [Shahada]. *Soeara 'Aisjijah*, No. 5, October 1930.

Kaoem poeteri di dalam peperangan [Women in war]. *Soeara 'Aisjijah*, February 16, 1942.

Ketenangan dan persediaan [Quietness and readiness]. *Soeara 'Aisjijah*, January 30, 1942.

Kongres Perempoean Indonesia (KPI) ke IV [The Fourth Congress of Indonesian Women]. *Soeara 'Aisjijah*, August 25, 1941.

Muhammad Yuanda Zara. Kaum putri Muhammadiyah membela bangsanya di zaman perang [Muhammadiyah women defending their nation in the age of war]. *Suara Muhammadiyah*, No. 18, September 16–30, 2018.

Neraka doenia [Hell on earth]. *Soeara 'Aisjijah*, February 16, 1942.

Pedoman soetji [Holy guide]. *Soeara 'Aisjijah*, February 16, 1942.

Penerimaan wang [Money received]. *Soeara 'Aisjijah*, November 30, 1941.

Tarich [Chronicle]. *Soeara 'Aisjijah*, August 25, 1941.

Books, Journals, Theses, and Dissertations

Anna Mariana. 2015. *Perbudakan seksual: Perbandingan antara masa fasisme Jepang dan neofasisme Orde Baru* [Sexual slavery: A comparison between the times of Japanese fascism and New Order neofascism]. Tangerang Selatan: Marjin Kiri.

Baird, J. Kevin; and Sangkot Marzuki. 2015. *War Crimes in Japan-Occupied Indonesia: A Case of Murder by Medicine*. Lincoln: University of Nebraska Press. doi: 10.2307/j.ctt1d989sc.

Basilius Triharyanto. 2009. *Pers perlawanan: Politik wacana antikolonialisme* Pertja Selatan [Resistance press: The anticolonial discourse of *Pertja Selatan*]. Yogyakarta: LKiS.

Benda, Harry J. 1956. The Beginnings of the Japanese Occupation of Java. *Far Eastern Quarterly* 15(4) (August): 541–560. doi: 10.2307/2941923.

————. 1955. Indonesian Islam under the Japanese Occupation, 1942–45. *Pacific Affairs* 28(4) (December): 350–362. doi: 10.2307/3035318.

Blackburn, Susan. 2008. Indonesian Women and Political Islam. *Journal of Southeast Asian Studies* 39(1) (February): 83–105. doi: 10.1017/S0022463408000040.

————. 2004. *Women and the State in Modern Indonesia*. Cambridge: Cambridge University Press. doi: 10.1017/CBO9780511492198.

Carroll, John M. 2007. *A Concise History of Hong Kong*. Maryland: Rowman & Littlefield.

Childers, Thomas. 2017. *The Third Reich: A History of Nazi Germany*. New York: Simon & Schuster.

Diamond, Hanna. 2013. *Women and the Second World War in France, 1939–1948: Choices and Constraints*. London and New York: Routledge.

Grayzel, Susan R. 2013. *Women and the First World War*. London and New York: Routledge.

Greenwald, Maurine Weiner. 1990. *Women, War, and Work: The Impact of World War I on Women Workers in the United States*. Ithaca and London: Cornell University Press.

Hallet, Christine E. 2016. *Nurse Writers of the Great War*. Manchester: Manchester University Press.

Hatley, Barbara; and Blackburn, Susan. 2000. Representations of Women's Roles in Household and Society in Indonesian Women's Writing of the 1930s. In *Women and Households in Indonesia: Cultural Notions and Social Practices*, edited by Juliette Koning, Marleen Nolten, Janet Rodenburg, and Ratna Saptari, pp. 45–67. Richmond: Curzon Press.

Hicks, George. 1997. *The Comfort Women: Japan's Brutal Regime of Enforced Prostitution in the Second World War*. New York: W.W. Norton & Company.

Hill, David T. 2010. *Journalism and Politics in Indonesia: A Critical Biography of Mochtar Lubis (1922–2004) as Editor and Author*. London and New York: Routledge.

Horton, William Bradley. 2010. Comfort Women. In *The Encyclopedia of Indonesia in the Pacific War*, edited by Peter Post *et al.*, pp. 184–196. Leiden and Boston: Brill.

It, Suraiya. 2005. The Women's Movement in Indonesia: With Special Reference to the 'Aisyiyah Organization. PhD dissertation, Temple University.

Kratoska, Paul H. 1997. *The Japanese Occupation of Malaya, 1941–1945*. Honolulu: University of Hawai'i Press.

Krida Amalia Husna. 2016. Gerakan kudung Muhammadiyah di Yogyakarta (1912–1941) [Muhammadiyah's veil movement in Yogyakarta, 1912–1941]. Master's thesis, Gadjah Mada University.

Kurasawa Aiko. 1987. Propaganda Media on Java under the Japanese 1942–1945. *Indonesia* 44 (October): 59–116. doi: 10.2307/3351221.

Kurniawati Hastuti Dewi. 2008. Perspective versus Practice: Women's Leadership in Muhammadiyah. *Sojourn: Journal of Social Issues in Southeast Asia* 23(2) (October): 161–185. doi: 10.1355/sj23-2a.

Latief, Hilman. 2010. Health Provision for the Poor: Islamic Aid and the Rise of Charitable Clinics in Indonesia. *South East Asia Research* 18(3) (September): 503–553. doi: 10.5367/sear.2010.0004.

Locher-Scholten, Elsbeth. 2000. *Women and the Colonial State: Essays on Gender and Modernity in the Netherlands Indies 1900–1942*. Amsterdam: Amsterdam University Press.

Mahayana, Maman S. 2013. Japanese Occupation Government Policy in Indonesia on Culture and Literature: A Case Study of *Asia Raja* Newspaper (1942–1945). *Humaniora* 25(2) (June): 129–142. doi: 10.22146/jh.2356.

Manus, M. P. B. 1985. *Peranan wanita Indonesia di masa perang kemerdekaan, 1945–1950* [The role of women in the Indonesian war of independence, 1945–1950]. Jakarta: Departemen Pendidikan dan Kebudayaan.

Mark, Ethan. 2018. *Japan's Occupation of Java in the Second World War: A Transnational History*. London: Bloomsbury Academic.

Miller, Marc. 1980. Working Women and World War II. *New England Quarterly* 53(1) (March): 42–61. doi: 10.2307/365288.

Muhammad Yuanda Zara. 2019. Securing the State, Defending the Religion: An Analysis of *Boelan Sabit* Newspaper Publications (December 1945–January 1946). *Journal of Indonesian Islam* 13(1): 115–140. doi: 10.15642/JIIS.2019.13.1.115-140.

Notosusanto, Nugroho. 1979. *The Peta Army during the Japanese Occupation of Indonesia*. Tokyo: Waseda University Press.

Pluvier, J. M. 1953. *Overzichten van de Ontwikkeling der Nationalistische Beweging in Indonesië de Jaren 1930 tot 1942* [Overview of the development of the nationalist movement in Indonesia from the 1930s to 1942]. 's-Gravenhage and Bandung: N.V. Uitgevrij W. van Hoeve.

Post, Peter; Frederick, William H.; Heidebrink, Iris; Sato Shigeru; and Horton, William Bradley, eds. 2010. *The Encyclopedia of Indonesia in the Pacific War*. Leiden and Boston: Brill.

Reni Nuryanti. 2011. *Perempuan berselimut konflik: Perempuan di Minangkabau di masa Dewan Banteng dan PRRI* [Women covered by conflict: Women in Minangkabau during the Dewan Banteng and PRRI times]. Yogyakarta: Tiara Wacana.

Ricklefs, M. C. 2001. *A History of Modern Indonesia since c. 1200*. Hampshire: Palgrave.

Sato Shigeru. 2006. Indonesia 1939–1942: Prelude to the Japanese Occupation. *Journal of Southeast Asian Studies* 37(2) (June): 225–248. doi: 10.1017/S0022463406000531.

Sciortino, Rosalia; Neni Ridarineni; and Brahmaputra Marjadi. 2010. Caught between Social and Market Considerations: A Case Study of Muhammadiyah Charitable Health Services. *Reproductive Health Matters* 18(36) (November): 25–34. doi: 10.1016/S0968-8080(10)36528-1.

Sely Widiya Ayu Restiana. 2016. Wacana perempuan dalam majalah *Suara 'Aisjijah* dan *Dunia Wanita* (1952–1956) [Discourse on women in *Suara 'Aisjijah* and *Dunia Wanita* magazines (1952–1956)]. Undergraduate thesis, Yogyakarta State University.

Siti Fatimah. 2010. Fujinkai: Women's Association. In *The Encyclopedia of Indonesia in the Pacific War*, edited by Peter Post *et al.*, pp. 290-300. Leiden and Boston: Brill.

Smith, Susan L. 1999. Women Health Workers and the Color Line in the Japanese American "Relocation Centers" of World War II. *Bulletin of the History of Medicine* 73(4) (Winter): 585–601. doi: 10.1353/bhm.1999.0190.

Syukmaweti. 2010. Peranan majalah *Suara 'Aisyiyah* dalam organisasi 'Aisyiyah pada tahun 1926-1952 di Yogyakarta [The role of *Suara 'Aisyiyah* within 'Aisyiyah in 1926–1952 in Yogyakarta]. Undergraduate thesis, Diponegoro University.

Tarling, Nicholas. 2001. *A Sudden Rampage: The Japanese Occupation of Southeast Asia 1941–1945*. London: Hurst and Company.

van Doorn-Harder, Nelly. 2002. The Indonesian Islamic Debate on a Woman President. *Sojourn: Journal of Social Issues in Southeast Asia* 17(2) (October): 164–190.

van Doorn-Harder, Pieternella. 2006. *Women Shaping Islam: Reading the Qur'an in Indonesia*. Urbana: University of Illinois Press.

White, Sally Jane. 2004. Reformist Islam, Gender and Marriage in Late Colonial Dutch East Indies, 1900–1942. PhD dissertation, Australian National University.

Websites

'Aisyiyah. 2019. Program 'Aisyiyah ['Aisyiyah's programs]. *'Aisyiyah*. https://aisyiyah.or.id/program, accessed December 30, 2019.

Anonymous. n.d.(a). Amal usaha [Charity and services]. *'Aisyiyah*. http://www.pp.aisyiyah.or.id/id/page/amal-usaha.html, accessed July 19, 2021.

Anonymous. n.d.(b). Tentang [About]. *Suara 'Aisyiyah*. https://suaraaisyiyah.id/tentang/, accessed July 19, 2021.

Livelihood and Happiness in a Resource (Natural and Cultural)-Rich Rural Municipality in the Philippines

Rosalina Palanca-Tan* and Sheila Bayog**

This paper looks at the economic and welfare conditions of residents in Lake Sebu, a largely rural but natural and cultural resource-rich municipality in Southern Mindanao in the Philippines. Two notions of welfare are used in the study: economic welfare, measured in terms of household income and vulnerability to hunger; and social welfare, measured in terms of self-reported happiness. The study uses primary data collected through a household survey and analyzed with statistical and econometric procedures (tests of difference between sub-populations; and ordinary least squares, binary probit, and ordered logistic regressions). The results suggest mixed implications of abundant natural and cultural resources on the income, livelihood, and happiness of people in Lake Sebu. Nonetheless, insofar as the availability of natural and cultural resources provides more opportunities for income-generating activities, and hence makes possible multiple-income households, abundant resources in Lake Sebu may be considered a blessing and welfare enhancing. Further, the study finds no significant positive relationship between income and happiness and no significant influence of social capital, measured in terms of membership in formal organizations, on welfare (both economic welfare and happiness).

Keywords: natural resources, non-built cultural heritage, economic welfare, social welfare, self-reported happiness

Introduction

The positive welfare effects of resource endowments may initially seem clear-cut. Abundant resources can provide multiple income opportunities or livelihood sources for inhabitants of the area, and hence higher welfare. This is a basic assumption in production theory in Economics, where output is specified as an increasing function of all types of resources that can be utilized as production inputs—natural, capital, human, and even

* Department of Economics, School of Social Sciences, Ateneo de Manila University, Loyola Heights, Quezon City, Metro Manila 1107, Philippines
Corresponding author's e-mail: rtan@ateneo.edu
** Research Center, Notre Dame of Marbel University, Alunan Avenue, Koronadal City, South Cotabato, Philippines

cultural resources. An OECD (2011) paper asserts that sectors related to natural resource use provide jobs and are often the basis of livelihoods in poorer communities, thus contributing toward poverty reduction.

In the early 2000s, however, the concept of the "resource curse," in which resource wealth does not lead to well-being, gained momentum (Karak 2019). This phenomenon is most prominent in oil-rich African countries that are heavily dependent on multinational oil companies for technology, financial capital, management, and sales networks. For example, in Nigeria, a major petroleum-producing country that derives more than 90 percent of its external revenues from crude oil, locals experience "poverty in the midst of plenty" due to the exploration, extraction, and exploitation of its crude oil by foreign companies with the blessings of the government (Orogun 2010). In a more subtle way, this is also the case for some developing Asian countries such as the Philippines, where poverty remains widespread despite the country's rich forest, land, and water resources as many of these resources are exploited by non-resident capitalists or multinationals for profit (see, for instance, Fujisaka *et al.* 1986; Cruz and Francisco 1993; Broad 1995; and World Bank 2017).

Literature relating natural resources to welfare in the Philippines includes papers on the dependence of the Philippine economy on natural resources, on the quantitative valuation of resource benefits, and on the resource curse.

Ian Coxhead and Sisira Jayasuriya (2001) have discussed the abundant natural resource endowments of the Philippines and their contribution to the economy—fertile lands making agriculture the largest single sector and employer in the economy, with more than half the population depending either directly or indirectly on income generated in agricultural production; and marine (17,460 km of coastline, 2 million km^2 of oceanic waters, and 266,000 km^2 of coastal waters) and freshwater ecosystems (384 major river systems and 54 lakes covering an area of 569,600 ha) generating fish supply and serving as major tourist and recreation sites. Both marine and freshwater resources in the Philippines are utilized for aquaculture, which generates fisheries income, foreign exchange, and food supply (Yap 1999; Rosario 2008; Palanca-Tan 2016). Specifically, seaweed farming (MAP-ABCD 2016; Pedrosa 2017) and small-scale freshwater fishponds (ADB 2005) and fish cages and pens (Palanca-Tan 2016) are shown to have provided low-income communities with primary and secondary means of livelihood that helped improve their economic conditions.

Quite recently, survey-based valuation techniques have been used to attach values to different forms of benefits derived from natural resources and ecosystems in the Philippines. Using the survey-based contingent valuation method (CVM), R. Palanca-Tan *et al.* (2017) estimated the total value of benefits from a well-protected Cagayan de Oro

River Basin providing water supply, recreation, biodiversity, flood control, and power supply to downstream households in Cagayan de Oro City to be over 100 million pesos every year. Together with benefits accruing to other sectors, namely, industrial sectors' water use and income for the fisheries and tourism sectors, the total economic value generated from the Cagayan de Oro River Basin was estimated to be about twice the household benefits (Palanca-Tan *et al.* 2018). CVM was also employed by Raul Bradecina (2014) in calculating the total economic value of beachscapes in Camarines Sur, while the travel cost method, another survey-based valuation technique, was utilized by Wilma Tejero (2014) to estimate the recreational use value of Apo Island.

The resource curse literature on the Philippines revolves around resource mismanagement and resource exploitation by the privileged few that constrain economic growth and exacerbate poverty and income inequality. Robin Broad (1995) described the case of the Philippines as a Third World, historically rainforest-rich country that followed a pattern of natural-resource exploitation that did not contribute to broader public welfare and sustainable development. The Philippines' vast forest cover of about 70% of its total land area in 1900 was exploited and depleted to about 50% by 1950, to less than 25% by the end of the 1980s (Kummer 1992), and to less than 19% by the late 1990s (Coxhead and Jayasuriya 2001). The highly concentrated control of Philippine forests only enriched a few at the expense of just and sustainable development, creating millions of poor people in the uplands (Broad 1995). The World Bank (2017) argued that despite Mindanao's fertile land, large deposits of minerals (particularly gold and copper), extensive forests, and vast marine resources, its economy had remained weak and failed to realize its potential for growth and development as profits from farming, forestry, and mining were siphoned out and not reinvested in Mindanao. The initial expansion in Mindanao's economy resulted in very little multiplier effects and job creation, and hence growth was not sustained, and poverty persisted.

On the other hand, literature on cultural heritage and welfare in the Philippines is scarce. There are studies illustrating how cultural resources and heritage provide leisure, recreation, and educational facilities (Balco 2012), generate tourism activities that stimulate commerce and create new jobs (Henderson 2012), and increase income-earning opportunities and investments (Labadi 2020), but there are only a few specifically on the Philippines. Geoffrey Cruz (2017) argued that cultural heritage preservation could push the value of real estate properties in the country and more than offset the cost of preservation. Eva Marie Medina (2009) presented the case of Vigan, Ilocos Sur, as an example of how cultural heritage tourism enabled the municipality to rise from being a second-class municipality to a first-class municipality. Most recently, Palanca-Tan (2020) combined cultural heritage with natural resources in her estimate of the total benefits

derived by a neighboring urban city from a rural municipality in the southern Philippines using CVM.

This paper looks at the economic and welfare conditions of residents in Lake Sebu, a largely rural but natural and cultural resource-rich municipality in the southern Philippines. The municipality of Lake Sebu in the province of South Cotabato in Mindanao is endowed with abundant natural resources (lakes, waterfalls, and caves) that offer captivating sights and exciting adventures (zip-lining, spelunking, mountain trekking, lake cruising) for residents and visitors. The municipality has the rich cultural heritage of the T'boli indigenous tribe—handicrafts (the most prominent of which is T'nalak weaving), music and dances, festivals, and beliefs and traditions. Because of its many captivating natural and cultural resources, Lake Sebu is fast becoming the prime ecotourism destination in the southern Philippines for Filipinos as well as foreigners. Moreover, its expansive freshwater bodies are used for lucrative fish farming operations that produce good-tasting tilapia, attracting visitors for dining and special celebrations and providing fish supply to neighboring cities and municipalities; and about a third of its land area is used for rice, corn and other crops, fruit and vegetable farms (a couple of which are organic), and mostly native-breed livestock and poultry raising (LSMPDO 2016). The paper focuses on the natural and cultural resource-dependent tourism, aquaculture, and agriculture (farming and livestock raising) livelihood sources in all *barangays* in the municipality except for Ned, which is somewhat isolated and distant from the livelihood activities mentioned.

The happiness framework, which combines economic and psychological perspectives in looking at the value of a resource, is used in this study instead of the more common economic valuation techniques. Thus, the analysis in this paper is not confined to income or economic welfare but extends to the broader concept of overall well-being, measured in terms of self-reported happiness. Using primary data collected through a household survey and analyzed with statistical (tests of hypothesis on the difference between and among sub-populations) and econometric (ordinary least squares, binary probit, and ordered logistic regressions) procedures, the study aims to:

(1) present indicators of and characterize economic and social welfare of resident households in the natural and cultural resource-rich municipality of Lake Sebu;
(2) determine whether income increases happiness; and
(3) determine the impact of social capital on income and happiness.

To date, studies of happiness in the Philippine context are largely confined to the disciplines of Psychology and Sociology (recent studies include Tolentino and Dullas 2015; Peterson 2016; Reyes 2016; Datu and Lizada 2018; Diego *et al.* 2018; and Lumontod

2019), while an economic perspective is still scant. Further, to the authors' knowledge, this is the first "happiness" perspective to benefits valuation of resources in the Philippines. This paper thus adds another dimension to resource valuation research, which in recent years has focused on assigning monetary values to resource benefits employing survey-based, stated preference techniques such as contingent valuation and choice modeling (examples of such resource valuation studies in the Philippines include Subade [2007] and Palanca-Tan *et al.* [2018]).

Methodology

Study Site

Lake Sebu, a municipality created in 1982, is one of 11 municipalities in the province of South Cotabato in Southern Mindanao. It is bounded in the northeast and southeast by the municipalities of Surallah and T'boli, respectively; in the northwest by the province of Sultan Kudarat; and in the southwest by the province of Sarangani. Lake Sebu is approximately 40 km from Koronadal, the capital and only city of South Cotabato and the regional center of Region XII (SOCCSKSARGEN).

Lake Sebu has a total land area of 89,138 ha, about 24% of South Cotabato's total land area. It has a predominantly rugged terrain with the mountain ranges of Daguma and Talihik and Mt. Talili (with an elevation of 1,410 m) along its eastern portion, Mt. Busa (with an elevation of 2,064 m) in its southeastern portion, and Pitot Kalabao Peak (with an elevation of 1,600 m) along its central portion. There are several lakes in the municipality. The most notable and biggest among these is Lake Sebu, with an approximate surface area of 354 ha. The other lakes are Lake Lahit, Lake Seloton, and seven other small lakes. The municipality has 40 major rivers and is endowed with 103 springs located strategically throughout its boundaries. Moreover, deep wells, shallow wells, and free-flowing wells are common along its steep slopes and rolling valleys. The climate of Lake Sebu belongs to the fourth climatic type under the Coronas Classification, where rainfall is evenly distributed throughout the year. With a temperature ranging from 21° to 30° Celsius and supported by the hydrologic cycle of the lakes, it is relatively cool throughout the day (LSMPDO 2015; 2016).

Lake Sebu is home to the indigenous T'boli people, who constitute the majority 55% of its population. Hiligaynon-Ilonggo migrants account for about a fourth, or 25%, of the population; while the Cebuanos and another indigenous tribe, Ubo-Manobo, each account for about 5%.

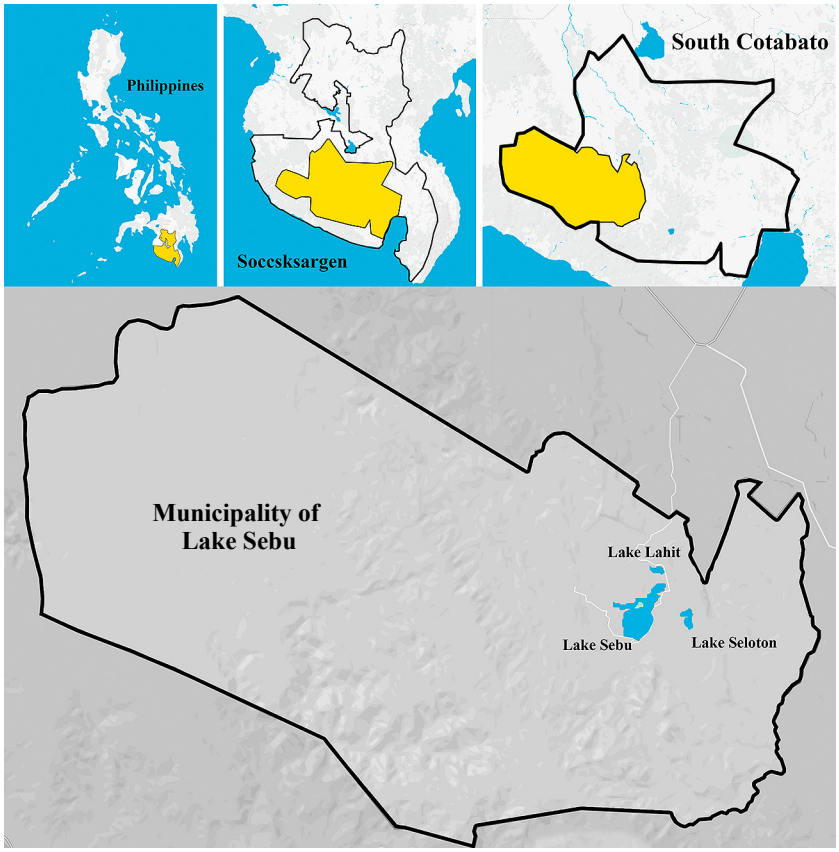

Fig. 1 Study Site: Municipality of Lake Sebu

Data Collection

This study used primary data collected through a household survey. The instrument used was largely a livelihood questionnaire finalized after a series of key informant interviews (KII), focus group discussions (FGD), and pre-tests with local government officials, sector leaders, and representative households. The 15-page questionnaire consisted of three parts. Part 1 included a brief introduction on the purpose of the survey as well as basic demographic questions about the respondent and household members.

Part 2 made up the bulk of the questionnaire (11 out of a total of 15 pages) as it asked detailed sector-specific questions on income sources of all household members. The respondent was asked which among the following six categories of income sources the household depended on: (1) fishing, (2) tourism, (3) farming, (4) livestock and poultry, (5) government/public service, and (6) others. Fishing was further categorized into

fish farm owner/operator, fish nursery owner/operator, fish farm worker, open fishing and fish trading; and tourism was categorized into resort/hotel, tourist attraction, souvenir, restaurant/food service, transport services/rental, and other tourism-related sectors.

Total household income was obtained from the large, detailed data sets generated from the survey. After identifying one income source, a series of questions that would allow calculation of net income or revenues from each income source were asked: for open fishing – daily fish catch (volume and value), fishing days per week, costs incurred; for fish farming and nursery operations – farming cycles, harvest frequency and volume and value, cost items (fingerlings, feed, farm construction and maintenance, etc.); for fish trading – scale and frequency of trading (wholesale and retail), revenues and cost of fish sales; for fish farm work – work days, wage rate, and other benefits or forms of compensation (e.g., food and housing provisions and government-mandated social security benefits); for tourism-related businesses such as resorts, restaurants, souvenir production and selling, tourist attractions, and transport services – assets, average monthly net revenues of the business; for resort employees and workers, full-time or part-time – monetary compensation (monthly salary or daily wages) and other benefits (food, transportation, and housing provisions); for indigenous crafts production – value of sales and costs of production; for crop farming – crops, frequency, volume and value of harvests, and cost of farming inputs; for livestock – annual volume and value of production and costs of production; and for government service and other types of employment – type of work, compensation (salary or wages), and other benefits. Annual income or net revenues generated from each source were estimated, and all income and net revenues from all sources were summed up for each household respondent. Note that revenues from fishing, agriculture, and livestock were computed such that non-cash revenues (e.g., food for home consumption and for giving away to relatives and friends) were also included (i.e., revenues were based on harvest/production value and not on sales value).

Part 3 covered the happiness and economic vulnerability questions as well as all other socioeconomic questions about the household, such as housing assets, consumption, saving and borrowing behavior, membership in organizations, and government and private assistance/subsidies received by the household.

A total sample of 489 respondents was generated through in-person interviews by experienced enumerators of the Research Center of Notre Dame of Marbel University in February 2019. All 19 *barangays* of Lake Sebu except Ned were included in the sampling frame. Ned is largely agricultural, quite distant and isolated from the rest of the municipality, and not yet part of the developed tourism and fishing industries of Lake Sebu, the economic sectors most closely associated with the rich natural and cultural

resources in the municipality, the main focus of this research.[1] The number of respondents in each *barangay* was set in proportion to the share of the *barangay* in the population of the municipality. Respondents in each *barangay* were chosen using systematic sampling. Permission and assistance to conduct the survey were secured from the *barangay* captain's office. With maps obtained from the *barangay* office, starting points were identified and enumerators were instructed to approach the 10th house from the starting point. In case of refusal to participate, the next house would be approached. Every succeeding respondent approached had to be the 10th house from the last responding household.

Enumerators were given two-day training prior to the pilot test. The training gave an overview of the objectives of the study, and a detailed explanation of the whole survey instrument (with the meaning and the reasons for each question and statement discussed) and the sampling procedure (systematic sampling method). The training included role-playing exercises.

Measures of Welfare

In this paper, welfare is measured on two dimensions: (1) economic welfare, and (2) social welfare.

The most basic indicator of economic welfare is income, measured as the sum of incomes of household members from all sources. Another indicator of economic welfare used in this study is having food on the table three times a day, that is, not missing meals due to financial difficulties. For this economic welfare indicator, the following question was included in the survey instrument: "In the last three months, has your family missed meal/s or experienced hunger due to lack of money?"

Social welfare is much broader than economic welfare. This paper adopts Richard Easterlin's (1974, 90) concept and measurement of subjective happiness as an indicator of social welfare: "Happiness . . . corresponds to social welfare," and "Social welfare is human happiness." This equality between social welfare and happiness was implied also in the earlier works of Ian Little (1950) and Ezra Mishan (1968).

Also referred to as "self-reported happiness," subjective happiness is based on statements by the individual about his/her happiness, usually elicited through a survey. This approach in measuring happiness assumes that the individual is the best judge of his/her feelings. A number of studies have shown that self-reported happiness is generally consistent and significantly correlated with objective indicators of happiness such as

1) Although Ned occupies 47% of the municipality of Lake Sebu, its population density is just 0.62 person per hectare (26,088 people in 41,802 ha). More than 55% of its total area is protected forest, while 40% is agricultural (planted with mainly corn, rice, and peanuts).

physical health (Kiecolt-Glaser *et al.* 2002; Cohen *et al.* 2003) and evaluations of psychological states such as depression and self-esteem (Bradburn 1969; Robinson and Shaver 1973). John Robinson and Phillip Shaver (1973) have also shown that self-reported happiness does not fluctuate widely over short periods of time and hence can be considered stable and reliable. Daniel Kahneman and Alan Krueger (2006, 3) note the increasing use of subjective well-being data in economic research: "From 2001 to 2005, more than 100 papers were written analyzing data on self-reported life satisfaction or happiness, up from just four in 1991–1995."

The question posed in our survey instrument follows the 10-point numerical rating scale of Hadley Cantril (1965). The actual question used in our study is "How happy or contented are you with your current living conditions? Please answer using a scale of 0–10 where 0 is very unhappy and discontented and 10 is perfectly happy and contented." Cantril's scale was selected over broad categories of happiness (very happy, fairly happy, not very happy) as respondents, particularly Filipinos (as found in the FGDs) are more at ease stating numbers instead of stating directly whether they are happy or not.

Relationship between Resources and Welfare

To investigate how natural and cultural resources in Lake Sebu affect the residents' welfare, two levels of analysis are done. On the first level, tests of hypothesis on the difference between means/proportions are undertaken. Means/proportions of the welfare indicators, namely, household income and vulnerability to hunger for economic welfare, and self-reported happiness for social welfare, are compared for two sets of subsamples. Set 1 divides the sample into households with multiple sources of income and households with just one source of income. Set 2 categorizes the households by main source of income—namely, fishing, tourism, farming, livestock (all of which are resource-dependent income sources); and all other sources lumped together into non-resource-dependent sources.

The second level of analysis undertaken is regression analysis. Using the econometric software STATA, ordinary least squares, binary probit, and ordered logistic regressions are conducted with indicators of economic welfare (household income and vulnerability to hunger) and social welfare (self-reported happiness) as dependent variables and the following categories of variables as covariates: (1) demographic variables (respondent's age, gender, education, ethnolinguistic group, number of years in Lake Sebu, household size); (2) natural and cultural-related variables as sources of livelihood; and (3) social capital indicators. John Helliwell and Robert Putnam (2004) have argued that social capital is one of "the most robust correlates of subjective well-being." Nattavudh Powdthavee (2008) has found that increasing the frequency of social contacts

proportionately increases life satisfaction. John Helliwell and Christopher Barrington-Leigh (2010, 15) further suggested that social capital is "more important than economic differences when explaining life satisfaction differences." Following Robert Putnam's (1993; 2000) concept of social capital as interpersonal networks (formal and informal associations and engagements), the survey for this study asked about the involvement of household members in organizations such as credit cooperatives, environment-related organizations, women's organizations, church-related organizations, and labor organizations to come up with social capital variables.

Results

Respondents' and Households' Profile

Table 1 shows the profile of survey respondents and their households. The average respondent is 41 years of age (standard deviation of 13 years, median age of 40 years) and has lived in Lake Sebu for 33 years (standard deviation of 16 years, median of 34 years). Nearly half (46%) of the respondents are the head or main breadwinner of the household, and a slightly smaller proportion (38%) are male. Most (78%) of the respondents are working, implying that it is not only the household head who is working in most households. About a third (34%) of respondents reached elementary school level, 42% reached high school, 3% had some vocational training, and 16% reached college level. Only 5% had no formal schooling. About two-thirds of respondents belong to the indigenous T'boli tribe, while 29% are migrant Hiligaynon-Ilonggo. The remaining 4% are a mix of other indigenous groups (such as Ubo-Manubo) and migrants from other places (Cebuano from the Visayas, and Bicolano and Ilocano from Luzon).

On average, each respondent household has five members (standard deviation of 1.8 and same median of 5) living in a two-bedroom house (standard deviation of 0.9 and same median of 2). The majority of households have an electricity connection, a television set, a mobile phone, and an automobile (including motorcycle and tricycle). The majority (53%) of households have savings. A substantial proportion (42%) are members of cooperatives. Smaller proportions—25% and 15%—are members of women's and church organizations, respectively. Only 1% of households have member/s in environment-related and labor organizations. With widespread poverty in the municipality, almost half (48%) of respondent households are beneficiaries of the government's conditional cash transfer program.

Table 1 Socio-demographic Profile of Respondents and Their Households

Variable	Mean
Respondent	
Age (average, in years)	40.77
Number of years residing in Lake Sebu (average)	32.70
Household role (proportion of respondents who are head of the household)	46.42%
Males (in proportion to total respondents)	38.45%
Working (in proportion to total respondents)	78.32%
Education (in proportion to total respondents)	
No formal education	5.32%
Elementary school	34.15%
High school	41.51%
Vocational school	3.07%
College	15.95%
Ethnolinguistic group (in proportion to total respondents)	
T'boli	66.46%
Hiligaynon-Ilonggo	29.45%
Others	4.09%
Household	
Household size (average number of household members)	4.79
Housing assets	
Number of bedrooms (average)	1.97
Proportion of respondent households with	
Mobile phone	88.55%
Television set	67.89%
Automobile	53.99%
Refrigerator	25.97%
Washing machine	14.11%
Computer	6.34%
Air conditioner	1.64%
Electricity connection	95.50%
Financial status (proportion of households with savings)	52.76%
Household membership in formal organizations (in proportion to total respondents)	
Cooperatives	42.33%
Environment-related organizations	1.43%
Women's organizations	24.95%
Church organizations	15.13%
Labor organizations	1.23%
Government and private assistance (proportion of households receiving financial assistance from)	
Conditional cash transfer (4Ps)	48.47%
Related overseas Filipino workers (OFWs)	6.13%
Relatives	14.31%
Senior citizen benefits	14.11%

Note: Exchange rate of US$1=PhP50.71 as of December 20, 2019.

Welfare and Resources

Table 2 presents the indicators of economic and social welfare of the households. On average, each household has an annual income of PhP156,701 (US$3,090), with a standard deviation of PhP216,602 implying substantial income variations among households. Comparing individual household incomes with the poverty threshold of PhP10,420 (US$205.48) per month or PhP125,040 (US$2,465.76) per year for a family of five in the province of South Cotabato (PSA 2015), 61%[2] of the surveyed households in Lake Sebu are considered to be living in poverty. The percentage of surveyed households living below the food threshold of PhP7,278 (US$143.52) per month or PhP87,336 (US$1,722.24) per year is 46%.

As another indicator of economic welfare, the survey also asked about the household's vulnerability to hunger. About 44% of respondent households experienced missing

Table 2 Welfare Indicators

	Household Income			Proportion of Households That Have Missed Meal/s	Average Happiness Score
	Average Annual Income (PhP/US$)	Proportion of Households			
		Below Poverty Threshold	Below Food Threshold		
All household respondents in Lake Sebu	156,701/3,090	61.15%	46.22%	43.76%	6.94
By multiple or single income sources					
Households with multiple income sources (62.58% of household respondents)	190,033/3,747	48.37%	33.33%	42.81%	7.11
Households with only one income source (37.42% of household respondents)	100,967/1,991	82.51%	67.76%	45.36%	6.65
By main income source					
Households whose main income source is fishing (8.18% of household respondents)	132,800/2,619	62.50%	50.00%	30.00%	7.70
Households whose main income source is tourism (7.16% of household respondents)	164,461/3,243	51.43%	34.29%	42.86%	6.94
Households whose main income source is farming (43.35% of household respondents)	108,086/2,131	77.83%	63.21%	53.77%	6.75
Households whose main income source is livestock (0.20% of household respondents)	59,200/1,025	100.00%	100.00%	0.00%	6.00
Households whose main income source is all others (41.11% of household respondents)	211,867/4,178	44.78%	46.22%	36.32%	6.99

2) This figure is very close to the 2015 official poverty index in the municipality of Lake Sebu of 64% (PSA 2015).

meals in the last three months, which corroborates the earlier estimated 46% incidence of food poverty based on reported income.

The average self-reported happiness score of all surveyed households is 6.94 (95% confidence interval of 6.72–7.15), which can be considered fairly or pretty happy. It appears, then, that Lake Sebu households are poor but fairly happy, lending support to Easterlin's (1974) conclusion that there is no clear correlation between income and happiness.

To probe into the role of natural and cultural resources in household welfare in Lake Sebu, the sample is divided into two subsamples: households with multiple income sources and households with only a single income source. The presence of natural and cultural resources in Lake Sebu offers varied livelihood alternatives with which residents can engage, thus providing varied ways for one or more household members to augment income as well as lower economic vulnerability with another income source to depend on when one source fails.

More than half of the households (63%) have multiple income sources. On average, households with multiple income sources have a higher annual income and hence lower incidence of poverty, lower incidence of hunger, and higher self-reported happiness score (second panel of Table 2).

The third panel of Table 2 divides the sample into five subsamples according to the main income source (classified according to dependence on or use of natural and cultural resources). Among income sources that directly utilize natural and cultural resources, households whose main income source is tourism have the highest average income, followed by households whose main income source is fishing. Low average incomes are reported by households with either livestock or farming as the main income source. Other sources of income (public/government service, transportation, construction, merchandising/retail trading, food, and clothing/apparel), which are not natural and cultural-resource-based, however, yield the highest average. Consequently, poverty and food shortage incidences are higher for households dependent mainly on resource-based incomes, except for tourism-dependent households, which have the lowest incidence of food poverty (lower than other income sources that are not resource based). Interestingly, self-reported hunger and happiness do not closely follow the income trend. Self-reported hunger is lowest for households with livestock and fishing as the main income sources and highest for farming and tourism-dependent households. Non-resource-based households are somewhere in the middle of the spectrum. For overall welfare, fishing-dependent households have a substantially higher happiness score (7.7) than all other categories, with almost a one-point difference from other non-resource-dependent income sources (6.99), tourism (6.94), and farming (6.75). Livestock-dependent house-

Table 3 Test of Hypothesis on Difference between Populations

Hypothesis	p-Value		
	Mean of HH Income	Proportion without Hunger Experience	Mean of Happiness Score
H_o: μ(multiple-income hh) = μ(single-income hh)	0.0000	0.2915	0.0270
H_A: μ(multiple-income hh) [ ] μ(single-income hh)	[>]	[<]	[>]
H_o: μ(main inc:fishing) = μ(main inc:non-fishing)	0.1416	0.0335	0.0134
H_A: μ(main inc:fishing) [ ] μ(main inc:non-fishing)	[<]	[<]	[>]
H_o: μ(main inc:tourism) = μ(main inc:non-tourism)	0.3758	0.4554	0.4923
H_A: μ(main inc:tourism) [ ] μ(main inc:non-tourism)	[>]	[<]	[<]
H_o: μ(main inc:farming) = μ(main inc:non-farming)	0.0000	0.0000	0.0697
H_A: μ(main inc:farming) [ ] μ(main inc:non-farming)	[<]	[>]	[<]
H_o: μ(main inc:others) = μ(main inc:non-others)	0.0000	0.0028	0.3526
H_A: μ(main inc:others) [ ] μ(main inc:non-others)	[>]	[<]	[>]

holds lag behind the rest with an average happiness score of only 6.00.

Tests of hypothesis on the difference between means (for the welfare indicators household income and happiness score) and between proportions (for the welfare indicator vulnerability to hunger) were conducted to determine whether the observed differences in the sample as discussed above were statistically significant and hence relevant for the whole population. Test results presented in Table 3 reveal the following: (1) the higher household income and happiness score of multiple-income households relative to single-income households are statistically significant, but there is no statistically significant difference in the hunger experience of the two subsamples; (2) the happiness score of fishing households is statistically higher than that of non-fishing households, and their hunger experience is statistically lower; (3) tourism-dependent households are not statistically different from the rest in terms of all three welfare measures; (4) farming households have statistically lower income and statistically higher hunger experience, but they are statistically happier than the rest; and (5) households whose main income source is not resource dependent have statistically higher income and statistically lower hunger experience, but their happiness score is not statistically higher than the rest.

Regression Results

To give a fuller picture of factors that contribute to household welfare in this resource-rich municipality, three sets of regression are undertaken: (1) ordinary least squares regression of household income, (2) binary probit regression of the households' vulner-

ability to hunger, and (3) ordered logistic regression of self-reported happiness.

The household income regression (column 2 of Table 4) reveals that indeed multiple income sources significantly raise household income, as also found in the earlier test of hypothesis. The regression results also show that the income of households whose main income source is resource based (fishing, tourism, or farming) is significantly lower than the income of non-resource-based income households. The annual income of households whose main income source is non-resource based is about PhP85,000 higher than that of mainly fishing-dependent households, PhP61,000 higher than that of mainly farming households, and PhP62,000 higher than that of mainly tourism-dependent households.

Table 4 Regression Results: Welfare Factors

	Household Income (Ordinary Least Squares)	Household Missing Meals (Binary Probit)	Happiness Score (Ordered Logistic)
HouseholdIncome	–	–2.02e06***	3.27e-07
Age	1594.68*	–0.0318***	0.0088
Male	–20214.29	–0.0193	–0.4287*
D_Educ_Elem	–11429.61	–0.4563	1.0905**
D_Educ_HighSchool	24049.66	–0.6618*	0.9287**
D_Educ_Vocational	31855.85	–0.7143	0.8295
D_Educ_College	73859.31	–1.3119***	0.8182*
Working	35207.48	0.2153	0.1471
D_ELG_HiligaynonIlonggo	–73479.92*	–0.9111**	0.3023
D_ELG_T'boli	–147039.90***	–0.3226	–0.0823
Years_in_LS	–907.54	0.0123*	–0.0058
HouseholdSize	–	0.1221***	–0.0750
Saving	10076.55	–0.5556***	0.5081***
MultipleIncomeSources	68355.27***	0.1454	0.0979
D_MainIncSource_Fishing	–84592.80***	–0.5189*	0.9909***
D_MainIncSource_Tourism	–62129.51*	0.0545	0.0912
D_MainIncSource_Farming	–61217.43***	0.2200	0.1017
D_MainIncSource_Livestock	–209351.70	–	–0.8196
WithElectricity		–0.3170	0.0167
Mem_Cooperative	59490.60***	0.2917*	0.2061
Mem_EnvironmentOrg		0.2254	0.1680
Mem_WomenOrg		–0.3173**	0.0880
Mem_ChurchOrg		–0.0922	0.2693
Mem_LaborOrg		0.2558	0.6059
Assist_4P		0.1542	–0.3254*
Assist_Senior		0.0426	–0.2592
Assist_OFW		–0.1841	0.4762
Assist_Relatives		0.2831	0.3355
Constant	166809.80**	1.6029*	–
No of observations	489	483	489
F/LR chi2	8.45	161.17	57.1
R2/PseudoR2	0.2337	0.2430	0.0297

Other factors that significantly affect household income are the age of the respondent, ethnolinguistic group, and membership in cooperatives. Households belonging to minor ethnolinguistic groups have higher income than the majority T'boli and the second major group, Hiligaynon-Ilonggo. Older respondents belong to higher-income households. And income of households with membership in cooperatives is about PhP59,000 higher.

The binary probit regression results (column 3 of Table 4) indicate that households with higher income, with an older and more educated head, with fewer members, who are relatively newer in Lake Sebu, with savings and membership in cooperatives are less likely to experience hunger. Households with membership in women's organizations are more likely to miss meals.

The ordered logistic regression (column 4 of Table 4) shows that household income does not significantly affect happiness. Female respondents are found to be happier than male respondents. The coefficients of the dummy variables for levels of education are significantly positive, implying that respondents with some education are happier than those without any education. Interestingly, however, the positive value of the coefficient of the dummy for education level becomes smaller the higher the education level, implying that respondents with more years of education reported slightly lower happiness scores than those with less. Respondents belonging to households with savings and whose main income source is fishing also have a higher reported happiness score. Ironically, households receiving conditional cash transfers (4Ps) from the government appear to be less happy. Literature on the effects of conditional cash transfer in the Philippines has been focused on the education outcomes (change in enrollment rate) and changes in child labor incidence rate as the assistance has been aimed at, and hence availment has been made contingent upon, the children in the household attending school. Past studies have consistently found some improvement in the enrollment rate, particularly among younger children. Ronaldo Frufonga (2015) and Aniceto Orbeta Jr. and Vicente Paqueo (2016) concluded that conditional cash transfer resulted in a decline in the incidence of child labor and an increase in household expenditures on education. Orbeta and Paqueo (2016) specifically found a decline in time spent on paid work of children in the household, while Nazmul Chaudhury and Okamura Yuko (2012) noted that sending older children to school was associated with higher direct (school fees and supplies, transportation costs) and indirect (opportunity) costs—the forgone income of children being sent to school instead of working. The additional burden and responsibilities of sending children to school, while the returns to education may be realized only in the long run, may account for the negative effect of 4Ps on happiness. Finally, none of the social capital indicators, in terms of membership in formal organizations, significantly affects the happiness score.

Conclusions

The findings of the study can be summarized into the following three points.

First, the study suggests mixed implications of abundant natural and cultural resources on the income, livelihood, and happiness of people in Lake Sebu. Nonetheless, insofar as the availability of natural and cultural resources provides more opportunities for income-generating activities, and hence makes possible multiple-income households, abundant resources in Lake Sebu may be considered a blessing and a significant contributor to welfare. Based on population mean/proportion difference test results, multiple-income households have higher income (economic welfare) and self-reported happiness (overall welfare). The OLS regression result indicates that annual income of multiple-income households is higher than that of single-income households by about PhP70,000. Mixed results, however, are obtained when the analysis is done by type of main income source. Households whose main income source is non-resource based have significantly higher economic welfare (higher income and accordingly lower vulnerability to hunger). Among mainly resource-based income earning households, fishing households register higher welfare indicators (in terms of lower vulnerability to hunger and higher happiness score) while farming households register lower welfare in terms of all three indicators. Findings from the KIIs and FGDs provide some explanations for these results. Several fish cage operators appear to also have non-resource-based income sources (such as permanent or contractual work in the local government). The need for regular financial capital for fish cage operations could have made it necessary for fish cage operators to find other sources of income, or it could be that other sources of regular income have made possible engagement in aquaculture operations. Either situation suggests that income benefits from abundant fishing resources (lakes that are highly favorable to aquaculture) can be realized only if there are other sources of income to provide the required financial capital. The low welfare conditions of farming in Lake Sebu, on the other hand, are reflective of general farming conditions in the Philippines. The resource curse appears to apply to farming in Lake Sebu, just like in other places in the Philippines (see, for instance, World Bank 2017). Further, the study reveals that tourism resources in Lake Sebu have not yet yielded significant benefits for residents.

Second, regression analysis of survey data on income and self-reported happiness in Lake Sebu reveals no significant positive relationship between income and happiness, supporting Moses Abramovitz's (1959) skepticism about A. C. Pigou's dictum that "changes in economic welfare indicate changes in social welfare in the same direction, if not in the same degree" (Abramovitz 1959). Easterlin (1974) argues that an increase in income leads to an escalation of human aspirations and thus negates the expected positive

impact on welfare. This is, however, not quite the case for the largely rural, indigenous population of Lake Sebu, who are naturally contented with subsistence income or just having enough to survive, and who have the custom or habit of focusing more on the spirit (the nonmonetary, nonmaterial aspects of life) than the flesh. Along the lines of Easterlin's argument, it may be that the norm of just maintaining subsistence income prevents the escalation of economic aspirations.

Finally, the case of Lake Sebu does not support the hypothesis that social capital matters for happiness. This may be because the social capital variables used in the study are limited to formal associational capital, that is, membership in formal organizations (cooperatives, churches, social and livelihood organizations). Andrés Rodríguez-Pose and Viola von Berlepsch (2014) note that the main drivers of the effects of social capital on happiness appear to be informal social interaction and general social as well as institutional trust, dimensions that unfortunately are not included in this study.

Accepted: November 30, 2020

Acknowledgments

This paper is one of several research papers resulting from a research project titled "The Total Economic Value of the Lake Sebu Natural and Cultural Resources." The research was undertaken with financial support from the Commission on Higher Education (CHED) of the Philippines and research support from the University Research Council (URC) of the Ateneo de Manila University. The authors gratefully acknowledge the excellent research assistance of Ms. Marilyn Palanca, Ms. Kristine Alloro, Mr. Jose Adlai Tancangco, and Mr. Gerome Vedeja, and the enthusiastic participation of survey enumerators and respondents.

References

Abramovitz, Moses. 1959. The Welfare Interpretations of Secular Trends in National Income and Product. In *The Allocation of Economic Resources: Essays in Honor of Bernard Francis Haley*, edited by M. Abramovitz *et al.*, pp. 1–22. Stanford: Stanford University Press.

Asian Development Bank (ADB). 2005. *An Evaluation of Small-scale Freshwater Rural Aquaculture Development for Poverty Reduction*. Manila: Operations Evaluation Department, ADB.

Balco, B. 2012. A Strategic Framework for Mapping Out Employment Opportunities in the Cultural Heritage Sector. Paper presented at the Institute for Labor Studies Forum on Cultural Heritage: Heritage Employment. It's More Fun in the Philippines, Ortigas Foundation Library, Pasig City, July 11.

Bradburn, Norman M. 1969. *The Structure of Psychological Well-being*. Chicago: Aldine.

Bradecina, Raul G. 2014. Economic Valuation of the Caramoan, Camarines Sur Beachscape: An Environmental Services Payment Scheme for Sustainable Ecotourism. *EEPSEA Research Report*

2014-RR3. Los Banos: EEPSEA Philippines Office.

Broad, Robin. 1995. The Political Economy of Natural Resources: Case Studies of the Indonesian and Philippine Forest Sectors. *Journal of Developing Areas* 29(3): 317–340.

Cantril, Hadley. 1965. *The Pattern of Human Concerns*. New Brunswick: Rutgers University Press.

Chaudhury, Nazmul; and Okamura Yuko. 2012. Conditional Cash Transfers and School Enrollment: Impact of the Conditional Cash Transfer Program in the Philippines. *The Philippine Social Protection Note* 6: 1–20.

Cohen, Sheldon; Doyle, William J.; Turner, Ronald B.; Alper, Cuneyt M.; and Skoner, David P. 2003. Emotional Style and Susceptibility to the Common Cold. *Psychosomatic Medicine* 65(4): 652–657. doi: 10.1097/01.psy.0000077508.57784.da.

Coxhead, Ian; and Jayasuriya, Sisira. 2001. Economic Growth, Development Policy and the Environment in the Philippines. Agricultural & Applied Economics Staff Paper No. 430, University of Wisconsin-Madison. doi: 10.22004/ag.econ.12643.

Cruz, Geoffrey Rhoel. 2017. The Cultural Heritage-Oriented Approach to Economic Development in the Philippines: A Comparative Study of Vigan, Ilocos Sur and Escolta, Manila. Paper presented at the 10th DLSU Arts Congress, De La Salle University, Manila, February 16.

Cruz, Wilfredo; and Francisco, Herminia. 1993. Poverty, Population Pressure and Deforestation in the Philippines. Paper presented at a workshop on Economy-wide Policies and the Environment, World Bank, Washington, DC, December 14–15.

Datu, Jesus Alfonso D.; and Lizada, Gabriel Sebastian N. 2018. Interdependent Happiness Is Associated with Higher Levels of Behavioral and Emotional Engagement among Filipino University Students. *Philippine Journal of Psychology* 51(1): 63–80. doi: 10.31710/pjp/0051.01.04.

Diego, Arnel A.; Cerna, Lyle C. de la; and Agdeppa, Joan Y. 2018. Happiness among Selected Filipino Elderly: A Consensual Qualitative Research. *Advanced Science Letters* 24(4): 2611–2615. doi: 10.1166/asl.2018.11017.

Easterlin, Richard A. 1974. Does Economic Growth Improve the Human Lot? Some Empirical Evidence. In *Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz*, edited by P. A. David and M. W. Reder, pp. 89–125. New York: Academic Press. doi: 10.1016/B978-0-12-205050-3.50008-7.

Frufonga, Ronaldo F. 2015. The Pantawid Pamilyang Pilipino Program (4Ps) in Iloilo, Philippines: An Evaluation. *Asia Pacific Journal of Multidisciplinary Research* 3(5), Part 2: 59–65.

Fujisaka, Sam; Sajise, Percy E.; and del Castillo, Romulo A., eds. 1986. *Man, Agriculture and the Tropical Forest: Change and Development in the Philippine Uplands*. Bangkok: Winrock International.

Helliwell, John F.; and Barrington-Leigh, Christopher P. 2010. How Much Is Social Capital Worth? NBER Working Paper No. 16025, National Bureau of Economic Research. doi: 10.3386/w16025.

Helliwell, John F.; and Putnam, Robert D. 2004. The Social Context of Well-being. *Philosophical Transactions of the Royal Society B Biological Sciences* 359(1449): 1435–1446. doi: 10.1098/rstb.2004.1522.

Henderson, Joan C. 2012. Conserving Heritage in South East Asia: Cases from Malaysia, Singapore and the Philippines. *Tourism Recreation Research* 37(1): 47–55. doi: 10.1080/02508281.2012.11081687.

Kahneman, Daniel; and Krueger, Alan B. 2006. Developments in the Measurement of Subjective Well-being. *Journal of Economic Perspectives* 20(1): 3–24. doi: 10.1257/089533006776526030.

Karak, Madhuri. 2019. Is the "Resource Curse" a Myth? *JSTOR Daily*, September 5.

Kiecolt-Glaser, Janice K.; McGuire, Lynanne; Robles, Theodore F.; and Glaser, Ronald. 2002. Psychoneuroimmunology: Psychological Influences on Immune Function and Health. *Journal of Consulting and Clinical Psychology* 70(3): 537–547. doi: 10.1037//0022-006x.70.3.537.

Kummer, David M. 1992. *Deforestation in the Postwar Philippines*. Manila: Ateneo de Manila University Press.

Labadi, Sophia, ed. 2020. *The Cultural Turn in International Aid: Impacts and Challenges for Heritage and the Creative Industries*. New York: Routledge.

Lake Sebu Municipal Planning and Development Office (LSMPDO). 2016. *Lake Sebu Socio-economic and Ecological Profile*. Lake Sebu Municipal Government, South Cotabato.

————. 2015. *Lake Sebu Comprehensive Land Use Plan 2014–2023*. Lake Sebu Municipal Government, South Cotabato.

Little, Ian Malcolm David. 1950. *A Critique of Welfare Economics*. London and New York: Oxford University Press.

Lumontod III, Robinson Z. 2019. The Role of Goal Concordance on Happiness and College Students' Academic Performance. *International Journal of Research Studies in Psychology* 8(1): 63–78. doi: 10.5861/ijrsp.2019.4000.

Management Association of the Philippines – Agribusiness and Countryside Development Foundation (MAP-ABCD). 2016. Seaweed Farming as Exponent of Inclusive Growth: Seaweed Industry Association of the Philippines. www.map-abcdf.com.ph, accessed July 18, 2017.

Medina, Eva Marie S. 2009. The Vigan City Heritage Conservation Program: A Tool for Development. Paper presented at the Penang International Conference on Sustainable Cultural Development, October 8–9.

Mishan, Ezra J. 1968. Welfare Economics. *International Encyclopedia of the Social Sciences*, Vol. 16, pp. 504–512. New York: Macmillan.

Orbeta Jr., Aniceto C.; and Paqueo, Vicente B. 2016. *Pantawid Pamilya Pilipino* Program: Boon or Bane? Philippine Institute for Development Studies (PIDS) Discussion Papers DP 2016-56.

Organisation for Economic Co-operation and Development (OECD). 2011. The Economic Significance of Natural Resources: Key Points for Reformers in Eastern Europe, Caucasus and Central Asia. Paris: OECD.

Orogun, Paul S. 2010. Resource Control, Revenue Allocation and Petroleum Politics in Nigeria: The Niger Delta Question. *GeoJournal* 75(5): 459–507. doi: 10.1007/s10708-009-9320-7.

Palanca-Tan, Rosalina. 2020. Willingness to Pay of Urban Households for the Conservation of Natural Resources and Cultural Heritage in a Neighboring Rural Area: A CVM Study. *Philippine Journal of Science* 149(2): 393–403.

————. 2016. Profile of an Aquaculture-Dependent Community in a Tropical Country. *Journal of Social, Political, and Economic Studies* 41(3): 3–27.

Palanca-Tan, Rosalina; Chico-Almaden, Catherine Roween; Navarro, Kresna; Melendez-Obedencio, Marichu; and Rubio-Sereñas, Caroline. 2018. Total Economic Value of the Cagayan de Oro River Basin. In *Innovation Addressing Climate Change Challenges: Market-Based Perspectives*, edited by Mona Hymel, Larry Kreiser, Janet E. Milne, and Hope Ashiabor, pp. 169–183. Cheltenham: Edward Elgar. doi: 10.4337/9781788973366.00025.

Palanca-Tan, R.; Obedencio, M.; and Serenas, C. 2017. Household Benefits from the Cagayan de Oro River Basin Ecosystem. In *Toward the Future of Asia: Best Papers of the 3rd Asia Future Conference*, edited by Imanishi Junko, pp. 33–40. Tokyo: Japan Book.

Pedrosa III, Alfredo A. 2017. Current Status of Philippine Seaweed Industry. Paper presented at the Regional Scientific Meeting: Attaining Sustainable Development Goals: Philippine Fisheries and Other Aquatic Resources 20/20, SMX Convention Center, Davao City, March 13–14. https://www.nast.ph/index.php/downloads/category/108-day-1-march-13-2017?download=346:4-plenary-2-mr-pedrosa-iii, accessed July 18, 2018.

Peterson, William. 2016. *Places for Happiness: Community, Self, and Performance in the Philippines*. Honolulu: University of Hawai'i Press.

Philippine Statistics Authority (PSA). 2015. Census of Population. https://psa.gov.ph/population-and-

housing/previous-release/2015, accessed December 7, 2019.

Powdthavee, Nattavudh. 2008. Putting a Price Tag on Friends, Relatives, and Neighbours: Using Surveys of Life Satisfaction to Value Social Relationships. *Journal of Behavioral and Experimental Economics* (formerly *The Journal of Socio-Economics*) 37(4): 1459–1480. doi: 10.1016/j.socec.2007.04.004.

Putnam, Robert D. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

————. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton: Princeton University Press.

Reyes, Joseph Anthony L. 2016. Exploring Leisure Time Activities and Sociodemographic Indicators of Subjective Happiness and Self-Perceived Health among Filipinos. *Austrian Journal of South-East Asian Studies* 9(2): 269–288. doi: 10.14764/10.ASEAS-2016.2-6.

Robinson, John P.; and Shaver, Phillip R. 1973. *Measures of Social Psychological Attitudes*. Revised Edition. Ann Arbor: Institute for Social Research, University of Michigan.

Rodríguez-Pose, Andrés; and von Berlepsch, Viola. 2014. Social Capital and Individual Happiness in Europe. *Journal of Happiness Studies* 15: 357–386. doi: 10.1007/s10902-013-9426-y.

Rosario, Westley R. 2008. The Philippines. In *Proceedings of the FAO/NACA Regional Workshop on the Future of Mariculture: A Regional Approach for Responsible Development in the Asia-Pacific Region, Guangzhou, China, 7–11 March 2006*, edited by A. Lovatelli, M. J. Phillips, J. R. Arthur, and K. Yamamoto, pp. 225–240. Rome: Food and Agriculture Organization of the United Nations.

Subade, Rodelio. 2007. Mechanisms to Capture Economic Values of Marine Biodiversity: The Case of Tubbataha Reefs UNESCO World Heritage Site, Philippines. *Marine Policy* 31(2): 135–142. doi: 10.1016/j.marpol.2006.05.012

Tejero, Wilma M. 2014. An Analysis of the Recreational Use Value of Apo Island, Philippines. EEPSEA Research Report 2014-SRG3. Los Banos: EEPSEA Philippines Office.

Tolentino, Marvin N.; and Dullas, Angelo R. 2015. Subjective Well-being of Filipino Farm Children. *International Journal of Research Studies in Psychology* 4(4): 47–60. doi: 10.5861/ijrsp.2015.1265.

World Bank. 2017. *Philippines Mindanao Jobs Report: A Strategy for Mindanao Regional Development*. Washington D.C.: World Bank Publications, World Bank Group. doi: 10.1596/28291.

Yap, Wilfredo G. 1999. *Rural Aquaculture in the Philippines*. Bangkok: Regional Office for Asia and the Pacific, Food and Agriculture Organization of the United Nations.

Local Names of Fishes in a Fishing Village on the Bank of the Middle Reaches of the Kampar River, Riau, Sumatra Island, Indonesia

Nakagawa Hikaru,[1] Osawa Takamasa,[2] Akhwan Binawan,[3] Kurniawati Hastuti Dewi,[4] Hasegawa Takuya,[5] Desti Zarli Mandari,[6] Nofrizal,[7] Wahyu Prasetyawan,[8] and Okamoto Masaaki[9]

Local ecological knowledge (LEK) originates from people's experience interacting with ecological systems in their daily lives. LEK therefore encompasses a variety of information on ecological systems and organisms. Knowing the local names of organisms is vital when collecting information from residents and associating a local name with other LEK. The taxonomic name of a biological species follows rules that were developed in the context of conventional natural science, whereas a local name is typically determined by historical and cultural context within a local human community. We aimed to clarify the relationships between local and scientific names of fishes in the middle reaches of the Kampar River, Indonesia. We investigated local names using a questionnaire survey in a fishing village. The villagers spoke a dialect of Malay used in the Kampar River Basin, and the interviewers were born in the area and were able to speak the dialect. We linked 28 local names of fishes to their corresponding scientific names, including three species that may be extir-

[1] 中川　光, Center for Southeast Asian Studies, Kyoto University; Tropical Peatland Society Project, Research Institute for Humanity and Nature, 457-4 Motoyama, Kamigamo, Kita-ku, Kyoto 603-8047, Japan
Corresponding author's e-mail: hikarunakagawa@icloud.com
https://orcid.org/0000-0001-8908-2011
[2] 大澤隆将, Tropical Peatland Society Project, Research Institute for Humanity and Nature
https://orcid.org/0000-0002-6079-1663
[3] Hakiki Foundation
https://orcid.org/0000-0002-8007-1962
[4] Research Center for Politics, National Research and Innovation Agency (BRIN)
https://orcid.org/0000-0003-2120-9674
[5] 長谷川拓也, Center for Southeast Asian Studies, Kyoto University
[6] Hakiki Foundation
https://orcid.org/0000-0001-9455-3631
[7] Faculty of Fisheries and Marine Science, Riau University
https://orcid.org/0000-0002-9623-1684
[8] Universitas Islam Negeri Syarif Hidayatullah Jakarta
https://orcid.org/0000-0002-6887-1238
[9] 岡本正明, Center for Southeast Asian Studies, Kyoto University

pated species in the local ecological community. More than half of the local names were associated with a scientific name at the genus level or higher. Residents of the settlement closer to the river more often responded with the local names of fishes inhabiting river channels, while those in the settlement farther from the river more frequently responded with the names of fishes that inhabit swamps. Finally, we discuss how information derived from LEK may be useful in ecological conservation even when it is not resolved to the species level.

Keywords: fishing village, folk name, local ecological knowledge, local name, local traditional knowledge, whole house survey

Introduction

Local ecological knowledge (LEK) is knowledge accumulated over a lifetime through observations and hands-on interaction with ecological systems and natural resources, or a cumulative body of local ecosystem knowledge that transcends generations through cultural transmission (Olsson and Folke 2001; Davis and Ruddle 2010; Thornton and Scheer 2012; Berkström *et al.* 2019). LEK includes organism-specific information such as preferred habitat, abundance, behavior, breeding, and seasonal patterns, and it thus contributes enormously to ecosystem conservation, particularly in situations where scientific data are scarce or unavailable, such as in developing countries (e.g., Hamilton *et al.* 2012; Berkström *et al.* 2019) or over historical time scales (e.g., Ogura 2006; Mikami 2008). Local residents are essential to environmental conservation, and combining their LEK with scientific interpretations promotes the success of conservation efforts. A contemporary challenge to achieving sustainable development for local communities and ecosystems is to combine science with local wisdom, but LEK has rarely been shared sufficiently with higher administrative organizations and is seldom reflected in development planning or conservation efforts (Dutton *et al.* 2009; Glaser *et al.* 2010; Satria and Adhuri 2010).

One reason that LEK may be difficult to incorporate in conservation practices is its divergence from the terms and concepts used in conventional natural science. LEK is represented in local languages and formulated within the cultural and historical context of a given human community (Atran 1998; Medin and Atran 2004). LEK is subjective; hence, the ecosystem represented by LEK is not a literal depiction of the environment itself but a reflection of the lived experience and memory of a single or multiple human community members. Despite these hurdles, exploring LEK may confer numerous advantages over data collection using conventional techniques. First, LEK can contribute to the formulation of conservation plans and protection of areas in developing and

developed countries (Baird 2006; Hamilton *et al.* 2012; Thornton and Scheer 2012; Berkström *et al.* 2019). Second, LEK provides long-term, comprehensive information about an environment and represents historical ecosystem dynamics (e.g., Mikami 2008). Third, LEK is related to local resource use; considering humans as part of the environment provides a more holistic depiction of anthropogenic disturbance (e.g., Ogura 2006).

We focused on obtaining the local names of fishes in a fishing village along the middle reaches of the Kampar River in Sumatra. Understanding local names is necessary to collect information on a focal organism from local residents or from existing literature written in a local language, and to associate a local name with other LEK (e.g., Ankei 1989; Castillo *et al.* 2018). The taxonomic description of a biological species and the determination of its scientific name are guided by international codes (i.e., International Code of Zoological Nomenclature, ICZN; International Code of Nomenclature for algae, fungi, and plants, ICN; International Code of Nomenclature of Prokaryotes, ICNP) (Chairman *et al.* 1999; Turland *et al.* 2018; Parker *et al.* 2019) that were developed in the context of conventional natural science, whereas a local name is typically determined by a morphological or behavioral character based on LEK, and the historical and cultural context of the local human community (Johannes 1992; Atran 1998; Medin and Atran 2004; Haggen *et al.* 2007). Therefore, the scientific name of a biological species often does not correspond exactly with the local name used for the species by residents. For a taxon with high species diversity, a local name often relates to a scientific name higher than the species level (i.e., genus or family; e.g., Ankei 1989; Ambali *et al.* 2001; Castillo *et al.* 2018; but see Roberts and Baird 1995). In addition, a single species may have multiple local names that correspond to various body sizes or to ontogenetic stages during which a fish is important to a community's livelihood (e.g., Ankei 1989; Castillo *et al.* 2018). It is therefore crucial to explicitly define the relationships between local and scientific names prior to collecting LEK, especially for conservation practices at the ecological community and ecosystem levels.

Sundaland, which includes Sumatra, Java, Kalimantan (Borneo), and the Malay Peninsula, is a biodiversity hotspot and one of the world's highest-priority regions for ecosystem conservation (Myers *et al.* 2000). In Riau Province of eastern Sumatra, natural forest cover has decreased rapidly since the 1980s due to deforestation by national and international industries (particularly oil palm and pulp), residents, and immigrants from northern Sumatra and Java (Mizuno and Kusumaningtyas 2016; Shimamura 2016). Riparian forest and swamp areas that are often submerged during the rainy season (i.e., floodplains) were typically seen as unsuitable for cultivation and thus were less developed relative to other forest areas, but clear-cutting in these areas has increased since the 2000s (Masuda *et al.* 2016). Floodplains provide critical spawning, rearing, and foraging

habitat for river fishes in tropical regions (Amoros and Bornette 2002; Correa and Winemiller 2014). Therefore, floodplain development presents a serious threat to river health, basin ecosystems, and the sustainability of inland fisheries (e.g., Yustina 2016).

The research site, the village of Rantau Baru, is situated in the middle reaches of the Kampar River approximately 200 km from the river mouth, which runs through eastern Sumatra from west to east. The village is surrounded by floodplain, and riparian areas are typically submerged during the rainy season. In addition, large areas of the riverbanks are covered by peat soil. This floodplain has undergone dramatic changes in the past 20 years. In 1996 a large-scale hydroelectric dam (PLTA Koto Panjang) was constructed in the upper reaches of the Kampar River, which has affected seasonal floods (Ahyani and Desma 2020; Aryani *et al.* 2020). Peat swamps in the research area have been drained since the late 1980s for the development of acacia and oil palm plantations (Shimamura 2016). The drained and dried hinterlands, which were covered by forested peat swamps in the past, now experience frequent fires, and burned areas are often converted to grassland (Shimamura 2016).

We aimed to describe the relationships between scientific and local names of fishes in this area and to understand fish biodiversity in Rantau Baru using questionnaire data. We expected that local fishes would fall into three categories: extant, extirpated, or exotic; hence, we used questions designed to collect this information. We further predicted that the majority of local names would represent a genus or higher taxonomic level and that local names would be biased toward fishes that were easily catchable and/or valuable due to their association with respondents' experiences.

Materials and Methods

Research Site

We administered a questionnaire survey in the administrative village of Rantau Baru, Pangkalan Kerinci Subdistrict, Pelalawan Regency, Riau Province, Sumatra, Indonesia (Fig. 1). A survey by the village office reported that the village was approximately 100 km^2 in area and had approximately 715 residents as of 2018. The main older settlement, Rantau Baru, located on the banks of the Kampar River, had 116 houses (Fig. 1c). This settlement is composed of two administrative sub-villages (Danau Sepunjung and Malako Kecik), but the settlement is customarily called Rantau Baru, the same name as the administrative village. The settlement of Sei Pebadaran is 8 km north of the settlement of Rantau Baru (Fig. 1c); it is a new settlement of 48 houses constructed on hinterland peat soil by the regency government around 2005. At present, tens of immi-

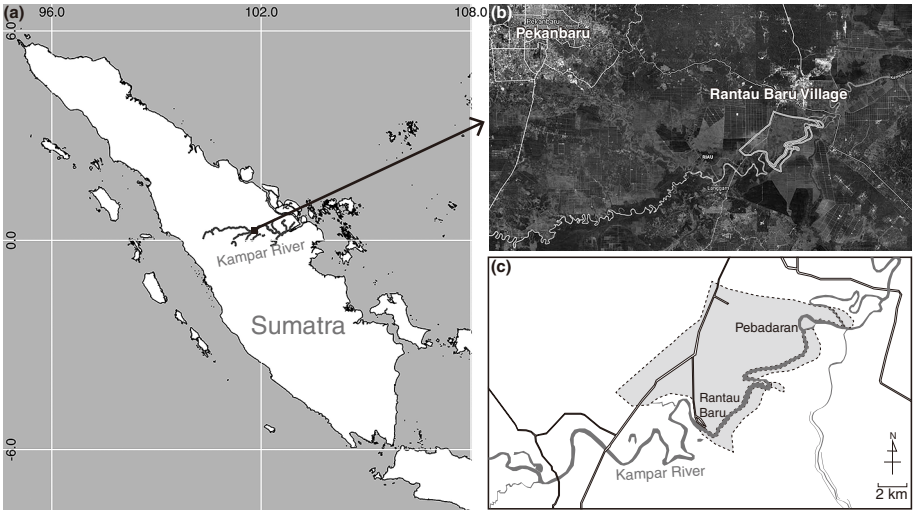

Fig. 1(a) Location of the Village of Rantau Baru

Fig. 1(b) Satellite Image of the Area Surrounding the Village of Rantau Baru (Google Maps, https://www.google.co.jp/maps/, obtained March 19, 2020)

Fig. 1(c) Location of the Settlements of Rantau Baru and Sei Pebadaran

grants from Java and northern Sumatra live in this settlement to work in surrounding oil palm plantations. Based on a preliminary interview with villagers, although *Rantau Baru* means "new settlement," the village is very old, and the details of its history are unknown to the villagers. In general, the settlements of Rantau Baru and Langgam (west of Rantau Baru), which are situated at the confluence of the Kampar Kiri and Kampar Kanan Rivers, are regarded as having the longest history in Pelalawan Regency. It is assumed that the first settlement was established around the confluence, and then people gradually moved downstream. Indeed, the villagers recognize that their ancestors lived in the proto-settlement of Malako Kecik, upstream on the opposite shore of the Kampar River (Fig. 1c), and moved to the present-day village of Rantau Baru at least a few hundred years ago.

The village is typical of fishing villages in the middle reaches of the Kampar River. Almost all households, including those in Sei Pebadaran, fish commercially or for self-consumption in the mainstream Kampar River and its tributaries, as well as oxbow lakes, canals, and swamps near the river. Typical fishing equipment includes fixed traps, gill nets, casting nets, and long lines (Masuda 2012). Local residents hold LEK about the river ecosystem and recognize that the floodplain forests are vital not only as fishing grounds but also as a spawning area (author's observation). Primary and secondary floodplain forests are relatively conserved around the settlement. Except for some

Javanese and Batak migrants, most of the villagers identify themselves as Malay (Orang Melayu). However, this area is in the territory (*hutan tanah wilayat*) of the Talang (Orang Talang) or Petalangan (Effendy 2002; Masuda 2012), whose livelihoods are largely dependent on swidden cultivation and river fishing. While the villagers acknowledge that their ancestors were called Orang Talang, they now prefer to be called Orang Melayu because the words *Talang* and *Petalangan* have negative connotations of "primitive" and "backward" (Effendy 2002; Masuda 2012).

Questionnaire Survey

A questionnaire survey was administered to all 164 houses that had a registered resident living in Rantau Baru between January 27 and February 2, 2020. The interviewers communicated with the villagers in the Malay dialect that is generally used in the Kampar River Basin. From each house, we selected one respondent who was either a head of household (*kepala keluarga* in Indonesian) or their spouse and conducted a structured interview, in which the questionnaire items were set in advance (Gubrium and Holstein 2001). Note that more than one head of household could be living in one house. The gender of respondents was controlled to achieve an approximately even split across all interviews. The interviewers were seven postgraduate students from the Faculty of Fisheries and Marine Science of Riau University and one NGO staff member from Hakiki who were born in Pelalawan Regency and could speak the Malay dialect of the Kampar River Basin. The interviewers and authors communicated with each other in a mix of Indonesian and English. The interviewers were four males and three females. An interviewer visited each house and conducted a face-to-face interview with a respondent. The questionnaire comprised 101 questions designed to obtain basic information about the respondents and their household, their attitude toward conservation of peat swamp forests, their level of participation in local human community activities, their fishery activity, their landownership status, and their income and assets.

With regard to fish names, we asked the following three questions of residents who reported fishing for consumption or commercial purposes:

1. *Tolong tulis jenis-jenis ikan yang anda tangkap dalam 1 tahun terakhir*. (Please write down the names of fishes that you have caught in the past year.)
2. *Apakah ada jenis ikan yang ditangkap di masa lalu, tetapi dalam 5 tahun terakhir tidak ditemukan lagi? Jika ada, tolong tuliskan nama jenis ikan nya (boleh lebih dari satu)*. (Please write the name of a fish that you caught in the past but has not been found in the last five years [may be more than one]).
3. *Apakah ada jenis ikan yang dulu tidak ada namun sekarang ditemukan? Jika ada, tolong tuliskan nama jenis ikan nya (boleh lebih dari satu)*. (Please write the name of

a fish that was not caught in the past but is caught now [may be more than one]). Before the final implementation of the questionnaire, we lectured the interviewers on the interview method and objective of our research. We also conducted two preliminary trials in the village in October and November 2019, in which we interviewed about 10 villagers per trial to improve the questionnaire. While some of the subjects also participated in the final version, there were no notable cases where we redid the analyses and removed data from the subjects. We were careful not to show fish names to respondents during interviews so as to avoid leading questions, and the respondents were free to provide any local names that they knew.

Literature Survey

We performed two English literature and three Indonesian literature searches for fish fauna in the middle reaches of the Kampar River (Fauzi 2004; Fithra and Siregar 2010; Aryani 2015; Efizon *et al.* 2015; Aryani *et al.* 2020) to obtain a reference species list for known fishes from the area surrounding the village of Rantau Baru. We corrected misidentifications and synonymous scientific names in the literature following J. S. Nelson *et al.* (2016) and FishBase (Froese and Pauly 2000). We removed from the list records of fishes that had been identified only to the genus level or higher, with the exception of *Tor* sp., which could not be resolved to species due to taxonomic uncertainty (Pinder *et al.* 2019). We supplemented the list of Indonesian fish names using literature records of fish from sites upstream and downstream of Rantau Baru and from neighboring rivers (the Rokan, Siak, and Indragiri Rivers) (Siregar *et al.* 1994; Tjakrawidjaja and Haryono 2000; Iskandar and Dahiyat 2012; Fahmi *et al.* 2015; Firdaus *et al.* 2015; Lubis and Windarti 2016; Purnama and Yolanda 2016; Yustina 2016).

Collation of Local and Scientific Names

We compiled all of the spelling variations of local fish names that appeared to be caused by variation in pronunciation or listening error (e.g., Kayang, Khayangan, Koloso, and Keloso are combined as the local name Kayangan/Arwana [*Scleropages formosus*]; see Table 1). Hereafter, quotation marks indicate local names obtained from interviews. Note that in this paper we provide the spellings of local names as given by the respondents; thus, in several cases the spelling of a local name does not correspond to Indonesian orthography (e.g., "masin" = asin [in standard Indonesian] = salt; "kucir" = kucil [in standard Indonesian] = small). We then connected local names to scientific names by inferring the Indonesian names of fishes. To evaluate the effect of sampling effort on the number of local names identified, both before and after compiling spelling variations, we created rarefaction curves of the number of local names compared to the number of

Table 1 Scientific, English, and Indonesian Names of Fishes in the Village of Rantau Baru, along with the Local Names and All Their Alternate(s), and the Number of Person(s) Who Reported Each Species in Response to Questions 1, 2, and 3 (Question 1: fishes caught within the last year; Question 2: fishes caught previously that have not been caught within the last five years; Question 3: fishes caught now that were not caught previously).

Order	Family	Species	English Name	Indonesian Name	Local Name	Alternate(s)	Q1	Q2	Q3
Myliobatiformes	Dasyatidae	*Fluvitrygon signifer*	White-rimmed stingray	Pari					
Osteoglossiformes	Osteoglossidae	*Scleropages formosus*	Asian bonytongue	Arowana/Pejang/Taliso	Kayangan/Arwana	Kayang; Khayangan; Koloso; Keloso		10	
	Notopteridae	*Chitala borneensis*	Indonesian featherback	Belida	Belida	Balido	3		
		Chitala lopis	Giant featherback	Belida	Belida	Balido	3		
Clupeiformes	Clupeidae	*Clupeichthys bleekeri*	Kapuas River sprat	Bunga air putih					
		Clupeichthys goniognathus	Sumatran river sprat	Bunga air merah					
	Chirocentridae	*Chirocentrus dorab*	Dorab wolf-herring	Parang-Parang	Ikan Parang	Ikan parang-parang; Ikan paparang; Parang-parang; Paparang; Parang; Pemparang		7	
Cypriniformes	Cyprinidae	*Tor* sp.	Mahseer		Gadi	Ikan gadi; Gadih		4	
		Barbichthys laevis	Sucker barb	Bentulu					
		Barbonymus schwanenfeldii	Tinfoil barb	Lampai/Lampam/Kapiah/ Kapiek	Kapiek	Ikan kepetuk; Kepetok; Kepituk; Kepureh; Kapetuk; Kepetuk	26	1	
		Barbonymus balleroides							
		Barbonymus gonionotus	Java barb	Tawes					
		Albulichthys albuloides		Dara putih	Ikan putih-putih	Ikan putitt; Pitue; Putih	4		
		Puntioplites waandersi		Daro putih	Ikan putih-putih	Ikan putitt; Pitue; Putih	4		
		Puntioplites bulu		Tabingalan/Bulu-Bulu/ Pantau	Pantau/Tabingal		26		
		Puntigrus tetrazona	Tiger barb	Pantau/Ikan Baja/Aji-aji/ Sumatra	Pantau/Tabingal		26		
		Rasbora argyrotaenia	Silber rasbora	Tabingalan/Bada/Pantau	Pantau/Tabingal		26		
		Rasbora rutteni		Pantau/Seluang/Bada	Pantau/Tabingal		26		
		Rasbora tawarensis		Pantau	Pantau/Tabingal		26		
		Rasbora lateristriata	Yellow rasbora						
		Rasbora reticulata							
		Labiobarbus leptocheilus		Luang/Wadon-guang/ Umbu-umbu/Ubut-ubut/ Sisik merah/Malih	Sisik		1		
		Labiobarbus festivus	Signal barb	Ingau/Mali-mali/ Terpayang					
		Labiobarbus ocellatus		Lamba/Mali					
		Labiobarbus fasciatus		Siluang					

		Leptobarbus hoevenii		Jelawat/Jelejer				
		Leptobarbus melanopterus		Petulu				
		Osteochilus kelabau		Kelabau	Kelabau	1		
		Osteochilus vittatus	Bonylip barb/Hard-lipped barb	Lelan Botiong/Paweh/ Nilem/Kelabu/Puyou/ Asang	Pawe	1		
		Osteochilus borneensis						
		Osteochilus microcephalus		Lelan Kunyit/Sibruak				
		Osteochilus schlegelii	Giant sharkminnow	Si buruk				
		Osteochilus pleurotaenia		Lelan				
		Osteochilus waandersii		Puyou				
		Oxygaster anomalura		Sepimping/Seluang ping-ping/Pimpiang	Pon-ping	1		
		Thynnichthys polylepis		Motan Besar Kepala	Motan	5		
		Thynnichthys thynnoides		Motan Siruncing/Lumo	Motan	5		
		Crossocheilus oblongus	Siamese flying fox/ Siamese algae eater	Selimang batu/Lukasla-wat				
		Crossocheilus langei	Red algae eater	Selimang batang				
		Cyclocheilichthys apogon	Beardless barb	Lais Timah/Kaperas/ Sipaku/Sibahan				
		Cyprinus carpio	Common carp	Ikan Mas				
		Epalzeorhynchos kalopterus	Flying fox	Selimang kayu				
		Hampala macrolepidota	Hampala barb	Hampal/Barau/Sebarau/ Sibarau				
		Hampala bimaculata		Dungan				
		Luciosoma trinema		Seluang-juo/Ikan jua				
		Lobocheilos falcifer		Klarii				
	Cobitidae	*Acantopsis octoactinotos*	Long-nosed loach	Awu-awu/Anculong				
		Chromobotia macracanthus	Clown loach					
		Syncrossus hymenophysa	Tiger loach	Ciling-ciling/Langli				
Siluriformes	Claridae	*Clarias batrachus*	Walking catfish	Lele	Lele	Lele kaleng; Lele sawit; Limbek	20	1
		Clarias teijsmanni		Keli/Lele Kembang	Lele	Lele kaleng; Lele sawit; Limbek	20	1
	Bagridae	*Hemibagrus wyckii*	Crystal-eyed catfish	Hinur/Jatisa/Geso	Geso	Baung pilar	2	1
		Hemibagrus nemurus	Asian redtail catfish	Baung rambe	Baung	Ikan baung; Anak baung; Baung kuning; Baung pisane	52	1
		Hemibagrus planiceps		Baung	Baung	Ikan baung; Anak baung; Baung kuning; Baung pisane	52	1
		Mystus nigriceps	Twospot catfish	Ingir-ingir/Baung/ Senggiring/Tundik	Baung	Ikan baung; Anak baung; Baung kuning; Baung pisane	52	1

Table 1 Scientific, English, and Indonesian Names of Fishes in the Village of Rantau Baru, along with the Local Names and All Their Alternate(s), and the Number of Person(s) Who Reported Each Species in Response to Questions 1, 2, and 3 (Question 1: fishes caught within the last year; Question 2: fishes caught previously that have not been caught within the last five years; Question 3: fishes caught now that were not caught previously). —continued—

Order	Family	Species	English Name	Indonesian Name	Local Name	Alternate(s)	Q1	Q2	Q3
		Mystus micracanthus	Twospot catfish	Baung	Baung	Ikan baung; Anak baung; Baung kuning; Baung pisane	52	1	
		Mystus gulio	Long-whiskers catfish	Baung	Baung	Ikan baung; Anak baung; Baung kuning; Baung pisane	52	1	
	Siluridae	*Ompok eugeneiatus*	Malay glass catfish	Silais	Selais	Ikan selais; Kapore; Selais kecir; Silais; Slais; Salais	60		1
		Ompok hypophthalmus		Selais danau/Silais	Selais	Ikan selais; Kapore; Selais kecir; Silais; Slais; Salais	60		1
		Kryptopterus palembangensis		Selais	Selais	Ikan selais; Kapore; Selais kecir; Silais; Slais; Salais	60		1
		Kryptopterus schilbeides		Selais/Silais	Selais	Ikan selais; Kapore; Selais kecir; Silais; Slais; Salais	60		1
		Kryptopterus macrocephalus	Striped glass catfish		Selais	Ikan selais; Kapore; Selais kecir; Silais; Slais; Salais	60		1
		Kryptopterus limpok	Long-barbel sheatfish	Selais janggut/Silais	Selais	Ikan selais; Kapore; Selais kecir; Silais; Slais; Salais	60		1
		Wallago leeri		Tapah/Tapak	Tapah	Tapa	6	1	
		Phalacronotus apogon		Lais Ttimah					
		Belodontichthys dinema		Sengarat/Singarek					
	Pangasidae	*Pangasius pangasius*	Pangas catfish	Patin/Juaro/Jambal	Juaro/Patin	Ikan juaro; Jambal; Ikan patin jambal; Patin keramba; Patin kualo; Patin kuning; Patin kunyit	20	13	4
		Pangasius polyuranodon		Juaro	Juaro/Patin	Ikan juaro; Jambal; Ikan patin jambal; Patin keramba; Patin kualo; Patin kuning; Patin kunyit	20	13	4
		Pseudolais micronemus	Shortbarbel pangasius						
		Pangasianodon hypophthalmus	Striped catfish						
	Loricariidae	*Pterygoplichthys pardalis*	Amazon sailfin catfish	Sapu-sapu	Sapu-sapu/ Indosiar	Ikan sapu-sapu; Ikan indosiar; Ikan terbang			15
Beloniformes	Zenarchopteridae	*Hemirhamphodon chrysopunctatus*		Julung-julung					
Synbranchiformes	Synbranchidae	*Monopterus albus*	Asian swamp eel/Swamp eel/Rice eel/White ricefield eel	Belut	Belut	Bulan-bulan; Blang	22	1	
	Mastacembelidae	*Mastacembelus maculatus*	Freckfin eel	Tilan					
		Mastacembelus notophthalmus		Tilan					

		Mastacembelus unicolor		Tilan					
Perciformes	Cichlidae	*Oreochromis niloticus*	Nile tilapia	Nila	Nila	Ikan nila		1	2
	Pristolepididae	*Pristolepis grootii*	Indonesian leaffish	Sepatung/Katung/Katong					
	Ambassidae	*Parambassis wolfii*	Duskyfin glassy perchlet	Sipongkah					
Gobiiformes	Butidae	*Oxyeleotris marmorata*	Marble goby	Betutu					
Anabantiformes	Helostomatidae	*Helostoma temminckii*	Kissing gourami	Tuakang/Tambakan	Tuakang				
	Osphronemidae	*Osphronemus goramy*	Giant gourami	Gurami/Kalau	Gurami	Kalui	1	1	
		Belontia hasselti	Malay combtail	Selinca	Selincah	Silinca	4		
	Anabantidae	*Anabas testudineus*	Climbing perch	Puyuh/Puyu/Betok/ Puju-Puju	Betik				
	Osphronemidae	*Trichogaster trichopterus*	Three spot gourami	Sepat rawa	Sepat	Sepat siam	10		
		Trichogaster leeri	Pearl gourami	Sepat mutiara	Sepat	Sepat siam	10		
		Sphaerichthys osphromenoides	Chocolate gourami	Sepat batik/Tuwakan	Sepat	Sepat siam	10		
	Chandidae	*Channa striata*	Striped snakehead	Gabus	Gabus	Ikan gabus; Botuik	13	2	
		Channa lucius	Forest snakehead	Bujuk	Gabus	Ikan gabus; Botuik	13	2	
		Channa bankanensis		Bujuk	Gabus	Ikan gabus; Botuik	13	2	
		Channa micropeltes	Red snakehead/Giant snakehead/Indonesian snakehead	Toman	Toman		8		
		Channa pleurophthalma		Serandang					
Pleuronectiformes	Soleidae	*Achiroides leucorhynchos*		Sebelah/Ikan lidah					
	Cynoglossidae	*Cynoglossus microlepis*	Smallscale tonguesole	Lidah-lidah					
Tetraodontiformes	Tetraodontidae	*Pao palembangensis*		Buntal					
Decapoda	Palaemonidae	*Macrobrachium rosenbergii*	Giant river prawn	Udan	Udang	Ulang-ulang	14	1	

respondents and calculated 95% confidence limits using bootstrap resampling with 999 iterations.

Results

We obtained responses from 93% of all households (152/164; male = 74, female = 78). Persons who fished accounted for 77.0% (57/74) of male respondents and 47.4% (37/78) of female respondents. We recorded 38 local fish names following spelling compilation and after removing two names that clearly did not relate to a specific taxon ("Ikan Masin" = salted fish, two cases; "Ikan Pulau" = island fish, three cases) and four names that related to marine fish ("Biang" = *Ilisha elongata*, three cases; "Ikan Kurau" = *Polynemidae* spp., one case; "Janggut" = *Polynemus dubius*, two cases; "Pisang" = *Elagatis bipinnulata*, one case). Our reference species list for the area, compiled from existing literature, included 96 species belonging to 53 genera, 28 families, and 13 orders (Table 1). The number of local names observed did not reach saturation without compilation (Fig. 2a) but did reach saturation at approximately 70 respondents with spelling compilation (Fig. 2b).

We related 28 local names to scientific names of fish taxa known from the area (Table 1). More than half of the local names were related to a scientific name at the genus level or higher and were also related to multiple scientific names at the species level. For example, "Pantau/Tabingal" was associated with multiple species belonging to the genera *Puntioplites* or *Rasbora*. "Baung" referred to multiple species belonging to the genera *Hemibagrus* or *Mystus* and included several alternates, such as "Baung kuning" (1/52 cases in Question 1) and "Baung pisane" (2/52 cases in Question 1), although these alternates could not be connected to scientific names. "Selais" referred to multiple species belonging to the genus *Ompok* or *Kryptopterus*. "Patin" referred to multiple species of the genus *Pangasius*, and respondents often gave several alternates referring to *Pangasius* spp., such as "Juaro" (13/20 cases in Question 1) and "Patin kunyit" (1/20 cases in Question 1), but we could not connect these to scientific names at the species level. "Patin kualo" and "Patin kuning" were named as extirpated species. "Jambal" and "Patin keramba" were named only as exotic species. Several local names such as "Kapore" (="Selais kecir") and "Anak baung" represented a certain body size or an ontogenetic stage. Fourteen local names were obviously related to the scientific name of a species for which no confusable species existed, such as a morphologically very similar species; these were "Kayangan/Arwana" (*Scleropages formosus*), "Ikan Parang" (*Chirocentrus dorab*), "Gadi" (*Tor* sp.), "Pon-ping" (*Oxygaster anomalura*), "Geso" (*Hemibagrus wyckii*),

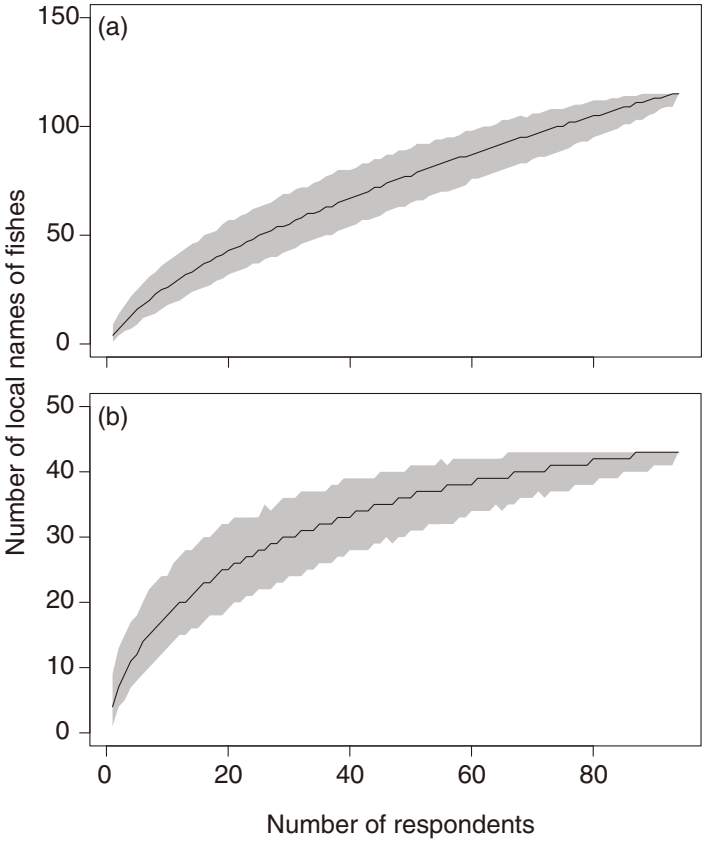

Fig. 2 Rarefaction Curves of (a) Raw Data of the Number of Local Names of Fishes and (b) the Number of Local Names of Fishes Following Spelling Compilation Relative to the Number of Respondents. Lines and gray area show the 50% and 95% confidence limit, respectively, estimated using bootstrap resampling with 999 iterations.

"Tapah" (*Wallago leeri*), "Sapu-sapu" (*Pterygoplichthys pardalis*), "Toman" (*Channa micropeltes*), "Belut" (*Monopterus albus*), "Nila" (*Oreochromis niloticus*), "Tuakang" (*Helostoma temminckii*), "Gurami/Kalau" (*Osphronemus goramy*), "Selincah" (*Belontia hasselti*), and "Betik" (*Anabas testudineus*).

We connected four local names—"Kayangan/Arwana," "Ikan Parang," "Gadi," and "Belut"—to the scientific names of four fish species, i.e., *Scleropages formosus*, *Chirocentrus dorab*, *Tor* sp., and *Monopterus albus*, respectively, which had not been recorded in previous scientific research in the area around Rantau Baru (Fauzi 2004; Fithra and Siregar 2010; Aryani 2015; Efizon *et al.* 2015). The first three of these species were reported as fishes that had been caught in the past but had not been observed in the last five years by respondents (i.e., extirpated). In total, 44 species belonging to 27 genera, 12 families,

and 10 orders that were listed in the reference list for the area could not be associated with a local name. Local names for which we found no counterpart in the scientific nomenclature were "Babarak," "Helang/Olang," "Ikan watang," "Jelapo," "Kapore," "Seban," "Tatukul," "Tepicalan," "Wajang," and "Wora." The majority of known species belonging to Siluriformes (18/21 species) and Anabantiformes (12/12 species) were related to local names, but a number of Cypriniformes (e.g., *Crossocheilus* spp., *Leptobarbus* spp., *Labiobarbus* spp., *Hampala* spp., and Cobitidae) and several minor taxa (e.g., Dasyatidae, Clupeidae, Mastacembelidae, Ambassidae, and Pleuronectiformes) had no known local names.

Respondents reported 16 and 7 local names in response to Questions 2 and 3, respectively (Table 1). Excluding the previously mentioned three species ("Kayangan/Arwana," "Ikan Parang," and "Gadi"), "Patin" (13 cases)—especially its alternates "Patin kunyit" (3 cases) and "Ikan juaro" (2 cases)—was frequently recorded in response to Question 2. "Sapu-sapu" was the most frequent, and "Patin" (4 cases), especially its alternate "Patin jambal" (2 cases), was the second-most frequent response to Question 3.

The taxonomic composition of responses did not differ notably between male and female fishers, with the exception that female fishers referred to the catch of small Cyprinids "Pantau/Tabingal" (15/37) more frequently than did male fishers (11/57). Individuals in Rantau Baru more frequently referred to "Baung," "Juaro/Patin," "Pantau/Tabingal," "Selais," and "Udang," whereas individuals living in Sei Pebadaran more frequently responded with "Belut," "Gabus," "Lele," and "Sepat."

Discussion

While there are various arguments concerning the development process of LEK in relation to conventional scientific knowledge, it is certain that there are differences of language, classification, and context between them (Agrawal 1995; Davis and Ruddle 2010; Thornton and Scheer 2012; Berkström *et al.* 2019). Therefore, when we try to relate LEK to information collected through conventional scientific methods and apply it to the accumulation of scientific ecological knowledge, we must carefully evaluate the accuracy and stringency of LEK from the perspective of conventional scientific methods (Davis and Ruddle 2010; Berkström *et al.* 2019). Despite a relatively small sample, our collection of local names in the present study reached saturation, and we therefore suggest that our sampling effort was sufficient to evaluate LEK of fish diversity, at least in the context of compiled local names based on the structured interview approach. Although a small number of respondents discussed processed and marine fish, the majority of local

names corresponded to fish taxa that are known to currently inhabit or historically have inhabited the area around Rantau Baru. Therefore, we believe that our questionnaire intent was clearly communicated to the majority of respondents.

We aimed to obtain information regarding extirpated and exotic species using Questions 2 and 3, respectively. However, several respondents answered these questions with local names that other respondents commonly reported, such as "Kapiek," "Baung," "Selais," and "Gabus." This may reflect changes in fishing location or equipment used over the past five years or a lack of clear interpretation of the differences among Questions 1, 2, and 3. In an interview scenario, it is challenging to explain, in exact terms, the meaning of extirpated and exotic species in the context of ecology, such as to be defined in a scientific text (e.g., Begon *et al.* 2005), to respondents who have no formal background in ecology. To be clearly communicated, such explanations would need to include explanations of the meanings of species, local populations, and natural distributions in the context of biology as the conventional natural science. Therefore, researchers need to apply appropriate and careful consideration when aiming to understand LEK regarding historical changes in species diversity, including extirpated or exotic invasion (e.g., Lavides *et al.* 2010).

We connected three reported local names to the scientific names of extirpated species in this study: "Kayangan/Arwana" (*Scleropages formosus*) (*Arwana* is a loanword originating from South America; Grenand *et al.* 2015), "Ikan Parang" (*Chirocentrus dorab*), and "Gadi" (*Tor* sp.). These species have not been recorded in the study area since the 2000s, and residents of Rantau Baru indicated that these species previously existed in the middle reaches of the Kampar River. Local residents also recognized several subgroups within "Patin." The spelling of several local names compiled as "Patin" was similar to the scientific name or a synonym of a species belonging to the genus *Pangasius*. We suspect that *Pangasius juaro* (a synonym of *Pangasius polyuranodon*), *Pangasius kunyit*, and *Pangasius djambal* are related to "Juaro," "Patin kunyit," and "Patin jambal," respectively. Interestingly, all three of these species are described as native to Sumatra Island, whereas the local residents defined "Patin kunyit" as the name of an extirpated species and "Patin jambal" as the name of an exotic species. This may reflect temporal changes in the composition of *Pangasius* spp. in the last several years or cross-swapping in local and scientific names due to miscommunication among and between residents and scientists.

We did not identify the scientific names of species belonging to taxa represented by multiple local names in this study. This was because we lacked sufficient photographs and specimens of fishes from the research site and could not confirm local and scientific names using these methods, as other studies have been able to do (e.g., Ambali *et al.*

2001; Castillo *et al.* 2018; Berkström *et al.* 2019). Therefore, the relationships that we report between 28 local names and their scientific counterparts reflect a highly conservative result; we expect to build upon this as scientific research progresses at the study site. Additionally, we assumed that the local names given by respondents during interviews reflected their own personal experiences. Therefore, it was likely that the responses may have been biased toward fish that were valuable or easily obtained by the respondents. Indeed, the local names of several taxa that are bottom dwelling and small in size, such as *Crossocheilus* spp., Cobitidae, Ambassidae, and Pleuronectiformes, were not reported in our survey. In addition, while the local name of the stingray (*Fluvitrygon signifer*) was not reported, we heard Rantau Baru villagers refer to caught ones as "Pari."

The lack of some fish names clearly shows the limitation of our research method using fixed questions. To comprehend the entire LEK of fish names in the village, the data should be complemented with additional qualitative field research (Baird 2006). Nevertheless, there are some advantages to the quantitative data obtained using a structured questionnaire. First, the data represent the representative fish names that the villagers remember immediately. The data are associated with the villagers' images of fish and fishing and may encompass gaps in the fish fauna that a conventional scientific investigation will reveal, which are important for planning conservation efforts in collaboration with the villagers (Baird 2006; Hamilton *et al.* 2012; Thornton and Scheer 2012; Berkström *et al.* 2019). Second, quantitative data from a structured questionnaire are attained relatively easily in other villages and can be compared among villages. Statistical comparative analyses among some villages in terms of the fish names and villagers' images provide a macro map of fish distributions and villagers' images of resource use, which are important complementary data to the qualitative data obtained in detailed field research. It would be fruitful to compare the Rantau Baru data with data from not only other Petalangan or Malay settlements in Pelalawan Regency but also Malay settlements in Kalimantan and the Malay Peninsula in general.

In cases where a large number of local names refer to multiple fish species, caution must be used when applying LEK data to mathematical or statistical analyses that presume species-level identification. For example, models of population dynamics most often assume that inputs reflect monitoring data from a single species (e.g., Beverton 1994), and species diversity indices are typically applied to presence–absence or abundance data obtained from recognized species or detailed operational taxonomic units (e.g., Hill *et al.* 2003). However, qualitative data from LEK remain useful in ecosystem conservation even when species-level resolution is not available, especially in scenarios where research data are insufficient or non-existent. For example, we found differences in the content of reports of local names between the settlements of Rantau Baru and Sei

Pebadaran. Respondents in the former typically responded with the local names of fishes inhabiting river channels or oxbow lakes, whereas those in the latter typically responded with the local names of fishes that prefer swamp habitats. This may reflect the location of the settlement of Sei Pebadaran, which is far from the main stem of the Kampar River relative to the settlement of Rantau Baru, as are the typical habitats where its inhabitants fish (i.e., swamps and small channels). Several previous studies in estuaries and coastal areas have aimed to gain information about habitats, spawning sites, and seasonal patterns of major fishery species from fishers' LEK (e.g., Knutsen *et al.* 2010; Hamilton *et al.* 2012; Berkström *et al.* 2019). We suggest that this approach is also effective in inland fisheries such as those at our research site.

Accepted: December 15, 2020

Acknowledgments

We thank villagers in the Rantau Baru village for the warm understanding and the kind cooperation to our research. This research was supported by Research Institute for Humanity and Nature (RIHN: a constituent member of NIHU) Project No. 14200117.

References

Agrawal, A. 1995. Dismantling the Divide between Indigenous and Scientific Knowledge. *Development and Change* 26(3): 413–439. doi: 10.1111/j.1467-7660.1995.tb00560.x.

Ahyani, R. F.; and Desma, H. 2020. Disaster Education to Increase Family Resilience (Community Based Participatory Action Research on Post Flood Reconstruction Phase). Proceedings of the 5th International Conference on Education in Muslim Society ICEMS 2019: 30 September–01 October 2019, Jakarta, Indonesia. doi: 10.4108/eai.30-9-2019.2291125.

Ambali, A.; Kabwazi, H.; Malekano, L.; Mwale, G.; Chimwaza, D.; Ingainga, J.; Makimoto, N.; Nakayama, S.; Yuma, M.; and Kada, Y. 2001. Relationship between Local and Scientific Names of Fishes in Lake Malawi/Nyasa. *African Study Monographs* 22(3): 123–154. doi: 10.14989/68206.

Amoros, C.; and Bornette, G. 2002. Connectivity and Biocomplexity in Waterbodies of Riverine Floodplains. *Freshwater Biology* 47(4): 761–776. doi: 10.1046/j.1365-2427.2002.00905.x.

Ankei, Y. 1989. Folk Knowledge of Fish among the Songola and the Bwari: Comparative Ethnoichthyology of the Lualaba River and Lake Tanganyika Fishermen. *African Study Monographs* 9(1): 1–88. doi: 10.14989/68349.

Aryani, N. 2015. Native Species in Kampar Kanan River, Riau Province Indonesia. *International Journal of Fisheries and Aquatic Studies* 2(5): 213–217.

Aryani, N.; Suharman, I.; Azrita, A.; Syandri, H.; and Mardiah, A. 2020. Diversity and Distribution of Fish Fauna of Upstream and Downstream Areas at Koto Panjang Reservoir, Riau Province, Indonesia. *F1000 Research* 8: 1435–1451. doi: 10.12688/f1000research.19679.2.

Atran, S. 1998. Folk Biology and the Anthropology of Science: Cognitive Universals and Cultural Par-

ticulars. *Behavioral and Brain Sciences* 21(4): 547–569. doi: 10.1017/S0140525X98001277.

Baird, I. G. 2006. Conducting Rapid Biology-Based Assessments Using Local Ecological Knowledge. *Natural History Bulletin of the Siam Society* 54(2): 167–175.

Begon, M.; Townsend, C. R.; and Harper, J. L. 2005. *Ecology: From Individuals to Ecosystems*. Hoboken: Wiley-Blackwell.

Berkström, C.; Papadopoulos, M.; Jiddawi, N. S.; and Nordlund, L. M. 2019. Fishers' Local Ecological Knowledge (LEK) on Connectivity and Seascape Management. *Frontiers in Marine Science* 6: Article 130. doi: 10.3389/fmars.2019.00130.

Beverton, R. J. H. 1994. *Notes on the Use of Theoretical Models in the Study of the Dynamics of Exploited Fish Populations*. Beaufort: Marine Fisheries Section, American Fisheries Society.

Castillo, T. I.; Brancolini, F.; Saigo, M.; Correa, J. R.; and Baigún, C. R. M. 2018. Ethnoichthyology of Artisanal Fisheries from the Lower La Plata River Basin (Argentina). *Journal of Ethnobiology* 38(3): 406–423. doi: 10.2993/0278-0771-38.3.406.

Chairman, W. D. L. R.; Cogger, H. G.; Dupuis, C.; Kraus, O.; Minelli, A.; Thompson, F. C.; and Tubbs, P. K. 1999. *International Code of Zoological Nomenclature*. London: International Trust for Zoological Nomenclature.

Correa, S. B.; and Winemiller, K. O. 2014. Niche Partitioning among Frugivorous Fishes in Response to Fluctuating Resources in the Amazonian Floodplain Forest. *Ecology* 95(1): 210–224. doi: 10.1890/13-0393.1.

Davis, A.; and Ruddle, K. 2010. Constructing Confidence: Rational Skepticism and Systematic Enquiry in Local Ecological Knowledge Research. *Ecological Applications* 20(3): 880–894. doi: 10.1890/09-0422.1.

Dutton, I. M.; Djohani, R.; Sastrapradja, S. D.; and Dutton, K. M. 2009. Balancing Biodiversity Conservation and Development in Eastern Indonesia. In *Working with Nature against Poverty: Development, Resources and the Environment in Eastern Indonesia*, edited by B. P. Resosudarmo and F. Jotzo, pp. 125–146. Singapore: Institute of Southeast Asian Studies. doi: 10.1355/9789812309600-012.

Effendy, T. 2002. The Orang Petalangan of Riau and Their Forest Environment. In *Tribal Communities in the Malay World: Historical, Cultural and Social Perspectives*, edited by G. Benjamin and C. Chou, pp. 364–383. Singapore: Institute of Southeast Asian Studies. doi: 10.1355/9789812306104-017.

Efizon, D.; Putra, R. M.; Kurnia, F.; Yani, A. H.; and Fauzi, M. 2015. Keanekaragaman jenis-jenis ikan di Oxbow Pinang dalam desa Buluh Cina Kabupaten Kampar, Riau [Diversity of fish species in Pinang oxbow lake in Buluh Cina village, Kampar Regency, Riau]. Prosiding Seminar Antarabangsa Ke 8: *Ekologi, Habitat Manusia dan Perubahan Persekitaran* 2015: 23–46.

Fahmi, M. R.; Ginanjar, R.; and Kusumah, R. V. 2015. Keragaman ikan hias di lahan gambut Cagar Biosfer Bukit-Batu, Propinsi Riau [Diversity of ornamental fishes in Bukit-Batu Peatlands Biosphere Reserve, Riau Province]. Prosiding Seminar Nasional Masyarakat Biodiversitas Indonesia 1: 51–58.

Fauzi, M. 2004. Struktur komunitas ikan sungai Kampar yang dipengaruhi perubahan massa air akibat bendungan PLTA Kotopanjang [The structure of the Kampar River fish community affected by changes in water mass due to the Kotopanjang hydropower dam]. *Jurnal Perikanan dan Kelautan* 9: 47–60.

Firdaus; Pulungan, C. P.; and Efawni. 2015. A Study on Fish Composition in the Air Hitam River, Pekanbaru, Riau Province. *Jurnal Online Mahasiswa Fakultas Perikanan dan Ilmu Kelautan Universitas Riau* 2(1): 1–14.

Fithra, R. Y.; and Siregar, Y. I. 2010. Keanekaragaman ikan sungai Kampar inventarisasi dari sungai Kampar Kanan [Fishes biodiversity of Kampar River, an inventory from Kampar Kanan River]. *Ilmu Lingkungan Journal of Environmental Science* 2(4): 139–147.

Froese, R.; and Pauly, D., eds. 2000. *FishBase 2000: Concepts, Designs and Data Sources*. Los Baños:

ICLARM.
Glaser, M.; Baitoningsih, W.; Ferse, S. C. A.; Neil, M.; and Deswandi, R. 2010. Whose Sustainability? Top-Down Participation and Emergent Rules in Marine Protected Area Management in Indonesia. *Marine Policy* 34(6): 1215–1225. doi: 10.1016/j.marpol.2010.04.006.
Grenand, P.; Chapuis, J.; Cognat, A.; Christinoi, A.; Davy, D.; Grenand, F.; Jégu, M.; Keith, P.; Martin, E.; Nemo, F.; Pagezy, H.; and Le Bail, P. Y. 2015. Revision of Vernacular Names for the Freshwater Fish of French Guiana. *Cybium* 39(4): 279–300. doi: 10.26028/cybium/2015-394-005.
Gubrium, J. F.; and Holstein, J. A. 2001. *Handbook of Interview Research*. Los Angeles: Sage Publications. doi: 10.4135/9781412973588.
Haggen, N.; Neis, B.; and Baird, I. G. 2007. *Fishers' Knowledge in Fisheries Science and Management*. Paris: UNESCO.
Hamilton, R.; de Mitcheson, Y. S.; and Aguilar-Perera, A. 2012. The Role of Local Ecological Knowledge in the Conservation and Management of Reef Fish Spawning Aggregations. In *Reef Fish Spawning Aggregations: Biology, Research and Management*, edited by Y. S. de Mitcheson and P. L. Colin, pp. 331–369. Berlin: Springer. doi: 10.1007/978-94-007-1980-4_10.
Hill, T. C. J.; Walsh, K. A.; Harris, J. A.; and Moffett, B. F. 2003. Using Ecological Diversity Measures with Bacterial Communities. *FEMS Microbiology Ecology* 43(1): 1–11. doi: 10.1111/j.1574-6941.2003.tb01040.x.
Iskandar, J.; and Dahiyat, Y. 2012. Keaneka ragaman ikan di sungai Siak Riau [Diversity of fish in the Siak River, Riau]. *Bionatura-journal Ilmu-ilmu Hayati dan Fisik* 14: 51–58.
Johannes, R. E. 1992. *Words of the Lagoon: Fishing and Marine Lore in the Palau District of Micronesia*. Berkeley: University of California Press.
Knutsen, J. A.; Knutsen, H.; Rinde, E.; Christie, H.; Bodvin, T.; and Dahl, E. 2010. Mapping Biological Resources in the Coastal Zone: An Evaluation of Methods in a Pioneering Study from Norway. *AMBIO: A Journal of the Human Environment* 39: 148–158. doi: 10.1007/s13280-010-0023-6.
Lavides, M. N.; Polunin, N. V. C.; Stead, S. M.; Tabaranza, D. G.; Comeros, M. T.; and Dongallo, J. R. 2010. Finfish Disappearances around Bohol, Philippines, Inferred from Traditional Ecological Knowledge. *Environmental Conservation* 36: 235–244.
Lubis, Efawani; and Windarti. 2016. Re-inventarisasi jenis ikan di sungai Sail anak sungai Siak kota Pekanbaru–Riau [Re-inventarisation of fishes in the Sail River, Pekanbaru Regency, Riau Province]. *JOM Faperi* 3: 1–10.
Masuda Kazuya 増田和也. 2012. *Indoneshia mori no kurashi to kaihatsu: Tochi wo meguru tsunagari to semegiai no syakaishi* インドネシア 森の暮らしと開発——土地をめぐる〈つながり〉と〈せめぎあい〉の社会史 [Livelihoods and developments in Indonesian forest: Socio-history of cooperation and conflict of land use]. Tokyo: Akashi Shoten.
Masuda, K.; Mizuno, K.; and Sugihara, K. 2016. A Socioeconomic History of the Peatland Region: From Trade to Land Development, and Then to Conservation. In *Catastrophe and Regeneration in Indonesia's Peatlands: Ecology, Economy and Society*, edited by K. Mizuno, M. S. Fujita, and S. Kawai, pp. 148–184. Singapore: NUS Press; Kyoto: Kyoto University Press.
Medin, D. L.; and Atran, S. 2004. The Native Mind: Biological Categorization and Reasoning in Development and Across Cultures. *Psychological Review* 111(4): 960–983. doi: 10.1037/0033-295X.111.4.960.
Mikami, T. 2008. Climatic Variations in Japan Reconstructed from Historical Documents. *Weather* 63(7): 190–193. doi: 10.1002/WEA.281.
Mizuno, K.; and Kusumaningtyas, R. 2016. Land and Forest Policy in Southeast Asia. In *Catastrophe and Regeneration in Indonesia's Peatlands: Ecology, Economy and Society*, edited by K. Mizuno, M. S. Fujita, and S. Kawai, pp. 19–68. Singapore: NUS Press; Kyoto: Kyoto University Press.
Myers, N.; Mittermeier, R. A.; Mittermeier, C. G.; da Fonseca, G. A. B.; and Kent, J. 2000. Biodiversity

Hotspots for Conservation Priorities. *Nature* 403: 853–858. doi: 10.1038/35002501.

Nelson, J. S.; Grande, T. C.; and Wilson, M. V. H. 2016. *Fishes of the World*. Hoboken: Wiley.

Ogura Junichi 小椋純一. 2006. Mori to sogen no rekishi 森と草原の歴史 [The transition of grassland area in Japan]. *Kyoto Seika Daigaku Kiyo* 京都精華大学紀要 [Journal of Kyoto Seika University] 30: 160–172.

Olsson, P.; and Folke, C. 2001. Local Ecological Knowledge and Institutional Dynamics for Ecosystem Management: A Study of Lake Racken Watershed, Sweden. *Ecosystems* 4: 85–104. doi: 10.1007/s100210000061.

Parker, C. T.; Tindall, B. J.; and Garrity, G. M. 2019. International Code of Nomenclature of Prokaryotes. *International Journal of Systematic and Evolutionary Microbiology* 69(1A): S1–S111. doi: 10.1099/ijsem.0.000778.

Pinder, A. C.; Britton, J. R.; Harrison, A. J.; Nautiyal, P.; Bower, S. D.; Cooke, S. J.; Lockett, S.; Everard, M.; Katwate, U.; Ranjeet, K.; Walton, S.; Danylchuk, A. J.; Dahanukar, N.; and Raghavan, R. 2019. Mahseer (*Tor* spp.) Fishes of the World: Status, Challenges and Opportunities for Conservation. *Reviews in Fish Biology and Fisheries* 29: 417–452. doi: 10.1007/s11160-019-09566-y.

Purnama, A. A.; and Yolanda, R. 2016. Diversity of Freshwater Fish (Pisces) in Kumu River, Rokan Hulu Distinct, Riau Province, Indonesia. *Aquaculture, Aquarium, Conservation and Legislation* 9(4): 785–789.

Roberts, T. R.; and Baird, I. G. 1995. Traditional Fisheries and Fish Ecology on the Mekong River at Khone Waterfalls in Southern Laos. *Natural History Bulletin of the Siam Society* 43: 219–262.

Satria, A.; and Adhuri, D. S. 2010. Pre-existing Fisheries Management Systems in Indonesia, Focusing on Lombok and Maluku. In *Managing Coastal and Inland Waters: Pre-existing Aquatic Management Systems in Southeast Asia*, edited by K. Ruddle and A. Satria, pp. 31–55. Berlin: Springer. doi: 10.1007/978-90-481-9555-8_2.

Shimamura, T. 2016. An Overview of Tropical Peat Swamps. In *Catastrophe and Regeneration in Indonesia's Peatlands: Ecology, Economy and Society*, edited by K. Mizuno, M. S. Fujita, and S. Kawai, pp. 123–147. Singapore: NUS Press; Kyoto: Kyoto University Press.

Siregar, S.; Putra, R. M.; and Sukendi. 1994. Fauna ikan di perairan sekitar bukit Tigapuluh Seberida, Sumatera [Fish fauna in the waters around Tigapuluh Seberida, Sumatra]. In *Rain Forest and Resource Management: Proceedings of the NORINDRA seminar*, edited by O. Sandbukt and H. Wiriadinata, pp. 67–70. Jakarta: Indonesian Institute of Science (LIPI).

Thornton, T. F.; and Scheer, A. M. 2012. Collaborative Engagement of Local and Traditional Knowledge and Science in Marine Environments: A Review. *Ecology and Society* 17(3): Article 8. doi: 10.5751/ES-04714-170308.

Tjakrawidjaja, A. H.; and Haryono. 2000. Keanekaragaman jenis ikan di areal penambangan gambut Perawang dan sekitarnya, kabupaten Bengkalis-Riau [Fish diversity in peat mining area of Perawang and its surroundings, Bengkalis Regency, Riau]. Prosiding Seminar Nasional Keanekaragaman Hayati Ikan, 6 Juni 2000: 55–60.

Turland, N. J.; Wiersema, J. H.; Barrie, F. R.; Greuter, W.; Hawksworth, D. L.; Herendeen, P. S.; Knapp, S.; Kusber, W. H.; Li, D. Z.; Marhold, K.; May, T. W.; McNeill, J.; Monro, A. M.; Prado, J.; Price, M. J.; and Smith, G. F. 2018. *International Code of Nomenclature for Algae, Fungi, and Plants (Shenzhen Code) Adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. Regnum Vegetabile 159. Glashütten: Koeltz Botanical Books. doi: 10.12705/Code.2018.

Yustina. 2016. The Impact of Forest and Peatland Exploitation towards Decreasing Biodiversity of Fishes in Rangau River, Riau-Indonesia. *International Journal of Applied Business and Economic Research* 14(14): 1043–1055.

Activists in Transition: Progressive Politics in Democratic Indonesia

THUSHARA DIBLEY and MICHELE FORD, eds.
Ithaca and London: Cornell University Southeast Asia Program Publications, 2019.

For its sheer size and diversity, Indonesia is a country that the world cannot simply ignore. Containing the world's fourth-biggest population and the largest number of Muslim adherents, being among the 20 most important economies, an exporter of many primary and manufactured products, and one of the planet's most biodiverse countries, everything it does now and in the future will continue to have significant international impact. At the same time, global developments in the struggles for, attainment of, transformations, and modifications in the experiences and meanings of democracy ineluctably affect Indonesia. *Activists in Transition: Progressive Politics in Democratic Indonesia* collects thought-provoking studies on the democratization movement in Indonesia from the New Order to the present. In the wake of Suharto's downfall in 1998, the world is watching how Indonesians themselves are charting a democratic path toward peace, progress, and prosperity compared to the authoritarian model of a developmentalist state it implemented for three decades.

The volume's editors, Thushara Dibley and Michele Ford, provide a directional introduction by defining the terms "social movements" and "democratization," explaining the nuance of the concept "progressive," strongly connecting social movements of various progressive groups and the process of democratization. They show how these movements propel democratization itself and how they engage with a newly democratized and democratizing state, and then the authors outline the stages of democratic struggles since the New Order. It is critical that the editors identify the problem of stagnation since the peaceful transfer of power in 2004. In so doing, they open to us the idea that "democracy" is not an achieved political form of government and social order, but instead a process that may experience setbacks and even reversal.

All the chapters present the historical development of each movement, explaining the twists and turns in their social struggles and charting the shifting course of progressive politics in the wake of Suharto's downfall. Key patterns are observable in progressive politics: the meeting of indigenous conceptions of rights and welfare, and relevant international developments (i.e., defini-

tions of disability and sexual minority, progressive and conservative politics cultivated from education and travel abroad, strategies and tactics shared by affiliated foreign organizations); the New Order's clampdown of potential rival political organizations (especially religious and labor groups); democratization's opening to all kinds of social forces (including conservative formations); Indonesia's move toward political decentralization as posing challenges to more comprehensive, national, and radical social changes; and the difficulties, promises, and perils of electoral politics.

The first chapter by Yatun Sastramidjaja explains the pivotal role of the student movement in the nation's history, from the 1966 Generation that helped entrench the Suharto dictatorship to the 1998 Generation that toppled it. Different organizations had different politics; however, they all assumed the role of the "political vanguard" in social struggles, anchoring on the supposed "moral force" of students untarnished by politics in the sense of actual involvement in governance. The next chapter by Elisabeth Kramer, on the anti-corruption movement, tackles the campaign to make the government transparent and accountable by "bringing political elites to justice." It shows us the difficulty of elite durability through and after *reformasi*, as they have clobbered the democratic institutions set up to hold them responsible.

Teri Caraway and Michele Ford's chapter presents a critical counterpoint to elite dominance in regime change in their discussion of the labor movement and democratization—a crucial topic considering the renewed liberalization of the economy in the post-authoritarian era characterized by intensifying attacks on workers' rights. However, while unions have successfully attained some political and economic rights, the absence of a worker's political party in Indonesia precludes more significant and long-term reforms for the labor sector. Iqra Anugrah tackles the case of agrarian politics and the peasant question with an identification of how the "structural inequality in the ownership of, and access to, land" (p. 83) remains the most critical issue after the New Order. What instead occurs is the preponderance of micro and small efforts for "individual economic empowerment through inclusion in market citizenship" (p. 86) and the lingering absence of comprehensive agrarian reform in natural-resources-rich Indonesia.

Ian Wilson's focus on "everyday politics" and "defensive forms of action" makes his chapter on urban poor activism in contemporary Jakarta the book's most fascinating one. The urban poor's "encroach[ment] on services, utilities, and space otherwise denied them" and "us[age] or appropriate[ion] of state-owned land" constitute everyday forms of resistance by the little people which social movements harness into wide-ranging programs of action that will systematically institutionalize their right to the city. Here, the failures of legalist approaches, clientelist politics, and election dependency demonstrate the challenge of realizing the political power of the urban poor themselves. Nevertheless, the same lesson applies to all the other sectoral and cause-oriented movements.

According to Greg Fealy's chapter on progressive Islamic politics, Indonesia's secular world is turned upside down. While the brutal New Order was amiable to liberal Islam, the post-

authoritarian dispensation witnesses increasing attacks against progressive Muslim personalities and organizations. Conservative and orthodox Islamic organizations that Suharto had weakened returned and, revitalized by the democratic process, are now aggressively contending for political power, pushing back secular reforms toward a more "purist" or "fundamentalist" Indonesia.

This conservative or anti-liberal turn in what is hitherto perceived as "moderate" Indonesia proved to be agonizing for the women's and gay and lesbian movements. The term "political" was considered "dirty" by New Order politics (p. 30), in the same way that "liberal" became taboo in religious politics since democratization (p. 129). In Rachel Rinaldo's chapter on the women's movement, we see how vital gains on the issue of domestic and sexual violence, pornography, sex outside marriage, rights to one's body, and a more gender-equal society are being reversed by democracy's (inadvertent) empowerment of conservatism. In Hendri Wijaya and Sharyn Graham Davies' chapter, democracy's promise of equality for lesbian and gay groups remains unfulfilled because of the conservative backlash that propagates hatred against them and institutionalizes the repression of sexual minorities through laws and social regulations. However, both works draw attention to how the two movements confront misogyny and homophobia by mobilizing for the social and legal recognition of diversity, human rights, and identity politics. Developing progressive interpretations of Islamic texts and a historical understanding of traditional queer practices in the country are imperative for the people to understand the "women" and "gay and lesbian" questions in contemporary Indonesia.

Thushara Dibley illustrates how the plight of the disabled or, some would say, the "differently-abled" was ameliorated when a social, not a medical, definition was adopted to understand their condition. Here, the problem lies more in implementing measures that would make life easier and more inclusive after passed laws. As a way of moving forward, Edward Aspinall concludes the book by pointing to the challenges of clientelism, informality, and competing claims and countermovements in democratizing Indonesia. The task is to move from a "*particularistic* social order" to "one based on *ethical universalism*."

We may glean several lessons from the authors' discussions. First, while sectoral organizations "exploit the electoral vulnerability of incumbents" (p. 70), the problem of political representation always raises the question of cooptation by the elite that dominates electoral politics. Participating in electoral politics might lead to the subsumption or dilution of their demands in alliance or coalition politics, notwithstanding the lucrative and, therefore, "dirtying" enmeshment with traditional politics. Second, whereas decentralization ideally grants freedom and flexibility to provinces and districts and promises greater citizen participation in decision-making, it is also seized by, and has eventually benefited, the conservatives who are more organized and politically influential at the local level. Third, non-government organizations thrive in social struggles and are even encouraged by democratization, but it remains to be seen whether they truly broaden and deepen grassroots social movements. Is the rift between "professionalization" and "radicalization"

an enduring one for social movements? How do international funding arrangements rework the approaches and aims of different social and political organizations? Finally, there will always be the trouble of organizational divisions along ideological and political lines. Setting aside differences for agreements on wider calls should be done because it is difficult to contest long-term elite interests as opposed to the ever-transforming goals of social movements.

The book stirs up many questions. How will progressive politics address democracy's unleashing of the conservative forces of society? Is liberalism the only way for democracy considering its radicalizing effect on the other sides? Can democracy be developed, thought of, felt, and experienced apart from the conditions of the "free market"? Are there other forms of democracy? How can Indonesia's rich history of social struggles (its particularities)—especially its indigenous conceptions and practices of pedagogy, land and labor value, sexualities, and multidimensional human abilities—continue to inform social movements worldwide (the universal) progressively? How should Indonesians (and the world) confront the specter of communism haunting movements across the political spectrum in light of the persistent calls for justice for those abused, imprisoned, tortured, and extrajudicially murdered in the wake of "October 1965"? Progressive politics can only be progressive if it first realizes that democracy is a moving target. In a nutshell, democratization is a never-ending struggle.

JPaul S. Manzanilla
Department of International Studies, De La Salle University Manila

Places for Happiness: Community, Self, and Performance in the Philippines

William Peterson
Honolulu: University of Hawai'i Press, 2016.

An early transnational experience of witnessing cultural dances from the Philippines, through his late Filipino American boyfriend whose life was cut short by a pandemic in the early 1980s in San Francisco, was what spurred William Peterson to write *Places for Happiness: Community, Self, and Performance in the Philippines*. To understand those dances from and in their autochthonous places, Peterson, an American performance studies scholar based in Australia, conducted years of research in the Philippines—the provenance of the dances that piqued his early scholarly interest in studying Filipino bodies in performance. Since 2001, along with the diasporic dances he first saw, which Philippine dance practitioners refer to as "folk" dances, he studied the *sinakulo* (a play about the life and Passion of Jesus Christ), the Aliwan festival, and political acts of theater activist Mae Paner whose stage name is "Juana Change" in Manila; the Moriones festival on the island of Marinduque; and the Ati-atihan festival in Kalibo, Aklan on Panay island. Peterson astutely argues that these

public performances, together with folk or traditional dances, constitute and are constituted by the fluidly complex nature of a Filipino nation or *bayan*.

As much as Peterson's work gestures towards a "nation," he articulates from the get-go the delimitation of his study. That it is confined in specific areas in Luzon and the Visayas, within the Tagalog and Visayan cultures, and does not include the large island of Mindanao and the string of islands comprising the Sulu Archipelago in the southern Philippines. These latter two are rich sites for studying expressive cultures of Muslim Filipinos, *lumad* (indigenous) population, and groups of Ilocanos, Cebuanos, and Visayans, who migrated to Mindanao starting in the 1930s, to seek greener pastures. *Bayan* is therefore not determined by language and geography's material contours, but is indexed by the many significations embodied performances Peterson studied in Luzon and the Visayas deploy every time they are re-enacted, staged, memorialized, created, and activated to form a community.

The book is topically divided between religious processions and Passion plays observed during the Lenten season and "street dancing" festivities that bring hundreds, even thousands, of participants to coalesce as one dancing and music-making organism. Peterson organizes these two seemingly disparate groups of public phenomena to bifurcate in such a manner where they are not exclusive from each other, but whose theoretical boundaries and research methodologies flow from and with each other. What ties them together is Peterson's lifelong passion for politics, performance, and religion—a trifecta in his scholarly work and ethnographic research.

The first three chapters center on *sinakulos* and the Moriones festival in Boac, Marinduque. Chapter 1 focuses on three kinds of *sinakulos*: the "traditional" *sinakulo* of San Roque, Barangka Ibaba in Mandaluyong City in Manila; the "civic-based" *sinakulo*, which unlike the first kind, is for a wider public and is almost always sponsored by powerful politicians and economic elite, with the Moriones festival as one such example; and the "activist" *sinakulo* Al Santos' *Kalbaryo ng Maralitang Tagalungsod* (Calvary of the Urban Poor) performed around Manila and Manila's Mobile Theater's *Martir sa Golgota* (The Martyr of Golgotha) under the artistic directorship of movie and theater personality, Lou Veloso. The next chapter is an exposition of the "Body of Christ," of the willingness and desire of believers and penitents in the Tagalog-speaking region to experience pain and suffering to be intimately connected to Christ in fulfillment of their *panata* (religious promise). Chapter 3 is Peterson's careful ethnography of the Moriones festival in Boac, a nationally renowned event where *morions*, dressed and wearing masks as Roman soldiers, roam the streets during Holy Week. The festival's highlight is a re-enactment of the story of Longinus, the half-blind, unknown soldier who stabbed with his lance the side of Christ on the cross—a narrative that Carmencita Reyes (the then congresswoman and later governor of Marinduque until her death) revised to draw tourism and as an expression of her power.

The last three chapters are on "folk" and "folk-inflected" dances. Chapter 4 is a critical explanation as to why folk dancing gained much traction in the Philippines' nationalism efforts in

the middle of the twentieth century; it examines the pioneering contributions of Francisca Reyes-Aquino in the research, teaching, and dissemination of this dance form. It also delves into the Bayanihan, the national dance company of the Philippines that has become the exemplar of how to choreograph folk dances for theater, with a recall of their being catapulted to the international stage in the wake of their successful participation at the 1958 Brussel's World Exposition. Following this chapter is Peterson's phenomenological experience attending in 2009, 2010, 2012, and 2014 the Ati-atihan. This is a festival in Kalibo, the capital town of the province of Aklan, annually celebrated in January to honor the Santo Niño (Holy Child Jesus) and the indigenous *atis*, a dark-skinned indigenous population who are considered as the putative ancestors of the Filipinos. Here he encountered a transcendence of time and an emplacement of local culture—in his body that participated for hours and hours in the street dancing called *sadsad* with the Motuses, the family that "adopts" him and welcomes him to their house every time he is in Kalibo. Chapter 6 is about the Aliwan Festival, a national "street-dancing" extravaganza that brings to Pasay City, in the Star City Park adjacent to the Cultural Center of the Philippines, which is the brainchild of the infamous Imelda Marcos, award-winning contingents in provincial festivals throughout the country. With a beauty contest as a highlight and a parade of spectacular floats standing in for different provinces, participating contingents vie for the grand prize of one million pesos—their competitive, trained bodies become embodiments of what Peterson calls "bayan-in-action" in the context of Aliwan, a newly invented, corporate-sponsored event. To conclude, Peterson zeroes in on the crucial role "Juana Change" (Mae Paner's alter ego) played in the 2010 election in support of Benigno S. Aquino III's presidential candidacy and his eventual winning as the country's 15th President. With writing partner Rody Vera, Paner originally came from PETA, a theater group known for its activist, social consciousness, and anti-Marcos works. Peterson in this final chapter brings out the notion of the "personal is political" and of Paner's and Vera's performance advocacy as an extension of the concept of *bayan*. In this enlarged concept, Peterson includes within its ambit alternative change and, following Catherine Diamond, "communities of imagination."

Striated across the book is Peterson's application of Mihaly Csikszentmihalyi's "flow" and the Filipino understanding of *kapwa* (self) as developed by Virgilio G. Enriquez, F. Landa Jocano, and Father Dionisio M. Miranda. Attendant to *kapwa* is the concept of *loob* (interiority) and *labas* (exteriority) that are in constant interaction with each other, that the self is about being with others, a unique confluence Peterson witnessed and experienced as an "outsider" while doing fieldwork in the Philippines. His third concept is *bayan*, a capacious Tagalog word that could mean a town, community, district, or even a nation. Following Edward Casey, following Maurice Merleau-Ponty, *bayan* for Peterson does not simply refer to a location, but is also about embodying a place—a kind of embodiment corporeal experiences and memories instantiate. Thus, while the dancers, musicians, penitents, and actors present in his book are performers imbued with the ability to bear communal identities and their own specificities, they are also "placelings" capable of bringing into

their bodies the places where they have elected to perform outside the quotidian.

These three concepts are the major theoretical frames that help form the crux of his study that is "happiness"—a state of being emerging out of and generated by performances that practitioners nourish by annually repeating them either as close to the original as possible or with intended alterations. As a responsible ethnographer, Peterson in his choice of theories to employ is sensitive to the politics of citationality. He provides importance to scholars in the country where he conducts research. For him, the Philippines is not simply a source of ethnographic materials to investigate, query, and write about, but also a wellspring of theories undergirding his scholarly project.

Reviewing this book during the Covid-19 pandemic is a reminder of the importance of liveness in performative acts and of being consistently present physically in an ethnographic endeavor that spans many years. This global upheaval has turned upside down the very lives of practitioners, who populate his book, and has dramatically altered and even halted the ways in which the community-based and traditional or folk-inspired performances he ethnographically investigated, are now being held.

On May 28, the Bayanihan had culminated its first-ever, two-week *sayaw* (dance) workshop online to children and dance enthusiasts. In a June 8 interview via Zoom call, Suzie Benitez, Bayanihan's executive director, stated that the online technology has made it possible for workshop participants from Manila and Cebu and from Sydney, Australia and Toronto, Canada—diasporic places with high concentrations of Filipino immigrants, in complete opposite on the globe hemisphere, with markedly different time zones—to come together to learn folk dances from the Bayanihan. That workshop made it possible for the attendees and their teachers, core members of Bayanihan, who before the pandemic would trot the world representing the Philippines in dance festivals, to form a temporary virtual dance community.

After all, the Tagalog word, *bayanihan* means a "community working together towards a common goal"; and in the case of this world-renowned dance company, of a community dancing together to bring pride to the Filipino nation and to keep alive the rich Filipino culture by staging for the contemporary theater Philippine traditional dances. However, Benitez added that synchronous learning, which she terms as "flexible," cannot be on a par with performing dances face-to-face, embodying them side-by-side with each other, and gaining tacit knowledge through the very act of dancing and making present one's non-digital body to perform with others.

As much as Peterson's book is a testament to the irreplaceability of body-to-body interaction in transmitting expressive culture and about anchoring cross-cultural discourses in "being there," borrowing from Sarah H. Davis and Melvin Konner (2011), it is as well a powerful reminder of the need to intersect socio-cultural and politico-historical dynamics that are at play in any performance practice one has elected to investigate. Peterson conducts his study vis-à-vis the Philippines' political context, colonial past, the practice of corruption, and cacique democracy (quoting Benedict

Anderson), and modern principalia (as informed by Dante C. Simbulan) that have governed lives of Filipinos since the Spanish colonial period, have produced the privileged *mestizo* class, and have led to extreme economic disparity.

His discussion of politics is erudite. An example is his making sense of the fall of the Ferdinand and Imelda Marcos' dictatorship, the staggering corruption during their heyday that gave them global notoriety, and the rise to power of Benigno S. Aquino III as the country's president. President Noynoy or Pnoy, as popularly referred by Filipinos and the Philippine media, is the son of the late President Corazon Aquino, the housewife of the slain Ninoy Aquino, the archenemy of the Marcoses, whose death became the spark that ignited the 1986 People's Power revolution. This unprecedented outpouring of anger by the Filipino people, who gathered by hundreds of thousands on EDSA, a major artery connecting Quezon City to Makati, installed overnight Cory, as she was fondly called, as the country's 11th President. The People's Power forced the Marcoses to go into exile in Hawai'i—ending two decades of ironclad governance and dizzying, unconscionable excesses.

Such are the many pithy contextualizing in Peterson's book, demonstrating splendidly that through an array of performance practices one can come to terms with how the personal becomes political, the ways in which folklorized religion, nationalism, and regional identities are embodied, and how a deep sense of enjoyment leads to "time out of time" as Alessandro Falassi (1987) formulated it, and to becoming members of a Filipino nation or *bayan*. Indeed, to experience "happiness," as Peterson describes, could be via performance's "flow"; and being *in situ* physically and diachronically remains a fodder for the ethnographic mill.

Patrick Alcedo
Department of Dance, York University

References

Benitez, Suzie. 2021. Personal interview. Manila, Philippines (via Zoom), June 8.

Davis, Sarah H.; and Konner, Melvin, eds. 2011. *Being There: Learning to Live Cross-Culturally*. Cambridge, MA: Harvard University Press.

Falassi, Alessandro, ed. 1987. *Time Out of Time: Essays on the Festival*. Albuquerque: University of New Mexico Press.

The Spirit Ambulance: Choreographing the End of Life in Thailand

Scott Stonington

Oakland: University of California Press, 2020.

The Spirit Ambulance: Choreographing the End of Life in Thailand aims to understand how people achieve making death good within the increasingly common global coexistence of Western biomedicine with other ways of approaching death. Specifically, this book describes the "choreography of good death" in northern Thailand, that is, how people arrange actions and resources dynamically in the flow of time to make death (hopefully) good in a specific context (p. 18), based mainly on medical anthropological fieldwork of the mid-2000s carried out in provincial government hospitals.

One of important strengths of this book is Stonington's inclusion of his own experiences in biomedicine. His fieldwork was implemented as part of his MD/PhD training while at medical school in the United States. He described experiencing a "whiplash" from his toggling between his medical training in the US and his ethnographic research in Thailand. By comparing these two worlds within the book, the author invites readers to focus both on the particularities and universalities of death (p. 19).

The phases of dying in northern Thailand are set out in *The Spirit Ambulance*. The "status quo" process of dying can be divided in two phases. Chapter 1 deals with the first phase involving aggressive medical care in the hospital. Here, there are two imperatives for family members of the dying. One involves paying back the "debt of life (*nii chiiwit*)," rooted in the relationship between body, spirit, and family—arising from the blood given by parents at the creation of a body. In present-day northern Thailand, high-tech medical care is the means used to repay this debt. Family members may try to get their dying elders to receive better and more aggressive medical treatments in hospital—regardless of the latter's prognosis or chances of a cure, and even if they may wish to go home.

The second imperative is to give elders "heart-mind energy (*hai kamlang cai*)" that animate their thinking and feeling selves in order to calm their mind and keep their body healthy. Protecting dying elders' *kamlang cai* can mean concealing the truth about their illness so as to mitigate the dangerous risk of shocking them (with the truth) and draining *kamlang cai*—the result of which might be their sudden decline and death. As such, most families in northern Thailand withhold the full extent of the elder's diagnosis and prognosis from them. Stonington, who studied many patients during his research in northern Thailand, found that they were kept ignorant of their medical condition for the duration of their illness. This runs contrary to what is practiced in the US, where patients are told the truth about their state of health based on their right to know.

Governed by these two imperatives, people in northern Thailand embody and act out different roles in the choreography of death. For instance, family members perform the role of "children" whose duty is to repay the "debt of life" they owe their elders for their gift of birth. In turn, the

dying elders acknowledge their duty to maintain their own *kamlang cai*, by remaining in a state of not-knowing (or partly knowing) about their own illness, and moving toward death without jeopardizing or shortening their lives.

Chapter 2 explores the second phase of dying, that is, "the last phase of life" that begins when medical staff and family members recognize that an elder's death is imminent. The central issue then becomes about when and where the elder will take their last breath, because one's place of death is partly responsible for the quality of their rebirth. In northern Thailand, people regard withdrawing life support in the home as ethical, and not so if in the hospital. This is because each place is a different ethical location inhabited by a different set of spirts and thus different ethical forces. Hospitals may be good for the purposes of saving lives and repaying the debt of life, but are not considered to be an ethical choice for a place to die—being amoral, dangerous, devoid of ceremonial history, and haunted by spirits. Rather, homes—imbued with ethical power from a history of beneficial ceremony and moral family life—are the ideal place of death to optimize an elder's rebirth. Families can use the "spirit ambulance" to transport elders on the brink of death from hospitals back to their homes to take their final breath. This chapter also describes successful and failed cases of families who balance the dual desires to pay back the debt of life at the hospital as well as to ensure their dying elder can take their last breath at home.

The author next describes how the famous monk, Buddahadasa, had died after spending many weeks in an ICU, despite having clearly stated that he did not want hospital care. This is followed by Chapter 3, where Stonington examines the new phase of dying, commonly referred to in English as "end-of-life." This phase emerged from public debates surrounding the problematizing of Buddahadasa's death, and relating to the social ills in Thai society such as consumerism and technology-worship. End-of-life, as a locus for societal improvements, offered an alternative approach—one shaped by broader ideas ranging from palliative care to human rights discourse; from conflicts around self-determination to the role of religion in daily life (p. 130). Today, this new end-of-life phase has become an additional imperative in the choreography of death in northern Thailand.

In this new approach, the period before death is regarded as an important opportunity for an individual's transformation and growth. This is modeled on the ethical figure of the "seeker of wisdom"; one who faces the truth and can therefore ascend the hierarchy of spiritual achievement. To achieve such self-transformation, the dying person must face the truth of their own illness and untie "*pom* (knot)," the heart of the specific problem to be solved. However, this approach is not applicable to everyone. Those who do not have a "high level of mind (*cit radap suung*)" risk the deadly consequences of truth-telling—the decline of *kamlang cai*. And only those who have a high degree of *cit radap suung* may be assured of their ability to face the truth and walk the path of spiritual advancement.

Chapter 4 discusses the choreography of severe illness, examining mainly how people in

northern Thailand conceive of and relate to their tumors or failing organs. The author encountered many individuals who regarded their severe illness as a "karma master (*cao kam naai ween*)," a moral being from the past that enters the present to resolve an old grievance (p. 133). His informants described their karma master not only as a being to which they needed to relate, but also as one that had become part of them. They therefore thought of themselves as an assemblage of multiple beings that have formed a collective. The self, consisting of multiple components, can be treated as independent at times and as part of a unified whole at others. It is also interesting how Stonington's informants related with their karma master as moral beings that were partly self and partly other. They did not fight against them or cut them out to save their body, but instead attempted to improve their relationship with them by treating them with loving-kindness and asking their forgiveness. The author considers such interactions with their karma master as their process to heal "ethical wounds"—fundamentally relational rather than individual interactions.

End-of-life discourse, which used to take place mainly in developed countries, has since the 1990s gradually increased in Southeast Asia. However, there are still few ethnographic studies that attempt to approach the lived experiences of the dying and their families based on intensive fieldwork (cf. Iwasa 2013). *The Spirit Ambulance*, describing vividly how northern Thai people struggle with choreographing different imperatives and resources in the precarious process of dying, is—as far as I am aware—the first monograph-length ethnography about end-of-life in Southeast Asia.

I especially appreciate the examination of the "new end-of-life" in this book. To date, many end-of-life discussions in the Asian region tend to be static and monolithic. They are often influenced by the Occidentalist gaze that portrays "Asian values" such as familism and Buddhism in opposition to "Western values" such as individualism and Christianity. Under such a tendency, the emergence of the "new end-of-life" in Thailand—which embraces truth-telling and self-determination—may be regarded as the "simple arrival" of biomedical expertise based on Western values. Stonington, however, succeeds in presenting "new end-of-life" through a different lens—as dynamically born out of a complex ecosystem overlapping global expertise, national politics, and religious practice. This fresh approach will be of great help in examining current situation end-of-life discussions and practices, not only in Thailand but also in other Southeast Asian countries.

There are some topics not covered in this book as well. One is concerning "cultural differences" of choreographing good death. The author does mention that diverse ethnic minorities including the Hmong, Karen, and Tai-Yai use provincial hospitals (p. 2), but there is little discussion of how they use hospitals in their dying process. If cases showing the differences of choreography of good death among ethnic minorities were presented, readers could have arrived at a more complex picture of end-of-life in northern Thailand.

However, in general, *The Spirit Ambulance* is undoubtedly an ethnography of fine quality, offering vivid descriptions of the realm of end-of-life in contemporary Thailand. I hope many

people read this book and enjoy experiencing "whiplash" as I did.

Iwasa Mitsuhiro 岩佐光広
Faculty of Humanities and Social Sciences, Kochi University

Reference

Iwasa Mitsuhiro. 2013. Aging and Dying in a Rural Lowland Area of Laos: A Consideration of Creating a "Good Death" Together. In *The Anthropology of Aging and Well-being Searching for the Space and Time to Cultivate Life Together* (Senri Ethnological Studies 80), edited by Suzuki Nanami, pp. 123–142. Osaka: National Museum of Ethnology, Japan.

Fashionable Traditions: Asian Handmade Textiles in Motion

Ayami Nakatani, ed.
Lanham: Lexington Books, 2020.

The idea of tradition has been challenged frequently since Eric Hobsbawm and Terence Ranger's seminal work in 1983. This volume of 14 essays is based on studies of textiles from India, Japan, and Indonesia, and illuminates some of the factors influencing changes in production and consumption, whose forms and meanings have been more or less rooted in the past. Processes explored include those dubbed "heritagization," "fashionization," "souvenirization," and "traditionalization" —awkward words which have come into being to explain complex phenomena. As with all volumes resulting from collating several different studies, there are considerable variations in approach, with a range of different disciplines supplying the tools of analysis. The result is impressive, and the book presents an extraordinarily varied and dynamic picture of resilience and creativity as well as, in some cases, marginalization and decline.

The volume begins with a chapter from Willemijn de Jong considering how weavers in the island of Flores in eastern Indonesia react to shifts in trade and fashion, and how aspects of handwoven clothing move from being viewed as traditional to fashionable and back again. Weavers not only seek inspiration from their surroundings, but are also both acutely aware of their markets and responsive to external forces. Designs are reinterpreted and need to be seen through the lens of fashion and a regional kind of modernity, of which tradition is a part.

Among the Hmong of Yunnan in China, ideas of fashion play into the longstanding practice of dressing in new clothes at New Year. Miyawaki Chie explains that where once a woman might spend all year elaborately embroidering an outfit to impress and attract others, now she can buy a ready-made ensemble. In the past, the home-embroidered items of clothing made for New Year were later worn "for best," then became everyday wear until they were worn out and finally used

as rags; this progression is now redundant. But the drive to adhere to the norms of group identity while at the same time demonstrating novelty and style is still in play.

The long international history of the pashmina shawl is addressed by Monisha Ahmed. The goats' hair used in the shawls was traded for centuries between the Changpa of the upper reaches of the Himalayan and Karakoram mountains and Kashmiri weavers. Conflict, colonialism, and changing political relationships have had their impact on the trade; designs changed and responded to challenges in the market and to the taste of consumers. Ladakh has found a niche market for its own versions.

The role of UNESCO in "heritagization" is introduced in Nakatani Ayami's contribution, with particular reference to textiles from West Timor in eastern Indonesia. The listing of particular products as part of the cultural heritage of particular groups has ironically coincided with or perhaps resulted in traditional cloth-making—once embedded in the local context of social relations and ritual practices—becoming a group activity primarily for the purposes of income generation. Government subsidies and supplies of new materials contributed to design innovations, and textiles may now represent different identities.

In Tamil Nadu, as Aarti Kawlra has found, the introduction of new technologies has allowed some entrepreneurs to introduce iconic imagery from authorized local heritage discourse into high-quality handweaving, "theme saris." The image of handweaving as a static tradition is challenged, the products expressing modernity, local heritage and, through the use of valuable materials worked by skilled artisans, high status.

Moon Okpyo's contribution begins with a meticulous examination of the development of the Nishijin silk-weaving industry, which adopted chemical dyes and European jacquard looms in the nineteenth century while still successfully maintaining its identity as a traditional industry. This was achieved through the retention of the system whereby different family businesses were responsible for different stages of the production process, allowing them to adjust and adapt to a succession of challenges. By the late twentieth century, however, these challenges had become almost overwhelming. State designation systems which might be employed to try to protect the industry under the banner of cultural heritage would be likely to raise prices and alienate existing customers. Heritagization, observes Moon, is a double-edged sword.

Kanetani Miwa's chapter, on the preservation of wisteria fiber textile-making in Kyoto, describes a relatively unusual phenomenon in which a local textile practice has been taken up by enthusiasts from outside the area. Partly because of the availability of the materials in the original place of manufacture, and partly because of the desires of these new practitioners, the skills of the craft are studied and passed on to others in the mountain district where it once flourished. While UNESCO discourse identifies communities as having a key role in safeguarding intangible cultural heritage, this case study raises questions about the nature of that "community."

Some of the many factors at play in sustaining textile practices and influencing the turns they

take are explored in Sugimoto Seiko's chapter looking at *tsumugi* kimono in Japan. *Tsumugi* was customarily woven using yarn extracted from floss silk, once considered inferior to reeled silk yarn because of its uneven texture and lesser sheen. Taken up by the publishing industry and linked to the Mingei (Folk Crafts) Movement, *tsumugi* has from time to time flourished when hand-made cloth has been marketed as more desirable than machine-made. This chapter, focusing on the role of fashion magazines, suffers more than others in the volume through an almost total lack of visual illustration.

Kubota Sachiko's study looks at the arts–crafts dichotomy in aboriginal women's weavings in Australia. Perceptions of these have shifted from a "craft" to "art" framework. Kubota's account describes the involvement of missions in the development of this work and initiatives to employ craft for income generation. Gender divisions in the types of product made have been reflected in differences in price, where weavings were accorded a lower value than bark paintings, for example, largely a male activity, which have been seen as explaining aboriginal attitudes to land. The interest of auction houses and the international art world is touched on, though the power relations entailed are not explained. In the end, this piece describes the shift in evaluation of aboriginal weaving but offers little in terms of explanation.

Two enterprises form the focus of Susan Rodgers' chapter on ikat in Bali—one business which meshes "dimensions of imagined heritage with up-to-date often internationalized fashion trends"; and another that seeks to "preserve village traditions" while alleviating village poverty. Rodgers laments both to different degrees and in different ways. The products of the business "Nogo" are made from pieces of *endek* cloth, hand-decorated with the *ikat* process but woven on semi-mechanized looms and used for modern globalized products. Their products evoke timelessness but the products themselves are fashionable, timely. "Threads of Life" markets high-quality, hand-crafted heritage art to well-off outsiders to help village women in outlying areas to generate an income while maintaining quality. Ethnic and island origins foregrounded in marketing hark back to an imagined past. Here aesthetics are emphasized over social structural elements of ritual cloth use. Rodgers suggests that indigenous voices are being left out—it would be interesting to find out through fieldwork whether this is indeed so.

Two chapters focus on textiles in Gujarat. Michele A. Hardy discusses changes in the context in which embroidery is produced by the Mutwa, a Muslim community of Muldhari (herdsmen) in Kutch. Development initiatives in the area following the Bhuj earthquake, particularly but not exclusively tourism, have led to changes in products and designs, and affected gender balance and involvement. The Rann Utsav festival in particular has eroded cultural identity and disrupted gender roles. While embroidery survives, it has lost its previous cultural significance, specifically in expressing important aspects of women's lives.

The Mata ni Pachedi dyed textiles of Gujarat produced for goddess rituals, especially in the city of Ahmedabad, were described and explained in terms of their production and use in the 1970s

and 1980s. Ueba Yoko, who has now looked also at the production of this type of cloth for visitors and collectors, considers how and why producers have adjusted their methods of production for these two different markets. Cloths made for local ritual use may be silk-screened and may use chemical dyes in an expanded color range. For these customers, the depiction of the goddess and her attributes is key. While their use may be "traditional," the production methods need not be. Those buying the cloths for "aesthetic appreciation"—rather than ritual—seek what they see as traditional methods: color applied by pen (*kalam*) or woodblock, and natural materials such as myrobalan for tannin and alizarin mordant dyes. Collectors and tourists believe they are buying something authentic. So where does authenticity lie?

In the tourist towns of Anatolia in Turkey, where sales of handwoven rugs have declined, a new trend has emerged: patchwork rugs. Tamura Ulara explores how these "light" versions of traditional rugs (in terms of impression, weight, maintenance, and price) represent a "fashionalization" of handwoven carpets. They are reconfigurations of old rugs for the export rug industry. Old unwanted carpets are bleached, overdyed, their surfaces trimmed, then cut into fragments and stitched together. Following on from the development and then decline of the carpet restoration business, this process resulted in a worldwide trend in the early twenty-first century. Sellers have an ambivalent attitude, lamenting the stagnation in the market for handmade traditional rugs but relying on this trend to survive. The Internet was essential in making these patchwork rugs globally available. A further development—dubbed an example of "fast-fashionalization"—is the production of imitation patchwork carpets.

In the final chapter of this volume, Aoki Eriko chose to look at the way handwoven textiles are used in a part of Flores where handweaving is not undertaken. Here the deep embedding of textile production in social structures observed by anthropologists in textile-producing areas is not found, though textiles do feature in gift exchange. They are appraised in a different way in such villages. Aoki argues that they have a degree of significance which could be explored using different theoretical stances, though this reader remained unconvinced.

For anyone interested in the changes taking place where hand-made textiles are produced, this book offers a range of insights into the processes at work. The authors have all produced intelligent, thoughtful studies that are well worth reading. Taken together, they provide a picture of artisans responding to the rapid social, political, and environmental circumstances in which they find themselves. A multitude of questions are raised, though answers are harder to find. Reluctantly I have to point out two major defects. The first, common to so many academic publications, is the lack of illustrations. Authors and editors need to recognize the need for images in their studies, and publishers need to recognize the important role of visual explanations in work of this nature and in this disciplinary area. Second, there was a need for a native speaker of English with good editorial skills on the production team. Several chapters suffer markedly from this absence. Overall, however, the book makes a valuable contribution to knowledge about the interplay between

"tradition" and "fashion" in textile production in the modern world.

Fiona Kerlogue
SOAS Centre of Southeast Asian Studies, University of London

Origins and Evolution of Environmental Policies: State, Time and Regional Experiences

TADAYOSHI TERAO and TSURUYO FUNATSU, eds.
Cheltenham and Northampton: Edward Elgar Publishing, 2021.

Since the 1990s, the Institute of Developing Economies (IDE)—one of the established social-science research centers in Japan specializing in studies of developing countries—has initiated various collaborative research projects relating to environmental problems and policies in Asia and other regions (Terao 2013). The research results have been regularly published through research reports, articles in scholarly journals, books, and other publication forms, but many of them are written in Japanese. Hence, not all the knowledge and insights accumulated through these projects have been shared with global readers who are concerned with environmental issues in developing countries. To fill this gap, *Origins and Evolution of Environmental Policies* clearly shows the scholarly achievements obtained through the IDE's research projects over the past decade on environmental policy formation in East and Southeast Asia.

The volume raises two research questions: Why were appropriate measures not taken until industrial pollution and environmental problems became so serious?; and Why were the possible measures not fully implemented, even though the problem had existed for a long time and possible measures were known? (p. x). Through case studies, the author of each chapter carefully examines the process of environmental policy formation, particularly in the early stage, and identifies major structural factors that have hindered the pursuing of effective environmental policy and administration in the country. Four case studies in East and Southeast Asia are provided: environment pollution and health policy in China (Chapter 3); air pollution control policy in Taiwan (Chapter 4) and Thailand (Chapter 5); and water management in Southeast Asia (Chapter 6). The volume also includes the case of the United States (Chapter 7) and Germany (Chapter 8), aiming for comparative analyses between developed and developing countries.

There are three approaches this book has adopted to analyze environmental policy formation in East and Southeast Asia. First, it takes a path dependence approach that stresses the historical backgrounds of policies. The basic idea is that "newly formulated policies are often framed by existing public policies" (p. 4). Second, it compares the formulation process of environmental policy between developed and developing countries. Finally, it emphasizes on the role of the state

in the success or the failure of environmental policy formation. These approaches distinguish the volume from many other scholarly works on environmental governance in Southeast Asia. The latter have been inclined to analyze the causes and effects of environmental degradation, details of environmental policies and regulations, and politics over natural resources (e.g., Hirsch and Warren 1998; Ross 2001; Hall *et al.* 2011). These studies often highlight that the state has exploited and enclosed natural resources through development projects and conservation programs, and stress the significant role of local communities, domestic non-governmental organizations, and international organizations in finding a sustainable solution to environmental issues. This volume, on the contrary, sheds light on the non-monolithic features of the state by demonstrating conflicts and negotiations among state agencies over resource and environmental policies.

The introduction (Chapters 1 and 2) explains details of the research approaches and provides readers with a useful framework to capture the distinctive characteristic of environmental policy, that is, "latecomer public policy." It denotes that environmental policy emerged only after development policies and agencies were established and implemented. Specifically, environmental problems such as pollution and waste problems became serious under rapid industrialization, and were then publicly recognized and addressed. Due to this "latecomer" feature, environmental policy was "often regarded as a subfield of other public policies, that is, public health, labor safety, social welfare, and even industrial policies" in the early stage of policy formulation (p. 17). Subsequently, the government tried to consolidate environmental policy as a new domain in public policy, and it required coordination and negotiation among existing government agencies as well as various stakeholders with their own bureaucratic, political, and business interests. In such a situation, environmental policy was often limited or less prioritized than development policies.

In Chapter 1, Terao Tadayoshi and Funatsu Tsuruyo also point out that the term "the environment" in the field of governance and regulation initially referred to environmental problems stemming from industrialization, such as pollution and waste problems. However, its scope has since gradually expanded to include a long-existing problem of natural resource depletion, which had been separately classified as a resource management issue. Moreover, since the 1980s, natural resource conservation has become increasingly discussed in the framework of global environmental issues, including global warming. Consequently, the contemporary definition of "the environment" comprises not only environmental problems, but also natural resource management and conservation.

The volume provides two case studies about Southeast Asia (Chapters 5 and 6). Chapter 5 focuses on pollution control policy in Thailand and Chapter 6 on water management in Southeast Asian countries. In Chapter 5, Funatsu demonstrates how Thailand's "dual system" of pollution control was established and developed during the past 50 years. The "dual system" refers to the shared responsibility of controlling industrial pollution between development and environmental agencies, namely, the Ministry of Industry (MOI) and the National Environmental Board (NEB).

The system was adopted in 1975—when the first environmental law was promulgated in Thailand—and it placed the primary authority with the MOI. Although the environmental law was revised in 1992 aiming to strengthen the NEB, the authority of development agencies continues to exceed the authority of environmental agencies. Funatsu discusses how such fragmented administration system has hindered effective pollution control in Thailand through the case of the Map Ta Phut air pollution dispute.

In Chapter 6, Sato Jin examines the history of interdependent relations between the state and society over irrigation management in Southeast Asian countries. He uses the concept of "compulsion to maintain"—meaning herein a constant need for maintaining infrastructure (i.e., irrigation system) to secure stable and long-term access to water resources—to explain the reasons behind the long-term involvement of the state and local people in managing large-scale irrigation facilities "regardless of their will" (p. 105). Specifically, Sato points out that "communities invite the state into the locale as mediators of resource conflicts, which have become difficult to resolve locally" (p. 119), and once irrigation facilities are installed by the state, "local communities continuously rely on the state for preventative, productive, and protective water works" (p. 119) due to the technical necessity to maintain the facilities. Such interdependent state—society relations in water management provide a contrast to the cases of forests and mines where local communities often stood against the state over the resources.

The volume's empirical and in-depth view on environmental policy formation is the result of several decades of field research and the accumulation of intensive discussions among Japanese scholars over a long period. Although the volume only shows two cases of Southeast Asia, the concepts and ideas particularly those presented in Chapters 1 and 2 will be useful and applicable to many other cases in Southeast Asian countries. Furthermore, the cases of China, the United States, and Germany tell us how great powers—the investing and donor countries to Southeast Asia—have formulated and developed environmental policy in their own countries. Through these chapters, the readers can anticipate how the views of the donor governments on environmental policy at home may affect Southeast Asia's environment and society through their investment and development assistance projects. In this sense, the volume could have included the Japan case.

This book does provide meaningful insights into how environment policy has emerged and evolved. However, what appears to be lacking is sufficient explanation of previous literatures, based on which the framework and ideas in this volume have been developed. In Chapter 2, Terao refers to some theoretical arguments in development and environmental studies, but that alone will not be enough to grasp the whole picture of how the concept of "latecomer public policy" and other ideas were formulated based on a wide variety of scholarly works. One reason for the insufficiency in literature review could be due to ideas constructed largely based on previous research and other Japanese scholars' works, which are yet to be published in English (e.g., Terao 2013; 2015). To make the volume's arguments more persuasive, the introductory chapters could have

listed more in-depth details on Japanese scholarly works on environmental studies. Although such details may be lengthy, it will help readers to fully comprehend the basis of the volume's insightful viewpoint.

Morishita Akiko 森下明子
College of International Relations, Ritsumeikan University

References

Hall, Derek; Hirsch, Philip; and Li, Tania Murray. 2011. *Powers of Exclusion: Land Dilemmas in Southeast Asia*. Honolulu: University of Hawai'i Press.

Hirsch, Philip; and Warren, Carol, eds. 1998. *The Politics of Environment in Southeast Asia: Resources and Resistance*. London and New York: Routledge.

Ross, Michael L. 2001. *Timber Booms and Institutional Breakdown in Southeast Asia*. Cambridge: Cambridge University Press.

Terao Tadayoshi 寺尾忠能, ed. 2013. *Kankyo seisaku no keisei katei: "Kaihatsu to kankyo" no shiten kara* 環境政策の形成過程――「開発と環境」の視点から [The formation of environmental policies in the process of economic development: From the viewpoint of "development and the environment"]. Chiba: Institute of Developing Economies, JETRO.

――――, ed. 2015. *"Kohatsusei" no poritikusu: Shigen kankyo seisaku no keisei katei* 「後発性」のポリティクス――資源・環境政策の形成過程 [Politics of "latecomer": Policy formation of resource and environmental policy]. Chiba: Institute of Developing Economies, JETRO.

Index to Southeast Asian Studies Vol. 10

Vol. 10 No. 1 April 2021

Articles

Book Reviews

Book Reviews