

THE UNIVERSITY OF CHICAGO

HERBAL MEDICINES, MOTORCYCLES, AND THE MAKING OF AN INDIGENOUS  
RESOURCE ECONOMY IN THE MYANMAR HIMALAYA

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BY

MARSHALL MITCHELL KRAMER

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## ABSTRACT

Alongside jade, gold, and timber, the Myanmar Himalaya is a well-known source of herbal medicines for Chinese markets. Medicinal commodities, like other resources, have continued to flow across the border for decades despite ongoing civil war, internal conflict, and rapid deforestation. However, unlike logging and jade enterprises, which enjoy the protection of inter/national military-corporate partnerships, the medicine trade endures as an indigenous resource economy—one in which production is not only carried out by indigenous communities of the region, but one that many indigenous communities depend upon for their livelihoods. This dissertation documents how the medicine trade persists in this volatile frontier, examining how indigenous communities reappropriate two common tools of frontier life to create this alternative economy: herbal medicines and mass-produced 125cc motorcycles. This dissertation makes three key arguments:

First, medicine is not simply a commodity, but a *means of production* in resource extraction frontiers like the Myanmar Himalaya. It serves as a critical tool to keep workers laboring in physically demanding and politically unstable environments. The dissertation traces the close relationships that frontier laborers—primarily displaced indigenous Lisu communities—develop with medicinal plants during their work and efforts to make a living. This entails everything from using herbs to cope with malaria and broken bones while mining, to experimentally cultivating valuable drugs to secure income and healthcare resources. At the same time, the dissertation documents how Lisu resource workers often play the role of “barefoot doctors” in this war-torn frontier, using their knowledge of herbal medicines and their harvests to negotiate relationships with soldiers and other predatory figures of the frontier. In this too, medicine is a *means of*

*production*, one that allows Lisu to carry out sustained labor in the social space of a war zone where negotiating predation is an everyday part of working life.

Second, more than commodities in circulation, motorcycles are critical means of circulation in resource extraction frontiers, enabling a steady flow of products out of the region amidst displacement and resource exhaustion. They do so by moving commodities, workers, and even *means of production* like valuable living plants across shifting sites of production and habitation. Here the dissertation tracks how displaced Lisu living in sub-urban settlements use motorcycles to collect traditional medicines, tend shifting agricultural fields, and participate in resource extraction work by commuting long-distance. At the same time, it uncovers how these vehicles are enabling a new proliferation of medicinal biodiversity as workers use motorcycles to transplant valuable species from rainforests into sub/urban gardens and groves, creating new pathways of biodiversity and healthcare resources.

Finally, considering the use of herbal medicine and motorcycles together, the dissertation argues that these tools-cum-commodities are part of an indigenous *mode of production*—or what Neville and Coulthard (2019) have called an “indigenous political economy.” More than allowing a steady flow of commodities and the accumulation of profits, the dissertation documents how this *mode of production* accumulates biodiversity, healthcare resources, and business opportunities for indigenous communities. It compares the herbal medicine-motorcycle *mode of production* to another indigenous political economy in the Myanmar Himalaya: indigenous militias who deploy networks of borderland checkpoints to extort tolls and levy trade. While recognizing that these economies have motifs of pre-industrial feudalism and flexible post-Fordist production, the dissertation considers how these motifs emerge from indigenous practices of territorial control, resource management, agriculture, and medicine.

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## A NOTE ON NAMES AND LANGUAGE

All names used in the text are pseudonyms, except for those of participants who requested that they be identified in the text. When noted, I have used pseudonyms for locations in the Gorge Country to protect the identity of community members in that challenging environment. Throughout the text I have used the name Myanmar (*myan-ma*) to refer to the present-day nation and its citizens following the lead of my interlocutors. Burma is only used historically (*i.e.* referring to the colonial period). For the national language and the dominant ethnic group, I use the term Burmese (*bǎ-ma*), again following the lead of my interlocutors. Neither name choice reflects any political opinions or persuasions but is instead a reflection of what I encountered in the field.

Lisu words in the text have been transliterated into a Roman based orthography following David Morse and Thomas Tehan's (2000) transliteration system. In transliteration, I have chosen not to space out separate Lisu syllables and not to include tone markings as to make the text accessible to non-Lisu speakers (*i.e.* *waci* instead of *wap cis*). Lisu names are given in their proper order with the clan name first (*i.e.* Ngwa, Jay, Leme), and the given name second. Christian given names are spelled as in English rather than Lisu or Burmese (*i.e.* Matthew instead of Mathi). The Burmese, language is transliterated according to O'kell, Saw Tun and Khin Mya Swe's (2010) romanization system without marking tones, and Chinese is transliterated using pinyin without tones. For all languages, I have included of keywords and phrases for greater precision and so that native speakers of those languages can understand precisely what is being discussed in the English text. Unicode scripts have been used for all foreign languages so that they can be text searched. Following standard botanical convention, all botanical names are given with the genus and species

in italics, and with the family in small caps. All botanical identifications in the text are based on the author's own studies, and any mistakes or errors in identification are the author's and his alone.

## A NOTE ON FIGURES AND IMAGES

This dissertation uses two kinds of visual aids to present data and analytical findings in support of the text: figures, including maps and tables, as well as images. In certain places multiple images are presented as a collection to be viewed at the same time, and I have marked these as a series (*i.e.* 3a, 3b, 3c). All figures and images were created by the author. All images were created by the author and are copyright 2022 by Marshall Kramer. All rights reserved.

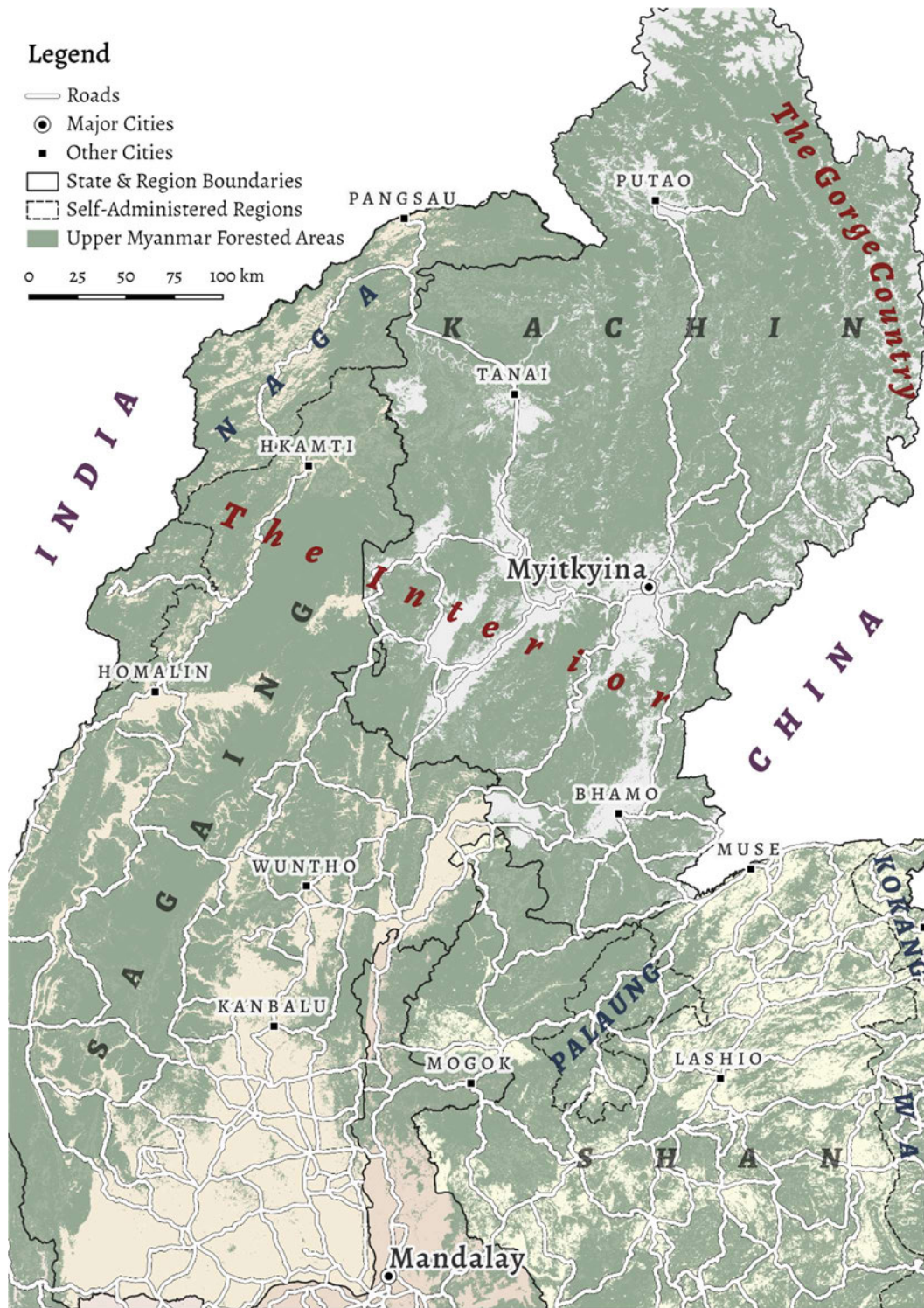


Figure 1. Map of the Research Area<sup>1</sup>

<sup>1</sup> All cities, regions, and geographic areas drawn by the author. Administrative boundaries, including Self-Administered Regions, and roadways from MIMU (2021a, 2021b, 2022). Forest cover from Murray et al (2021).

INTRODUCTION:  
“SETTLERS AND NEW PEOPLE”

(YV; BV: BE L: FO XU:)

I. MOUNT ZION

The muffled thunder of distant mortar fire echoes down the valley, and thin smoke plumes drift up from the hills of the China-Myanmar border on the horizon. It is a faint sound, soon overwhelmed by the rhythms of construction and the hymns of the construction workers. All around me wooden beams are going up, bamboo wall panels are being woven, and a village is being planted to the tune of an old Methodist hymn sung in Lisu: “I know that my redeemer lives” (SI.-d: SV. TY M AW SQ. LO). The settlers are a ragged bunch, their brightly colored clothes show signs of wear from weeks of living on the road: holes, torn sleeves, and faded streaks. They are Lisu, a community that has long lived in the hills of northern Myanmar and Southwestern China, and like other Lisu, they are part of a fresh wave of refugees who have now fled the fighting in the mountains. Their new camp is little more than a collection of bamboo shacks and worn tarps on the edge of the rice fields, but a hand-painted signboard tells of its future, promising a new life on the edges of the old: “Mount Zion” (ZI-YU W CI).

“*Mapha* (M. d:), I’m so glad I called at you on the road! Truly God’s grace!” the pastor hollers with a grin as he comes across the yard with a thermos of tea and a pair of cups. He addresses me with the Lisu word for “teacher,” *mapha*, just as he had on the road. I was driving my motorcycle on the highway to the border when I had heard a trailing cry from a passing motorcycle. When I slowed and looked back, I saw it was the pastor, Ngwa Matthew, a Lisu healer and missionary I had met months before and hundreds of kilometers away, high in the Myanmar Himalaya. We had first met while I was researching, and he had told me of his mission work in the south. Now, as we sit down in two plastic chairs under a tent that will be the new church, Matthew continues:

“The fighting has been so much this month, *Mapha*. It’s God’s grace I saw you before you reached the mountains. We all came down from those mountains. I was doing mission work there months ago when the fighting started. There was mortar fire... soldiers everywhere... and when we fled they were shooting with guns. [He shakes his head]. Half the village made it here. And now we’re planting a new village, Mount Zion! What a blessing we can meet here! So why did you come to Shan State? What medicine are you looking for this time, *Mapha*? There’s no *xachi* (X. CI.) or caterpillar fungi (XU. B1: DI) here...”

When Matthew and I first met I was researching the export of those medicines to China—rare herbs and fungi picked from the deep forests and sparsely inhabited

valleys of his home. Now hundreds of kilometers south, in the valleys of Myanmar's Shan State, I am following a lead on a new medicine—a “wild” herb that is reportedly being collected and sold to China by the truck load from this largely deforested landscape. Pulling out my cell phone, I show Matthew a photo of the root.

“*Chutingo* (ငူ: တိ လူ့..)! I know it well, *Mapha*! Everyone has been collecting it for months and selling it at the border. Leme Tha,” he calls out to one of the men carrying lumber across the camp, “Leme Tha, come here, say *hwa hwa* (HW. HW. :) to the American *Mapha*!”

“Ho, *Mapha*, I'm coming, I'm coming,” the man replies. He grins broadly as he approaches us with a limp, and thrusts out a heavily calloused hand for me to shake with a loud “*Hwa hwa*.” Matthew explains Leme Tha is one of many from the village who has been collecting the roots, and as he introduces us, Leme Tha beckons us over to his make-shift tent. The inside is sparse: a sack of clothes, a thin plastic sleeping mat with a blanket, a small pot next to a fire pit, and a large (20 KG) rice sack tied with red plastic twine. Opening the rice sack, he offers me a handful of the twisted roots, “I was going to sell these in Lashio,<sup>1</sup> but I can give you some?”

I thank him but decline, and explain that I am trying to identify the plant, and I hope to collect a specimen, “Where did you collect these?”

“By our old village.”

“So you brought this sack when you fled?”

“No *Mapha*, I went back to collect them, after we fled.”

Leme Tha's sack of herbs, picked from the battlefields of Upper Myanmar, is part of the Chinese herbal medicine trade: a global market that sees diverse flora and fauna flowing from around the world to Chinese medicine vendors and distributors across East Asia. More than seeking new sources for species overharvested at home (Pei et al. 2009), this market has a long history of seeking out new commodities. In the process it has transformed rural livelihoods and landscapes around the world. It has made ginseng “North America's most harvested wild plant” (McGraw et al. 2013, 62; cf. Johannsen 2006; Burkhart et al 2021),<sup>2</sup> caterpillar fungi “the mainstay of

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<sup>1</sup> A regional market town from where many exports to China are coordinated (see Figure 1).

<sup>2</sup> *Panax quinquefolius* L. ARALIACEAE. Indeed by 1752, exports of the herb from Canada had already reached a value of .5 million francs per year (Shelton 2019, 36).

household economies” across the central Himalaya (Childs and Choedup 2014, 9), and in Upper Myanmar it has made many rural communities like Leme Tha’s “almost exclusively depend[ent]” on the trade for cash income (Aryal et al 2020, 15; *cf.* Rao et al 2010, 2011). It is this modern-day foraging economy that I set out to understand in my research, looking at the impact of this biodiversity trade on rural communities and landscapes like those around Mount Zion.

Where the prospecting efforts of European and American empires and pharmaceutical corporations have been well documented (*eg.* Schiebinger 2004, Osseo-Asare 2014, Hayden 2003), much of the global Chinese medicine market’s resource flows remain opaque—likely due to their movement through informal and illicit channels (Jiao 2021). The relative paucity of official documentation that does exist largely focuses on the market’s impact on global wildlife populations (Jiao 2021), or the global popularization of Chinese medicine as an alternative to Western biomedicine (Xiang et al 2022, Lin et al 2018). Official reports on China’s herbal medicine import/exports fall in the latter category, suggesting modest growth from a \$394 million import/export market in 2001 (Xiang et al 2022) to a healthier \$4.6 billion market in 2016 (Lin et al. 2018) owing to the increasing popularity of Chinese medicine formulae abroad. Yet these reports noticeably fail to record the large flows of “crude medicines” like the Leme Tha’s sack of *chu ti ngo*.<sup>3</sup> In contrast to the modest trade in branded formulae, business analysts in China report that the official market for crude medicinal materials grew from \$15.6 to \$21.4 billion between 2017 and 2019 and is estimated to have reached \$28.3 billion in 2020 (Zhang 2022).

Like Leme Tha’s story, other accounts of harvesting crude medicines for the Chinese market point to conflict zones, where these commodities are not only involved in “turf wars”

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<sup>3</sup> For example, during the same period (2007-2016), the *legal* international trade in wild animal parts through China averaged \$1.3 billion per year (Jiao 2022, 408)—many of which are recognized as medicines or medicinal foods in Chinese medicine. This is taken to be a tiny fraction of the true market size with an additional 5.76 billion animals being confiscated on average each year by Chinese officials in raids on wildlife traffickers (*ibid*).

(Childs and Choedup 2014, 12) and “gold rushes” (Khimmm 2016), but have even been implicated in funding civil wars (Baral and Heinen 2005, *cf.* Gurung 2020). In Upper Myanmar, separatist conflicts and civil war have wracked the country with little cessation since it received independence from colonial rule in 1948 (*cf.* Callahan 2003, Smith 1999, Sadan 2013). Where war and sanctions against the country’s military government have kept Western markets from returning to the hills and forests of Upper Myanmar (*cf.* Bryant 1997), resource extraction for East Asian markets has thrived undeterred by conflict. Reports documenting military involvement in the jade mining and logging industries help explain the steady export of these resources from the country amidst conflict (EIA 2019; Global Witness 2021, Woods 2011). However, it is harder to account for the steady flow of crude medicinal resources across the border, especially as logging and mining projects continue to decimate Upper Myanmar’s forest systems. Burmese accounts of agarwood (*Aquilaria* sp. THYMELAEACE) harvesting record flows of the rare wood from the jungles of Upper Myanmar to Chinese markets starting in the 1960’s and continuing steadily into the present (Aung Nyunt Thit 2011), even as forest cover across the country has dropped from 77% to 50% in the same period (Sudhakar Reddy et al 2019). From the oral histories I gathered over the course of 3 years of fieldwork (2018-2021), I found that many other crude medicine commodities had remained in steady export across these tumultuous years, unfettered by rapidly shrinking forest systems: camphorwoods (*Cinnamomum* sp. LAURACEAE), goldthread roots (*Coptis* sp. RANUNCULACEAE), fritillary bulbs (*Fritillaria* sp. LILIACEAE), orchids (ORCHIDACEAE), wild ginsengs (*Panax* sp. ARALIACEAE), magnolia barks (MAGNOLIACEAE), and countless other floral riches of the tropics.



Image 1. Medicine Market Stall in the Borderlands. *Kachin State, 2017. All images featured in the text were created by the author and are copyright Marshall Kramer 2022. All rights reserved.*

At the center of my inquiry entering the field were two questions surrounding the Chinese medicine trade in Upper Myanmar: What social relationships and infrastructures enable this resource trade to work continuously across zones of conflict? And what ecological practices sustain the production of medicinal biodiversity in the face of decades of unregulated logging and mining?

To answer these questions, I based myself in one of Upper Myanmar's fastest growing zones of deforestation (Woods et al. 2021), and the center of the herbal medicine trade: Kachin State (*see* Image 1). Stretching from the edge of Myanmar's arid dry zone to the 6,000 M peaks of the Myanmar Himalaya, Kachin State is a zone of immense biological diversity that is inhabited by a mix of indigenous Kachin, Rvwàng, Lisu, and Tai communities who now face waves of Burmese migrants. My fieldwork involved moving between sites across this diverse landscape to keep up with the harvesters, from the Himalayan valleys surrounding Putao in the north to the hills and lowland forests around the trade centers of Myitkyina in the south. As they introduced me to their networks, I found myself traveling to neighboring states across the borderlands of Upper Myanmar: Sagaing Division, Mandalay Division, and Shan State where I met Leme Tha.

## II. RESEARCHING EXTRACTION

When Leme Tha finds me the next morning it is still cool in the valley and the mists of the evening are slowly burning off. He is wearing a side bag and a machete over a camouflage jacket, with long soccer shorts and a pair of Chinese army shoes. His right leg is visible, and it is hard not to notice. From just above his ankle the leg is a mass of lumps and cords of scar tissue twisted in knots, and just below his knee his leg is bent ever so slightly at an awkward angle. The skin all over is smooth and shiny, and discolored. I try not to look at it, and he smiles as he approaches, walking his motorcycle over.

*"Hwa hwa, Mapha,"* he calls out offering his hand again for a firm shake. "You wanted to see the plant?"

I nod, and he has me climb on behind him on the small bike. He laughs at how big and heavy I am but refuses to let me drive my own bike. We drive out the valley road heading back towards the mountains, but before we reach the highway, he takes a small gravel road winding steeply up a hill through small forest groves and pineapple fields. The engine of his 125cc motorcycle whines loudly under my weight, and I can feel the heat coming off the motor on my calves. Finally, after 15 minutes we reach a point where a small stream runs across the road. He carefully brings the motorcycle to a stop, and with wave to follow, he begins climbing down through the bushes of the creek as it winds between two fields.

He moves with remarkable speed down the slope, occasionally using his arm to help lift his maimed leg, and in a few moments it's clear that I won't be able to keep up with him. As he disappears into the bushes, I lose track of him, and when I catch up, he is pulling a thorny vine out off a small tree. He tears off a leaf and hands it to me: "This is *chutingo*."

As I look at the vine, and marvel at its proximity, he nods, "Yeah. It grows in places like this. People who don't know just walk past it. But it grows a lot more up, by our village. Do you know what kind of medicine this is *Mapha*? Does it work?"

I shake my head and tell him that I don't know, and as I take pictures of the plant, he waits quietly. When I have finished taking my notes on the plant, he looks at me and asks, "Pretty fast, eh?"

He waits for me to respond, but I don't follow. He taps his maimed leg. It takes me a moment to laugh, and I finally manage, "Faster than mine!"

He smiles, and nods. And after a moment of silence, he starts again. "It's ugly, isn't it? Our medicine healed this. I was mining in Kachin State. We were in a deep gorge, mining for gold and a big boulder came down on it. [He gestures drawing his arms apart]. This big. Broke it completely, every bone. No hospital, no village. The nearest village was three days away. I thought I would lose my leg or die. But by the Grace of God... there was a doctor who knew the root medicines (SI, CE NV ၁၂;) like *Mapha* Matthew. He got the medicine, a bone-joining medicine (WO. TO F. NV ၁၂;) and bound it... and it healed. I'm sure with your [western] medicine it wouldn't look this ugly. But we don't have your [western] medicine. You should find that bone-joining medicine *Mapha*."

It took me several days to process the importance of Leme Tha's testimony. At the time I was in awe of the ease with which we were able to pluck a high-demand commodity from the shrubby irrigation channel of a nearby field. It was only later in reflection, that I realized that for Leme Tha the trip had been an effort to share with me something he found far more important: the power of these medicinal plants to heal broken bodies like his own. Where I approached medicine as another commodity in this resource extraction frontier, I was continually confronted with the reality that my interlocutors were not just collectors of herbal medicines, but that their *work and lives depended* on herbal medicine.

From church deacons to militia leaders to truck drivers and noodle vendors, I encountered testimonies like Leme Tha's from almost all segments of society in Upper Myanmar. Just days

after I met Leme Tha, I was stopped by an immigration official who questioned me intensely for 45 minutes about my business in the area. After the stern cross examination revealed my research on medicine, he offered to personally drive me to a series of healers and medicine makers in the area. Before I could get away from him, he insisted on walking me through an abandoned field to show me three herbal medicines that he used to treat his irritable bowels. At his insistence, I collected specimens for review. Perhaps something of this general interest in the topic is why my research permit applications were originally approved by the Ministry of Border Affairs, not only granting me access to the highly restricted border area of Putao District in the Myanmar Himalaya, giving me a year and a half of fieldwork time to study the economic role of medicinal plants in this space. The permit was a critical tool in my research, which not only allowed me to gain access to harvest grounds and accompany harvesters, but also helped me to establish my reputation with diverse state and para-state authorities in the borderlands of Upper Myanmar.

Where the permit served as a tool to gain access to the field, once in the field, I found myself dependent on a tool that medicine pickers like Leme Tha use to access diverse harvest grounds across the borderlands: 125cc mass-produced motorcycles imported from China. Weighing no more than 50-100 KG, and often getting a range of up to 50 KM / liter of petrol, these economical bikes are the most common form of transportation used across the cities and rural reaches of Upper Myanmar. From carrying medicine hunters over narrow jungle roads to find rare herbs, to transporting bundles of valuable vines to borderland markets for export, 125cc motorcycles underpin the movement of herbal medicines across this landscape. As I followed the flows of medicines across this frontier during my fieldwork, I used over a dozen different 125cc motorcycles, clocking approximately 41,300 km of motorcycle travel.

Though I had set out to discover the social relationships and environmental practices that made resource flows possible from this borderland, as my fieldwork progressed, I found that to do so I needed to understand the tools that resource extraction workers used the most in their daily labor: motorcycles and herbal medicines. As I turned my focus to these *means of production*, investigating how they shaped the processes of resource extraction and circulation, I began to realize that these “tools” were also some of the most regularly exchanged commodities across Upper Myanmar. Instead of a simple flow of motorcycle imports and medicinal exports across the Chinese border, I found that both were sold and resold in lively village, town, and regional markets—including extensive black markets where stolen bikes and illegal medicines (like orchids) were traded in bulk. It became even harder to separate the two, as herbal doctors like Matthew explained to me that motorcycle injuries were possibly the most common injury they treated, driving a whole new demand for bone-setting medicines. (Or, as another healer put it: “motorcycles keep me in business.”) At the same time, I watched as herbal medicines were not simply carried from jungle to market, but instead motorcycles were used to replant and even cultivate these drugs along motorcycle paths. Motorcycles were being used to create new lines of resources and biodiversity.

In investigating how these tools-cum-commodities sustained a flow of natural resource exports ranging from forest products to amber and gold, my research began to see how these tools were shaping the logistics of a separate rural resource economy—that is one markedly different from the militarized logging and mining projects that continue to carve up the borderlands. As I pursued these questions with harvesters from across the different communities of Upper Myanmar, our conversations invariably pointed towards the knowledge and skill of a particular indigenous community at the center of this *indigenous economy*: the Lisu. Not only were they famed as

harvesters of diverse medicines from the caterpillar fungi of Himalayan peaks to the rare and fragrant agarwood and camphorwood of the lowland jungles, but they were also reputed to be the most daring motorcyclists driving jerry-rigged 125 cc bikes that are known across Upper Myanmar by Burmese monikers: “Lisucycles” (လီဆူဆိုင်ကယ်) or “Lisu wheels” (လီဆူဘီး).

As I interviewed and travels with dozens of Lisu harvesters, I learned from this indigenous community about how medicines and motorcycles were part of making a new life for themselves in the resource extraction frontiers of Upper Myanmar. This was a new life that they, like Leme Tha, embarked upon after having been displaced from their homes.

### III. THE LISU AND THE FRONTIER

Before I leave the camp, Matthew asks me if I have finished translating and reading *Mapha No Le*'s book, and if he might get my notes. We had met *Mapha No Le*, a renowned medicine maker, months before at a meeting of Lisu apothecaries, or “medicine makers” (၂၃. ၄; ၅၆, ၇) in Kachin State. Wearing a great turban and walking barefoot in the middle of the winter, *Mapha No Le* taught the doctors the art of pulse reading, disease diagnosis, and herbal formulae from the worn pages of an old manuscript that had been passed down in his family.

The manuscript was written in Chinese in the old style, horizontal columns read from right to left, but its characters were the simplified sort that became standard across China following the People's Revolution. *Mapha No Le* explained that the manuscript was based on a family text that had been passed down since sometime in the late Qing Dynasty (18<sup>th</sup>-19<sup>th</sup> C.), when his family had moved out of the high gorges of the borderlands to the valley of Sadon in central Kachin State. Their knowledge of medicine predated the invention of the Lisu script in 1915, just as it predated them becoming Lisu.

As he taught it to the gathering of Lisu apothecaries, he carefully pronounced each Chinese word followed by a Lisu explanation, but for those who struggled to understand his dialect, another apothecary was called to translate into Burmese.

Tacking between the three languages, and just as many dialects of Lisu, the instruction had gone on for days, and I recall looking at the notes of other apothecaries to find them writing in a mix of Lisu and Burmese, some adding Chinese characters. The number of people who could not only speak all three languages but write them was impressive. Almost all were old hands in the medicine trade, if not medicine hunters of repute, and their level of education was

unexpected. As different apothecaries presented, we were instructed in a dizzying mix of medicine systems and languages. Alongside different Chinese medicine techniques, we were taught Tai herbal recipes from the lowland forests, and even principles of Burmese ayurveda and alchemy. Throughout, different apothecaries shared different family heritage medicines, ranging from recipes to cure chronic illnesses to the arts of Lisu massage. When we had left the meeting Matthew had asked me for a copy of my notes and I had assured him I would get him my materials once I'd typed them up.

As I showed Matthew the portion that I had finished, he talked of wanting to write a book, and we agreed on my next visit we would make sure to do some writing together.



Image 2. *Mapha No Le's Medicine Manual.*

When I moved to Upper Myanmar in 2017 for a year of pre-field language work in Myitkyina, I was competent in spoken Chinese and had rudimentary Burmese which improved to fluency over the course of the year. Yet as my research moved forward, I found more and more of my interlocutors pushing me to learn a third language that they spoke and was heavily used in the medicine trade: Lisu. For them, many of whom spoke anywhere from two to seven languages, this was not a grand request. Rather I needed to build some of the basic linguistic tools that were needed to keep up in this space.

Accordingly, halfway through my first year of fieldwork (2018), I began studying the central dialect of Lisu, and over the next two years I found myself learning the northern dialect of Lisu spoken across Putao and the gorges of the borderlands. While I learned some words in other languages at the encouragement of my interlocutors—Jinghpaw, Rvwàng, and Tai Laeng—the majority of the research in this dissertation reflects dialogues that often began in Burmese and moved into Lisu, weaving in and out of Chinese along the way. In doing so it offers a vantage that comes from conversations in that language patois, one which may differ from the experience of other researchers of Upper Myanmar who have often found themselves speaking other patois of Jinghpaw, Tai, Burmese and Chinese.

As I learned Lisu, I came to understand that working with Lisu speakers entailed a far greater diversity than the ethnonym might imply. Where studies of Lisu have focused on the migration of Lisu communities out of Southwestern China into Southeast Asia (Mazard 2014), No Le, like many of the Lisu I came to know is part of a diversity that is often obscured in these accounts. No (NO.) is the Lisu clan name for the Nu, Nung and Anung communities who have long lived in the gorges of the Salween and N'Mai Rivers along the China-Myanmar border. No Le's family traces its ancestry to gorges that lie on the Myanmar side of border. Since descending from

the high gorges he finds himself speaking and living with Lisu. Like him, Leme Tha's family is part of another indigenous community from the gorges of the borderlands: the Leme (LE:-ME:), sometimes spelled Laemae (LV:-MV:). Though some Leme identify themselves with the Bai communities of China, as a cousin people, many claim certain gorges in Upper Myanmar as their ancestral lands. Indeed, most Bai who have become Lisu use the clan name Lapheu (L-dɿ). As one surveys the literature on Kachin State, one can find that many of the indigenous peoples documented there are represented in Lisu communities carrying clan names that reflect their roots in this land: Lacid and Ngochang communities take the clan name Achya (A-ɔY.), Rvwàngs take the name Cho (ɔO:), and Jinghpaw take the clan name Aphu (A-dU). As I spent more time talking with Lisu in Putao, I learned that there were countless other indigenous groups of the hills who had now “become” Lisu, like the Meko (ME,-KO), the Thaung (ɿO), the Zali (ʁ-Lɿ), and the Dangsvr (ɿA-ɿAI)—all names of villages and valleys high in the gorges of Kachin State and the Myanmar Himalaya. Far from a singular community, Lisu was a multicultural assembly of indigenous migrants from places near and far.

With all the focus that has been applied to the shifting identity politics of the Kachin (Leach 1964; Sadan 2013; Robinne and Sadan 2007)—a term used in colonial Burma and now taken as a banner for those who seek a separate state—little scholarship has been carried out on the diverse populations who speak Lisu and claim this identity in Upper Myanmar. Instead, the Lisu have more often been treated in scholarship as a gypsy-like community of “state escape artists” (Mazard 2014; Scott 2009; Zack 2017), who maintain an anarchistic and egalitarian society by cash-cropping opium (Dessaint 1971, 2004; Durrenburger 1983, Hutheesing 1990). While these narratives contain valuable insights—particularly in Northern Thailand where much of the research on Lisu has been carried out—Lisu like *Mapha No Le* challenge this portrait, not only

with their indigeneity, but also their almost metropolitan literacy and knowledge. Far from migratory, No Le's family has long been rooted in the two valleys of the borderland that they call home, apothecary traders who have at times served the various lords of the region and who were respected on the Chinese side as "scholars" (学者). Indeed, the Lisu apothecaries and harvesters I worked with regularly discussed a stunning array of medicinal and botanical knowledge not only drawn from family traditions and experience, but from diverse literatures and regional schools of medicine that they assembled together into "Lisu Medicine" (LI-SU NY. ㄐ!). Lisu Medicine is but one of the many forms of knowledges which Lisu use to work and live across the diverse landscapes of Upper Myanmar, but also it is also one that they use to negotiate the many state and para-state authorities that assert dominion over people, plants, and territories in this resource extraction frontier.

This dissertation is accordingly an account of resource extraction told from the perspective of those who speak Lisu—a kind of community that often poorly fits the political categories of Leach's Kachin, and that often lacks the stories of autonomy so prevalent in other Lisu accounts. Instead, it is one that reflects the efforts of displaced indigenous peoples as they try to carve out livelihoods between new homes and old. It tells stories like that of Leme Tha. If there is a figure of free roaming Lisu that emerges from this story it is best summed up by a harvester that I met one afternoon in Myitkyina. At almost 60 she had worked in various resource extraction industries after losing family and home at age 11 to war in the borderlands. She was a famed medicine collector who had lived in the remote jungles of Tanai and the Chindwin River (near Hkamti) in Upper Myanmar for nearly ten years extracting different rare resins and plants. With her children married and her husband passed away from a heroin overdose, she now roamed the region making and selling medicines, and donating her healing services to those in need. When I met her, she was

without a stable home moving from house to house before her next harvest trip. As we talked in a friend's courtyard, she showed me a plastic wrapped bundle that she explained she always carried and used daily. Inside were three books: a Lisu Bible, a Burmese Baptist Hymnal, and a 1971 barefoot doctor's manual to medicinal plants written in simplified Chinese.

#### IV. METHODOLOGIES

What follows is the product of over four years spent living and studying in the borderlands of Upper Myanmar, primarily in the towns of Myitkyina and Putao. This included three years of field research in Upper Myanmar (January 2018-March 2021) funded by the Wenner Gren Foundation, supplemented by multiple pre-field research survey trips to China (2014, 2017) and Myanmar (2013, 2016), as well as nearly a year of language training in Kachin State (2017) funded in part by the Center for South Asian Studies at the University of Chicago. While I had intended to leave Myanmar in 2020, with the outbreak of COVID-19 I was unable to leave Upper Myanmar due to local and international flights being grounded. Just over a month after the State Administration Council assumed control of Myanmar in February 2021, I was able to exit the country on an aid flight provided by the US Embassy concluding my time in the field.

During this time, my fieldwork was made possible by a research permit which I acquired with the help of Mandalay University to carry out studies on herbal medicine and herbal medicine harvested in Kachin State, including Putao and Myitkyina where I split my fieldwork time. To gain inroads into harvester communities, I began my research by volunteering at local schools as well as attending local churches and meetings of the different literature and culture societies in these towns. Literature and culture societies are important forums for many of the communities who participate in the herbal medicine trade, and through these organizations I acquired most of my

early introductions to harvesters and medicine practitioners. From there I adopted a snowball method of participant recruitment, following the social networks of my interlocutors across Upper Myanmar from multiday harvest trips into the jungle to weeks spent at regional markets with medicine brokers and vendors. During the course of this research, I found myself visiting resource extraction sites from diverse industries as the lives of my interlocutors moved across diverse forms of resource work.

In total, I interviewed 158 harvesters who worked in the herbal medicine trade and just over 110 others who were somehow involved with the trade, or who shared stories about harvester communities. Setting out to document the social relationships and environmental practices that sustain the herbal medicine trade, my field work was focused on a combination of field visits to harvest areas and markets, as well as oral history interviews with harvesters, medicine makers, and brokers/traders. As I followed harvesters to the field, I initially planned to collect ecological and social data on the microenvironments of resource production. My goal was to better understand how the harvest of several prominent medicine species interacted with regional practices of ecological and landscape transformation, particularly slash-and-burn agricultural. An additional goal was to observe in the field how harvesters used social networks to negotiate the political challenges of this conflict-riddled frontier.

However, as the research progressed and I discovered the role of the medicines themselves in harvesters working lives as well as their extensive use of motorcycles, I had to adapt my methodologies. To capture the ways in which harvesters were using motorcycles to negotiate environments, I devised different surveys that combined macro-environmental data produced by colleagues at the Wildlife Conservation Society with harvest driving routes, road types, and land use histories collected while driving offroad with harvesters (Chapter 2). Similarly, where I

initially intended to gather interview-style oral histories about trade medicines, as I learned about the diversity of medicines that harvesters both used to keep their bodies working in the frontier (Chapter 3) and that they transplanted and cultivate in sub/urban areas (Chapter 4), I began mapping their transplantation efforts and researching more extensively the herbal medicine knowledge of my interlocutors. This included conducting extensive interviews and oral history collection with Lisu, Rvwàng, Jinghpaw and Tai Laeng herbal medicine practitioners that would eventually lead to an oral history project with the Firebird Foundation for Anthropological Research. At the request of these herbalists and medicine makers, I also began to document the plants they used and their recipes—knowledge that they wanted recognized and recorded.

Alongside these research efforts, I also had the opportunity to join the New York Botanical Garden on a botanical expedition to the Htamanthi Wildlife Reserve in the Chindwin River region (February-April 2019)—an important harvest area I had heard about from numerous interviewees. The expedition afforded the opportunity to not only collect botanical specimens of diverse medicine in trade, but also to spend extended time with medicine harvesters of different communities (Naga and Tai Laeng) in this largely roadless region. My research in the jungles of the Chindwin River region was guided by oral histories of sassafras tree harvesting which I had collected from interlocutors in Myitkyina and Putao (2018). I investigated this recent boom-bust trade with locals from the scattered villages of the upper Chindwin River. The botanical specimens we collected with New York Botanical Garden presented additional opportunities for research upon my return from the expedition. In Myitkyina, I showed photos of our specimen collections to harvesters and traders bringing forward their own memories or working in this space and a wealth of trade lore (Chapter 1). Alongside sassafras trees and diverse other trade species, my travels through the Chindwin River region introduced me firsthand to the ways in which herbal

medicines and motorcycles are used cross extractive industries. In this frontier as my Tai and Naga companions guided me through jungles and rivers pockmarked by gold mines, amber shafts, and selective logging tracks (Chapters 2 & 3).

Conducting economic research on resource extraction *in situ* is always sensitive, and accordingly I have given pseudonyms to all my interlocutors and avoided identifying specific harvest sites, beyond mentioning well-known harvest areas that are public knowledge. At the same time, as I studied subjects of significant local and indigenous knowledge, I gave all participants the option to be identified with a name of their choosing and to share their knowledge and teachings as oral histories. Their stories, some under pseudonyms, some under real names, are at the heart of this ethnographic dissertation that follows.

## V. THE LAYOUT OF THE DISSERTATION

Over four chapters, this dissertation tells the story of two indigenous *modes of production*—what Neville and Coulthard (2019) have termed “indigenous political economies”—that coexist alongside Upper Myanmar’s primary industrial economy of jade, timber, and monocrop agriculture production. The first of these alternative *modes of production* is a system of checkpoint extortion that profitably limits the flow of goods, while the second is a *mode of production* that relies on motorcycles and the use of herbal medicines to accumulate valuable biodiversity. Where the industrial economy of the region is dominated by military-corporate partnerships of outsiders, who have overseen the steady destruction of the region’s forests and waterways, these alternative political economies suggest ways in which indigenous communities are negotiating the ruination of their landscape to secure livelihoods and resources. As the dissertation explores the ways in which these different modes of production coexist in the same space, it considers how indigenous

political economies adopt semblances of pre-Capitalist (pre-industrial) feudalism and flexible post-Fordist (post-industrial) production. Rather than sorting these alternative economies into a dispensational chronology of capitalism, the dissertation considers how these motifs emerge from indigenous practices of territorial control, medicine harvesting, and resource conservation which create non-industrial modes of accumulation. In conclusion, it explores how these indigenous political economies are fostering a reconfiguration of the region's biodiversity resources in corridors of transplantation that not only help harvesters accumulate profits, but also propagate and redistribute valuable biodiversity in this increasingly ecologically fragmented frontier.

In the first chapter, "The Medicine Business," I explore the political economy of the borderland gorges over the last 70 years to understand both the roots of the present-day medicine trade, and the large-scale migration of indigenous communities into the interior of Upper Myanmar. Drawing on oral histories, historical accounts and interviews with harvesters and militiamen, I investigate how indigenous-led militias have come to dominate the export of resources and the trade flows of the borderlands. Central to their mode of control in an extractive regime of checkpoints—one which draws on legacies of feudal lordship in the region. As I trace the outflow of medicine harvesters from the border to the lowlands of the interior, I consider how these indigenous emigrants become settlers in the lands of neighboring indigenous groups. Here, the chapter closely examines the challenging milieu that Gorge migrants negotiate in the interior as they begin to interact directly with Chinese brokers and encounter indigenous rebel armies who seek to govern the regions many resource commons. In doing so, this chapter considers one type of indigenous political economy in this space: indigenous militias and militaries that control and coordinate the limited production of resources in their own versions of the medicine business.

Across the second and third chapters, I explore a second indigenous political economy that is most visible among displaced communities of Lisu. I follow how they use motorcycles and herbal medicines to create resource extraction livelihoods in the interior lowlands of Upper Myanmar, tracing how both tools-cum-commodities become *means of production* for harvesters while remaining the subject their own predatory trades: be that the prospecting of local medicines, or the illicit procurement of motorcycles.

Chapter 2, “Explorers” follows how Lisu communities in the interior not only use motorcycles to recreate traditional medicine harvest strategies, but also how they use these vehicles to work across the torn-up landscapes and checkpoints of Upper Myanmar. To do so, it draws on oral histories and harvest route surveys to map the ways in which motorcycles are reshaping the extraction of medicinal resources. It argues that drivers of these “Lisucycles” participate in a post-Fordist style economy of circulation—that is one where profits are not accrued from stable sites of production but from the *very* mobility of harvesters as they use these vehicles to carry out the exploratory work of resource extraction. At the same time, it tracks how motorcycles are also the subject of their own resource extraction-esque trade, with motorcycle thieves targeting these tools of daily life for theft and resale on lively used bike markets.

In a similar fashion, Chapter 3, “Apothecaries” explores how frontier workers (from harvesters to truck drivers) use herbal medicines to sustain their bodies in the grueling and hazardous labor conditions of the interior. It argues that these plants act as *means of production*, or more precisely *means of health*. In addition to helping negotiate the physical hazards of frontier, the dissertation follows how these medicines help harvesters build new relationships with each other and negotiate the various predators (and soldiers) that stalk this war-torn geography. As it explores the medicines of the frontier, it not only reveals the unique position of Lisu as

apothecaries and healers, but also the ways in which the medicines they depend upon are being steadily targeted for commodification by the Chinese medicine trade.

Chapter 4, “Plantation Work” looks at how indigenous harvesters use motorcycles to move plants across the fragmented ecological matrix of Upper Myanmar and cultivate biodiverse resources in medicine gardens. It explores how these transplantation practices build off widespread techniques of transplantation used in the cultivation of swidden (slash and burn) agricultural sites. Similarly, it suggests how the Lisu approach to landscapes cleared and abandoned by industrial production resembles their approach to swidden rotational farming. Along the way, it maps how these harvesters create corridors of biodiversity by transplanting valuable species into roadside forest fragments left over from various industrial resource extraction projects. The result is a network of growing sites that reaches from slash-and-burn fields on the edge of the jungle to urban gardens. Rather than just accumulating profits, this chapter suggests how the motorcycle-aided cultivation of herbal medicines accumulates biodiversity in the increasingly damaged landscapes of Upper Myanmar.

In the Conclusion, I consider the forms of biodiversity, indigeneity, and sovereignty that this political economy of medicines and motorcycles is fostering in Upper Myanmar.

CHAPTER 1:  
“THE MEDICINE BUSINESS”

(NÁ.. ㄆ; ㄌ, ㄌÁ;)

I. LORDS OF THE VALLEY

The market in Pianma (片马) bustles in the mid-morning sun as a steady stream of migrants carrying heavy loads on their backs make their way up the hill from the China-Myanmar border gate. Roots, rolls of bark, leathery leaves and strange looking seed pods abound, all spread out on tarps to dry in the mid-morning sun. Alongside them are live plants still rooted in the colorful soils of the tropics, carried up in boxes and bags for transportation. With all the packing and unpacking it is hard to tell what is for sale and what is just being prepared for the next leg of the journey: a steep road that climbs more than 2,500 m. out of the tropics to the Snow Squall Pass [风雪丫口], before descending the Salween River Gorge into the interior of China beyond.

As I wait outside the post office for a minivan back, I watch this diverse wealth of sub/tropical flora in wholesale export. Box after box of produce is filled and instructions are given in broken Chinese for destinations across the nation: Kunming, Changsha, Shanghai. When the van finally arrives a group of young men push past me to board. They shove muddy rice sacks bulging with roots into the passenger area with laughter as the driver yells at them for dirtying the seats. After I squeeze in, the driver slams the door, and we begin our climb up the pass. As the van climbs into the clouds, the warmth of our bodies fogs over the windows, and their banter slows until one finally works up the nerve to speak to me in heavily accented Chinese.

“You come to Pianma for business?”

I explain to him I am a researcher studying medicinal plants and his face lights up. He opens one of the muddy sacks and pulls out a root out for me to look at.

“Do you know this medicine? We call it shachi in our language,” he pauses, “The Chinese call it *sanqi* (三七), it’s very potent.”

I shake my head, and he breaks off the tip of the root for me to smell. A strong woody aroma quickly fills the car. I ask him if he is a medicine trader, and he explains that he and his companions are part of another resource industry: migrant workers coming back from nearly three months logging in the high valleys of the Myanmar side. The roots, he tells me, are part of their compensation from the logging company, incentives that make the hard work worthwhile. With the market for medicinal plants as strong as it is he is confident that these roots for wages will put him ahead of those who just take cash.

“You mean these roots are your wages (工钱)? And you’re okay with that?”

“Of course! This sack is worth more money than anything they would ever pay us,” he continues unphased, “This *sanqi* is a kind of wild ginseng (野生人参). You can’t find that in China anymore.”

“But why work logging for this? Couldn’t you just go to Myanmar and collect these roots on your own?”

A long pause follows, and this time he replies more slowly with another word I do not know, “We can’t. We would need the permission of the *sipha* (Si: d:).<sup>1</sup>”

“Who’s the *sipha*?”

“The *sipha* is the lord of the valley [峡谷的主人],” he explains leaning in so that the driver cannot hear, “His soldiers are everywhere.”

Roots for wages, lords of valleys and soldiers abundant: my first trip to the China-Myanmar border during a 2017 market survey reinforced to me the complex politics that underlie the global extraction of natural resources for China’s booming herbal medicine markets. Later, I would learn that my traveling companions were Lisu from the Salween River Valley who had been working in valleys across the border where many had aunts, uncles, and cousins—now divided by national borders and national histories. I discovered that it was not far off migrants from central and eastern China that were prospecting the riches of the tropics, but rather borderland indigenous communities like the Lisu who had long negotiated the pressures of extractive trades and colonial expansion for centuries. As I investigated the Chinese medicine trade across the border in Myanmar, I discovered that the tropical bounty I had witnessed at the market was not just the product of an indigenous industry. Rather the product of an indigenous political economy, characterized by indigenous militarization and a dynamic struggle to balance predatory strategies of trade control with efforts to protect their lands, resources, and communities.

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<sup>1</sup> At the time of the interview, I did not speak Lisu. I recorded this word in Chinese pinyin in my notes, thinking it was a Chinese word. After learning Lisu, it became clear my interlocutor in the minivan was borrowing the Lisu term, and accordingly I have retrospectively added in the Lisu script for clarity.

In the first part of this chapter, I explore how the labor of indigenous communities and indigenous medicine knowledge serve as a “foundation” (Menzies and Butler 2008, 2001) for the export medicine trade from the Myanmar-China borderlands of the eastern Himalaya. Where indigenous engagement in the settler and franchise colonial economies is often framed as unidirectional exclusion or exploitation (Wolfe 2006, Englert 2020), my investigations into the economic institutions of the borderlands revealed a more complex picture: a network of indigenous-lead and indigenous-staffed militias running resource cartels and levying trade flows with armed checkpoints.

Where outside commentators often malign these groups as “ceasefire capitalists” (Woods 2011) and opportunists for their dealings with the Myanmar Military, the second section of this chapter attempts to understand these indigenous militias within a historical context. I argue that these militias represent an illiberal form of indigenous politics that I term an “indigenous political economy” (*following* Neville and Coulthard 2019), and that their economic strategies not only shape the medicine trade but also creates variable zones of indigenous autonomy along the borderlands. In the final section, I consider the “free market” dynamics that indigenous settlers who leave the borderlands grapple with as they move into the settler colonial frontiers of Upper Myanmar. There, I track how lowland indigenous militaries are not only adopting resource control strategies from the militias of the borderlands, but also how borderland militias are expanding their business to support out-migrating community members. The result is an expansion of the indigenous political economy and its logics beyond the borderlands.

## II. THE INDIGENOUS FOUNDATIONS OF THE MEDICINE TRADE

That medicine roots might be offered for wages may seem an anomaly, but I am hardly the first to observe this phenomenon in the region. When the Tang imperial administrator Fan Chuo visited the Salween River Gorge and the modern-day borderlands in the late 9th century, he observed that the fragrant medicine *shexiang* (麝香) or deer musk<sup>2</sup> was not only a key “product [物产]” of the region but also that “the natives used it as a medium [currency] of exchange [土人皆以交易货币]” (Luce and Oey 1961, 72). Similarly, just north of where I met my traveling companions, anthropologist Edmund Leach (1964, 146-7) recorded in the 1940’s that debts between merchants and local Lisus were measured in *numrin*, or *Coptis teeta* RANUNCLACEAE, a small herb whose roots are “used in Chinese medicine.” In his case study, bulk quantities of this bitter medicine were used to measure the value of goats and cows. Leach (1964, 152) took interest in the structural flexibility that such exchanges granted debtors in what otherwise appeared to be an economy shaped by strict “caste-like hierarchy.” However, Leach may have missed the greater significance of the fact that these medicines could be exchanged for prized cattle *at all*; or that these tiny roots which often weigh little more than 10-15g wet,<sup>3</sup> and are rarely used at doses greater than 5g, were being traded in weights equivalent to 9.8-11.8 kilograms (Leach 1964, 174).<sup>4</sup> What Leach and Chuo’s accounts suggest is not only the scale and endurance of the region’s medicine producing industry, but also the deep historical roots of the trade in both the labor and medicine traditions of the region’s indigenous communities.

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<sup>2</sup> Deer musk is the scent gland of the musk deer, *Moschus fucus* MOSCHIDAE.

<sup>3</sup> This is based on my measure of 6 six samples collected in the Putao and Pianma regions, dry samples weighed less than a gram on average.

<sup>4</sup> The quoted measure is “6-7 viss.,” a unit commonly used in Myanmar and South Asia. 1 viss. is approximately 1,632.9g. When I mentioned this story to locals in the present, the general response was shock, as many cannot imagine finding or cultivating even 1 viss of the herb in the present.



Images 3a-3c. Historic trade medicines from Kachin State. 3a. Deer musk (top left). 3b. aconitum roots (top right). 3c. “lu-tze” (bottom).

### *A. Indigenous Labor as a Foundation for the Herbal Medicine Trade*

Called *xuh xuh* (ꨀꨣ. ꨀꨣ..) in Lisu, Leach's *Coptis teeta* RANUNCULACEAE is well recorded as an export product from the region, with European accounts of its large-scale export going as far back as Lieutenant R. Wilcox's (1832, 425) expedition to the Putao region of Upper Myanmar in the mid-1820's. Colonial explorers a century later report the trade as alive and well, telling stories of Tibetan merchants traveling down to these same borderlands to buy *C. teeta* from locals with Chinese opium in the early 1900's (Williamson 1909, 370). Recent work from Chinese ethnoecologists employing local records and field surveys have further documented how Lisu communities developed agroforestry techniques to cultivate *C. teeta* for the booming trading starting as far back as the mid-1870's (Huang and Long 2006:84). Their research aligns with local histories produced by indigenous Rvwàng elders in adjacent parts of Myanmar, who detail a historical practice of clearing forest floors and selectively removing trees to create *C. teeta* gardens for export (Hpan Nan Min et al. 2001, 87). Such cultivation was sufficiently widespread by the early 20th c. that Frank Kingdon Ward (1921: 135) even stumbled upon *C. teeta* growing in "little fenced off-places" above an indigenous Lhaovo settlements during a botanical expedition to northern Myanmar. Such techniques were not only central to the resource economy then, but in recent years have been appropriated by the Chinese government as part of a broader initiative to develop agricultural industries for communities in mountainous areas (Huang and Long 2007, cf. Gros 2014).

Alongside, the *C. teeta* trade, a diversity of species from the area are recorded in long-running export trades led by indigenous communities, including the bulbs of *Fritillaria* sp. LILIACEAE (Ward 1956, 47; Hpan Nan Min 2001, 887; Gros 2014, 90) and the potent roots of *Aconitum* sp. RANUNCULACEAE, which continue to be used as a hunting poisons and applied

crossbow bolts (Ward 1956, 110; Luce and Oley 1961, 72). The export of these poisons in regular trade from Upper Myanmar is first recorded by British explorers in the 1820's (Bridgeman 1836, 99). In addition to these well-established commodities, historical accounts of the region also speak to the presence of lesser commodities that thrived for a time but later disappeared. In his journey through the Salween River Valley and crossing of the Gaoligong Range, 100 years before my own journey, English explorer E. Young describes a scene not unlike the one I witnessed at Pianma:

During our passage through the Liso [Lisu] country, we noticed a considerable trade in a species of herb, called Lu-tze by the natives, which grows in the patches of jungle found low down in the valleys. The plant is a creeper...It has no fruit except a sort of bulbous pod, half berry and half leaf, which constitutes the valuable part of the plant. This usually grows high up on the trees, which the Lisos climb by driving wooden pegs into the trunk at intervals so as to form foot-rests. The herb has a pungent aromatic taste...and is high esteemed as a stomachic. As already stated, there is quite a large trade in this article, and we met Chinese merchants who were buying all the could get hold of. (Young 1907, 160)

Where many of the medicines mentioned above are referenced repeatedly in local and colonial accounts of the trade, “Lu-tze” does not. Instead, it appears to be a medicine that boomed in the borderland markets for a time and then quietly disappeared. When I asked Lisu healers during my fieldwork about the plant, I found that *lutzi* (LU FI:) remains a well-used herb among Lisu healers, though none recall it being a significant trade item to China in the recent past (*see* Images 3-5). Instead “Lu-tze” appears to be part of a historical, adaptive trade carried out by indigenous communities, perhaps a local medicine that had short run at the borderland markets before being forgotten.

From harvesters scouring lowland jungles to communities attempting to cultivate valued medicines, these historical cases from the last two centuries closely echoed my own experiences during three years of ethnographic fieldwork (2018-2020). As I followed harvesters from medicine harvest grounds to brokers' houses to border markets, I too found that this is an indigenous industry, and that supposed hordes were participating often other displaced communities. Of the 158

medicine harvesters I interviewed, 156 identified with one or more of the indigenous communities that has historically inhabited the borderlands of Kachin State, including: Lisu, Rvwàng, Leme, Nu, Khophang (Fuchya), Jinghpaw, Lhaovo, Ngochang, Tai, Lahu, and Ta'ang.<sup>5</sup>

To see the medicine trade as part of an indigenous economy is on one hand to recognize that much of the labor that presently supplies the trade, and has in the past, is provided by indigenous communities who remain the “foundation” of this resource industry (Menzies and Butler 2008). Recognizing indigenous communities as an enduring foundation that predates modern regimes of settler colonization and cross-border capitalism, is critical as it acknowledges them as “actors, not [just] as subjects acted upon by outside forces” even if their role has varied across time and geography between “independent producers” and “labor power” (Menzies and Butler 2008, 131, 148). The effect is not only that indigenous communities remain rooted in a “sense of their history and culture” (Menzies and Butler 2008, 149), but also that aspects of that culture have become foundational to the resource economy of the borderlands: be it in the continuing use of medicines as currencies, the broader circulation of these diverse medicinal species into regional resource markets, or even the appropriation of indigenous cultivation techniques. This became particularly apparent as I studied with indigenous healers from across these communities during the course of my fieldwork in Upper Myanmar: more than their labor, their medicine traditions were also foundational to the evolving trade.

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<sup>5</sup> The two exceptions shared similar stories, both were Burmese soldiers who had both been captured in clashes with the Kachin Independence Army and had eventually been released from detainment and allowed to settle in Kachin areas. There they not only married Kachin wives, but also followed their wives and in-laws in harvesting medicines as a source of income.

### *B. Indigenous Medicine as a Foundation for the Medicine Trade*

The role of indigenous medicine knowledge in the trade became particularly apparent at the end of my first year of fieldwork (2018), when I was invited by Lisu doctors to participate in a series of “herbal medicine knowledge exchanges” (SI, CE NV.. ㄐ; SC. NI, SO ZI; DU) hosted by the Lisu Apothecary Association of Myanmar. I had been introduced to the president of the organization soon after arriving in Myitkyina for fieldwork (2018) by a harvester who was a regular member of the association. To my good fortune the association’s annual meeting was being held just outside of Myitkyina that year and the president was enthusiastic for me to attend. After arriving, I quickly found out that many of the apothecaries (or healers) were old hands in the medicine trade.

With the meeting proceeding in confusing a jumble of Chinese, Burmese, and Lisu, I found myself sticking close to a healer from the Latse River Gorge (L-ㄐE;-LO.,) north of Pianma. His name was a Atsi Jacob, and in addition to having worked in the medicine trade for most of his life, he was fluent in all three languages. More importantly for me, he was excited to talk with a foreigner who had visited the borderlands so close to his home. As different members of the association took their turns teaching healing techniques and formulae, he would whisper translations to me and show me his notes to correct my poor Lisu spelling. In the first day, many of the healers focused on teaching diagnostic techniques or plants that could be found in the lowlands around Myitkyina. When another healer from the Latse River region got up to teach a medicine formula (*see* Figure 2) for lung ailments, Atsi Jacob was quick to get my attention: “Listen to this, this is real Lisu medicine. *Mapha* Fu Sa Yi is from my valley. He is very knowledgeable about medicinal plants. You may know some of the plants he is talking about.”

| Medicine Name in Lisu <sup>1</sup><br>(romanized) | Identified Chinese Name <sup>1</sup><br>(pinyin) | Botanical Identity in Chinese Sources <sup>2</sup><br>(Genus species FAMILY) | Export Trade Status <sup>3</sup><br>(history) | Trade Name in Lisu <sup>3</sup><br>(romanized) | Trade Name in Burmese <sup>3</sup><br>(romanized) |
|---|--|--|---|--|---|
| PṬ, MU..<br><i>peumu</i>                          | 川貝母<br><i>beimu</i>                              | <i>Fritillaria cirrhosa</i><br>LILIACEAE                                     | Established<br>1940's-present                 | PṬ, MṬ<br><i>peumeu</i>                        | မချစ်ဥ<br><i>ma-c'iq-u</i>                        |
| FU T: CY.<br><i>tzutacya</i>                      | 白及<br><i>baiji</i>                               | <i>Bletilla striata</i><br>ORCHIDACEAE                                       | New<br>2020-present <sup>4</sup>              | PṬ, CI<br><i>paeci</i>                         | ပေးကြီ<br><i>pei-ci</i>                           |
| LD MO DI, dY:<br><i>loemodiphya</i>               | unknown<br>-                                     | unidentified<br>-  | not exported<br>-                             | unknown<br>-                                   | unknown<br>-                                      |
| Y.. D..<br><i>yada</i>                            | 重樓<br><i>chonglou</i>                            | <i>Paris polyphylla</i><br>MELANTHIACEAE                                     | New<br>1990's-present                         | XY, DI,<br><i>shachi</i>                       | ရှားချီး<br><i>sha-c'i</i>                        |
| L: M MU FṬ<br><i>lama mutzeu</i>                  | 老虎須<br><i>laobuxu</i>                            | <i>Tacca chantrieri</i><br>DIOSCOREACEAE                                     | Intermittent<br>2000's-present                | L: M MṬ FṬ:<br><i>lama meutzeu</i>             | ကျားမုတ်ဆိတ်<br><i>ma-c'iq-u</i>                  |
| BY: YI<br><i>byayi</i>                            | 蜂蜜<br><i>fengmi</i>                              | <i>Apis mel</i> [honey]  | Established<br>1900's-present                 | BY: YI<br><i>byayi</i>                         | ပျားရည်<br><i>pya-yi</i>                          |
| MO, CE:<br><i>moce</i>                            | 菖蒲<br><i>changpu</i>                             | <i>Acorus calamus</i><br>ACORACEAE   | not exported<br>-                             | unknown<br>-                                   | လင်နေ<br><i>lin-ne</i>                            |

Figure 2. An Collaborative Analysis of *Mapha Fu Sa Yi's* Cure for Lung Ailments. <sup>1</sup> Recipe in Lisu and Chinese by Fu Sa Yi. <sup>2</sup> Botanical identification from a Chinese herbal medicine handbook, pointed out by Fu Sa Yi and Atsi Jacob (KMPH (1970)). <sup>3</sup> Trade notes and analysis by *Mapha Fu Sa Yi* and Atsi Jacob.

As Fu Sa Yi, listed off the ingredients in Lisu and Chinese, Atsi Jacob excitedly whispered their names to me. At the next break he guided me over to Fu Sa Yi so we could discuss the formula. *This should be in your research.* As we went down the list of ingredients, Atsi Jacob borrowed a copy of the *Yunnan Bencao Xuan* (KMPH 1970) from another healer to show me the different species in the recipe and make sure I recognized each one, and telling me of their trade names in Burmese. The book was common among Lisu healers and as we flipped through its hand drawn illustrations, Atsi Jacob was quick to point out that it had been made in the 1970's after doctors from Kunming had come to the borderlands. While other healers I met often treated the book as a

great piece of knowledge given to the Lisu by Chinese teachers, the two Latse River natives were quick to point out that many of its medicines had long been used in the borderlands, long before the 1970's campaign of medicine handbook publishing in China.

Of particular interest to Atsi Jacob was *yada* (Y. D.). He explained the names Fu Sa Yi taught were the original Lisu names, and that in the trade *yada* was now called by another Lisu name: *xachi* (X. ㄒㄢ). When I told him I thought *xachi* was a ginseng, and showed him a picture of the roots in Pianma, he laughed and Fu Sa Yi stepped in to explain. *Xachi* was a sort of catch-all trade name for several valuable plants taken from the Chinese word *sanqi* (三七): a southern Chinese way of calling “ginseng-like plants.” When Atsi Jacob stopped laughing he explained it was something like a “marketing name” or a “brand.” The ginseng that I showed him was also called *xachi* at market as well, but among Lisu healers it was known as *homachi* (HO., M ㄒㄢ). Beyond having different applications, the men agreed that the market value of these drugs was typically quite different, but to those who knew the medicines it was easy to know when to barter hard for higher prices. *Xachi*, it turns out, was a way of bringing different drugs to market for variably un/discerning buyers.

While the recipe may look like a collection of popular trade medicines, Atsi Jacob and Fu Sa Yi were emphatic that each drug was a heritage passed down from generation to generation in their families. As we read the Chinese applications of the drug in the handbook, they corrected the texts, supplementing it with additional uses taught by their parents, and disregarding misapplications. Their explanations echoed those I would receive from other indigenous healers in Upper Myanmar, who often used family names for well traded drugs and offered extensive pharmaceutical instruction that far exceeded the Chinese handbooks. More than resolving any debate over where each commodity came from, these insights and Fu Sa Yi's recipe show the deep

cultural foundations of the medicine trade in indigenous medicine traditions, and expose the diverse ways in which these communities bring medicines to market.

After the meeting I filed away my notes, but two years later, I pulled this recipe out again to make an addition. When the COVID-19 struck in 2020, I was stranded in the field due to closed borders and grounded flights. While waiting for the pandemic to subside in Kachin State, I got to see another one of the medicines from the recipe emerge onto the market. In May 2020, medicine sellers began to talk about Chinese buying up a new plant in bulk that was rumored to treat the virulent lung disease: *paeci* (PṼ, C1). I called Atsi Jacob and Fu Sa Yi and when I finally got through to them in the borderlands, they confirmed that, indeed, their *tzutacya* (FU T: CY.) was one of several plants now selling in the border markets as *paeci*.

### III. KINGDOMS IN THE SKY AND THE INDIGENOUS POLITICAL ECONOMIES

While indigenous labor and knowledge are foundations of the now thriving *paeci* trade in borderland markets, for these small orchid bulbs to reach consumers they still must pass through the valleys and the *soldiers* of the borderlands. In this section, I explore the place of the China-Myanmar borderlands in the medicine industry. More than conduits or barriers to trade, these steep valleys with their bountiful medicines *and militias* have long served as a resource base for the indigenous medicine economy, and as I discovered, an indigenous political economy of resource management and taxation.

By using the term “indigenous political economies,” I follow indigenous studies scholars Kate Neville and Glen Coulthard (2019, 14) who push back on the globalizing language of the singular “economy” and “political economy” to draw attention to the diverse “indigenous resource governance strategies and movements that are reshaping global and local political economies.”

These strategies are not only emerging out of a resurgence of indigenous activism in the 2010's, but also from sustained historical efforts by indigenous communities to maintain “social economies” within broader conditions of capitalism which point to “new possibilities for future political economic organization” (*ibid.*, 14). Where Neville and Coulthard hope these economies will reveal for possibilities to move away from logics of transactional exchange in the Global North (and beyond), the extractive indigenous political economies of the China-Myanmar borderlands offer a view of how indigenous communities reassert control in the illiberal borderlands of the Global South where conditions of militarization and extraction run unfettered. Their efforts to establish indigenous political economies through networks of armed checkpoints reveal some of the ways indigenous communities are striking a forceful balance between protecting resources and making profits to stay afloat.

#### *A. The Gorge Country*

After our first meeting at the Apothecary trainings, the next time I met Atsi Jacob was a few weeks later at another healer's house outside Myitkyina, Li Isaiah. Atsi Jacob came to visit and was carrying a large bag that looked like it had a treelet inside, but when he opened the bag, it turned out to be a AK-47 assault rifle. He explained that he had brought the gun down to get it repaired in town, and in what followed the two healers engaged in a detailed discussion of how to best fix and maintain the assault rifle. Ever the gentleman, Atsi Jacob apologized if the sight caused a fright, and assured me that it was for “our militia” (RO: P X: MV;) in the borderlands. Atsi Jacob, it turns out, was a commander in one of the many militias that now controls sections of the China-Myanmar borderlands—the “soldiers” that my traveling companions from Pianma spoke of with hushed tones. In the conversation that followed, I asked him about the militia and the medicine

trade, but rather than answer me directly, he told me of his childhood growing up back and forth across the border — the story of his family’s resettlement:

When the Cultural Revolution came my parents knew they had to leave our home in the Salween River. My parents were deacons in a Pentecostal Church. And they also owned a shop in town. So they knew some of the people would call them *fuchya-pha* (fU-dY, d:). You know *fengjian* (封建) in Chinese? Feudalism. We pronounce it *fuchya* in Lisu. *Fuchya pha* originally means the feudal nobles (封建贵族). You know many of the Nu people here in Myanmar, they call themselves *fuchya-pha*? They also left the Salween River. The same. People thought they were related to the old feudal lords in the Salween River. Maybe they were?

That’s why we all came to *lokhu muh* (LO., XU: MN:)—the country (MN:) of gorges (LO., XU:). My parents first crossed into the Ngwaphakha River Gorge (AW-d:-X, LO.) gorge above Pianma. The place you went. Then they climbed up to the Laga River Gorge (L.-G; LO.). That’s where people used to hunt—*ga* (G;) musk deer—*laho* (L. HO) for market. Thus the name. That is where I was born. It was hard to live there, so we crossed into the Latse River Gorge when I was a baby. That’s where I grew up. You know in the Book of Jeremiah it says, ‘Leave the cities and dwell in the rock...be like the dove that nests in the sides of the mouth of a gorge’?<sup>6</sup> That’s what we did. Like doves we lived in the rock. There’s a lot of rock in the gorge country. We cut swiddens, ala! Some were so steep! And we hunted. And my father and mother taught me medicines which we picked and traded. We have such good medicines in Latse. Down by the river there is a great jungle like you see here [near Myitkyina]. Hot country jungle. You can find the most fragrant sassafras trees (MI: NƏ. ZI) there. And on the mountain there is snow and caterpillar fungi (XŃ. BŃ: DI). There are so many valuable medicines there. I hope you can come and stay with us there one day so I can show you all the medicines.

[*He pauses.*] So when war came with the Kachin, we had to make the militia to protect our valley. Without the valley what livelihood would we have?”

In Atsi Jacob’s roundabout answer, the militia is the latest chapter in a heroic tale of resettlement, and as Atsi Jacob spoke, Isaiah and his wife Gwa Wumi nodded along in vigorous affirmation. They had grown up in the same gorge as Atsi Jacob, and while their family had lived in the region for longer, they recalled when waves of people that came over during the 1960’s and 1970’s.

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<sup>6</sup> Jeremiah 48:28. All biblical quotes in the text are taken from the *English Standard Version* (2016 text version, ©2001 Crossway, a publishing ministry of Good News Publishers). His quote comes from the *Lisu Standard Version* (1980). It could be reverse translated from of Lisu as, “Climb up and out of all the cities, and live in the rock. Live like the dove in the side of the rocky gorge slopes [LO dƏ A JŃ TV LO.. T YE SI B. KW TY YE= B. LI. KW YI XŃ, XŃ M A GU LE BE TY=].”

Such stories of resettlement and independent life resonate with processes of state evasion that James C. Scott (2009) has argued were once widespread across the mountainous reaches of inter-Asia. Indeed, scholars of Lisu-speaking peoples have often framed Lisu migrations as forms of anti-authoritarian state escape. Scott's own argument not only draws from such ethnographies (Dessaint 1998, 2004; Durrenberger 1983, 1989; *cf.* Scott 2009, 88, 175, 213, 217-8, 234-5, 276), but has also inspired recent authors to brand the Lisu as preeminent "escape artists," talented in the "art of not looking back" (Mazard 2014) and staying "far from the ruler" (Zack 2017).

While the majority of these studies focus on Lisu movements to Thailand, on the surface, their logic seems applicable to Lisu migrations into the China-Myanmar borderlands. Scott's analysis appears particularly relevant as it interprets escape migrations in terms of livelihood and subsistence strategies—modes of production that closely resemble Atsi Jacob's story of life in the gorges. Scott (2009, 41-50) sees "hilly terrain" as offering a fundamental challenge to the "walking" state's ability to capture produce and peoples, creating a graduated boundary to "state spaces." This friction of terrain is further enhanced by a difference between crops and subsistence strategies. Those who farm "state crops" like lowland rice and wheat that must be gathered at prescribed times, are vulnerable to opportunistic extraction by state agents and soldiers during the harvest season. By contrast, those who climb the hills and make a living growing "escape crops" like taro, cassava, and millet which can be stored in the ground or harvested at irregular times (Scott 2009, 199-207), or those who make a living foraging the hills and collecting valuable forest products (Scott 2009, 105-107, 188-189, *fn.*379). State agents would have to climb, dig and forage. The new life described by Atsi Jacob in the gorge country, cutting swiddens, hunting and gathering valuable medicine well fits Scott's political ecology of escape.

Yet, in the conversation that followed Atsi Jacob's story, the three spoke of the valley less in the terms of a space of refuge, and more in terms of its economic importance and potential:

[From my field notes, January 2019] Isaiah points out that many of the refugees were not really moving into new lands, rather they were resettling valleys that they had long used for hunting and harvesting medicines. The routes they fled along were old paths to harvest grounds. Moving into the gorge country means leaving the city to move into the "land of medicines" (SI, CE NV ɬ; MN:). Every plant there is a medicine. Atsi Jacob agrees but laments that his family left behind their brick-and-mortar store in one of the region's better markets. After moving to the gorge country, he complains they were often at a disadvantage on the latest prices when they went to the city. This is surprising. They fled persecution, but Atsi Jacob speaks of regularly returning to their village and the Salween River Valley to sell medicines and other products at market. Gwa Wumi agrees with Atsi Jacob's market concerns. She explains this is why it is better to move down to Myitkyina (like her and Isaiah) and live in the cities. Atsi Jacob reminds her that if everyone left there would be no one to guard the gorge and others would take all their caterpillar fungi. Gwa Wumi agrees it's good that the militia "keeps our valley for us" (RO: Bɛ ɿ RO: L:-ɬE;-LO., TV LO. J Gɿ), but counters that there's never enough food in the gorge country. Atsi Jacob suggests that that is why they need more to develop agriculture options for the valley, and asks me what I think they should grow...

Where Scott (2009, 40-50) tries to understand hill communities by thinking and seeing like the administrator of an agricultural state, Atsi Jacob, Isaiah and Gwa Wumi appear to be thinking more like administrators of a supply-chain franchise: topographies of agricultural lands, highways, and state centers replaced with harvest grounds, trade routes, and markets. In perhaps the starkest contrast to Scott's vision of a mobile life of escape, Atsi Jacob and Isaiah do not speak of abandoning the gorge country when faced with conflict in the highlands. Instead they insist on the importance of protecting and hanging on to their rocky valley. Their decision makes a certain sense if one stops thinking of them as victims of the state, and recognizes instead their efforts to create a political economy: the gorge country is the harvest ground that their community has long known and depended upon for income. It is the field of production that they have continually sought to maintain control over.

*B. The Soldiers and their Kingdoms in the Sky*

When I returned to Isaiah Li and Gwa Wumi's house later that month, Atsi Jacob was not there and Gwa Wumi took the opportunity to tell me all about the hardship of life in the gorge country *under militia rule*. Her complaints shed light on how militias use checkpoints and levies to institute their political economy in this remote landscape:

Salt is the hardest. Sometimes you have to walk a week to get salt! [*Her own goiter scars shake as she tells the story emphatically*]. So you have to cross the mountains. I remember when someone would come back from China with salt when I was a kid. We would all gather around to steal pinches of it. *Anae*, it tasted so very sweet! Rice was also hard to get. There's millet, but it stinks! *Anae*, it smelled so bad. We hated eating it. If we could, we would get rice. Rice fills you up. But if you wanted rice you had to grow it or buy it. Swidden rice wasn't enough, so then you had to buy it from over the mountains. And then there were the soldiers. If something passed them they would take a portion. They always waited at the pass. If you weren't carrying anything heavy you could climb the higher passes, but if you were carrying anything heavy it was impossible. And money was hard. You needed money to buy from the markets on the other side [of the mountains], so you would bring things over to sell and the soldiers would take a portion. The only thing you could hide from those soldiers were medicines, but if you carried a lot or if they knew the medicine, they would take some. They even used to take a leg from every deer we hunted. Communists. *Anae, twee* [spitting sound]! They thought they were *sipha*, with their own "kingdoms in the sky" (MU XW W TI. MN:). But I tell you there is only one *Sipha*, and that is our Lord Jesus Christ (Sl.. d: YE-SU JI-SU). Amen!

The soldiers Gwa Wumi mentions were likely members of the Communist Party of Burma's (CPB) who seized the gorge country in 1969. Their people's army was led by two locals of the gorge country, Zakhaung Ting Ying and Leyawk Zelum, who had broken away from the previous military rulers of the area: the Kachin Independence Army or "KIA" (Lintner 1990, 76-79; Lintner 2011, 435; cf. Sadan 2013). Journalist Bertil Linter (1990, 37), who had the opportunity to stay at the CPB headquarters during the late 1980's and examine their records, reports that the CPB was making 67% of its income from taxing trade with China in the late 1970's after it consolidated power over the borderlands. When the CPB disbanded in 1989, Ting Ying and Zelum would go on to form the country's first officially recognized "militia" or *pyithusiq* (ပြည်သူ့စစ်) ruling over the

same territory under the rationale that they provided border security, and that they could serve as an ally for the Myanmar Military against the KIA (Lintner 2011, 435). The NDA-K would later fragment into a bevy of officially recognized “indigenous militias” (ဌာနေပြည်သူစစ်) and “Border Guard Forces” (နယ်ခြားစောင့်တပ်) in the transitional years of 2008-2011 with the Border Guard Forces facing variably greater integration into the Myanmar Military and the indigenous militia remaining largely autonomous (Buchanan 2016, 24-26). The functional leaders and soldier bases of these diverse militia groups remained indigenous peoples from across the gorge country, and the recognition they won to administer these spaces was from the Myanmar Military—a political relationship that has endured through Myanmar’s brief second democracy period (2013-2020) and into the present.

Accordingly, the first national recognition of indigenous sovereignty over lands in Upper Myanmar’s borderlands, and *the only form of recognition* that continues in the present, is neither one of liberal democratic representation nor any principle of economic liberalism. Rather it is a military recognition that grants these groups recognition based on imperatives of “security” (လုံခြုံရေး) and permits these groups to self-finance (Buchanan 2016, 37). However the various changes in their national recognition seem to have changed little for communities on the ground and in Lisu all of these continue to be called *militias* (P XY: MV;) and their leaders *siphas*. As I interviewed other families that had moved down from the Gorge Country into the settlements around Myitkyina<sup>7</sup> and Putao,<sup>8</sup> I heard stories of soldiers levying salt, rice, cooking oil, *Coptis teeta*, caterpillar fungi, cardamom, cell phones, and diesel (to name but a few examples) in the past *and the present*. The most noted difference after the creation of the Border Guard Forces is that now two border

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<sup>7</sup> Interviews conducted November 2018-April 2019; 28 participants.

<sup>8</sup> Interviews conducted April-May 2018, January 2019, August-September 2019, April-August 2020; 32 participants.

crossings in the gorge country (Pangwa and Pianma) now have official customs and immigrations checkpoints staffed by the Myanmar Government. However the vast majority of crossings remain administered directly by *militias* and even at Pianma and Pangwa, a wealth of side paths managed by militia member provide access routes for gorge country residents who lack proper national documents—after all most gorge areas lack government offices that can grant official documents. Stories of levying extraction continuing into the present were not particularly hard to come by in these urban centers: many explained their migration out of the gorge country as an escape from the taxation and extraction taking place under different militia groups and *siphas*—be it the KIA, the Communist Party of Burma, the NDA-K or new groups like the one Atsi Jacob serves in formed in the mid 2000’s.

Across these stories, checkpoints and mountain passes are at the center of these militia predation strategies, turning the frictions of terrain into a strategy of profitable control. As Gwa Wumi points out, this strategy gives militias the opportunity to levy the total (net) movement of goods coming in and out of their spaces: including the produce of the indigenous communities they claim to (militarily) represent. However, to see this form of checkpoint-based political economy as a recent development in a new terrain of the nation-state, would overlook its historical roots in indigenous forms of highland feudalism. Returning to Leach’s account of Kachin State in the 1940’s, one finds similar accounts of levied trade and ransomed passages in Gorge Country, particularly at Pianma. As Leach explains, the steep “mountain barrier” and sparse passes organized communities around trade flows, where “income from tolls from transit caravans” was not only an “important element in the economy” but a “major source of power” comparable to control over the “rice land and slaves” of the lowlands (Leach 1964, 237-8).<sup>9</sup> The Pianma leaders

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<sup>9</sup> Maran La Raw, Leach’s Kachin assistant throughout his fieldwork who later became an academic under the tutelage of Frank “Chit Hlaing” Lehman, points out that Gumlao are in fact not “rebels” against the state. Instead, they are

in particular were of interest to Leach (1964:238), because they were able to “balance their economy by means of caravan tolls alone.”<sup>10</sup>

Leach’s description of Pianma’s communities “balanc[ing] their economy” with tolls speaks not only to how these present day militias attempt to cover the many kinds of shortages Gwa Wumi described (food and salt), but also to how these groups attempt to manage an indigenous political economy amidst the pressures of greater outside market forces. When I later talked with Atsi Jacob, about the subject of checkpoints, he spoke to this challenge of balancing directly:

Of course militias use tolls and checkpoints. All militias do. Soldiers have to eat, and where do the soldiers come from? They come from the villages in the valley. When they eat, the people eat. Many of these descenders [a term for outmigrants] don’t know what we are keeping from coming in. Right after our militia was formed, Chinese businessmen came. As soon as we were registered they came. They said they would give us a truck full of cash to open the road into the valley. A whole blue cargo truck with the back full of money. 100 RMB notes. How many million billion RMB? I don’t know. They said if we needed two trucks, they could arrange it. No problem. We open up the road into the valley. They come and log. They promised they wouldn’t cut too much. We said no. And they asked again, and we said no. If we wanted cash, easy. Done. We said no because if the people lose the forest, they lose their livelihoods forever. No more medicine roots. No more food. Landslides. In a few years the valley would be empty.<sup>11</sup>

Regardless of how one assesses their merits, these militias and their checkpoint schemes of management in the borderlands create indigenous political economies within the overlapping

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communities who have become over reliant on “upland opium-poppy (cash crop) cultivation” to the neglect of subsistence production, and as such turn to other livelihood strategies (Maran 1967, 138-139).

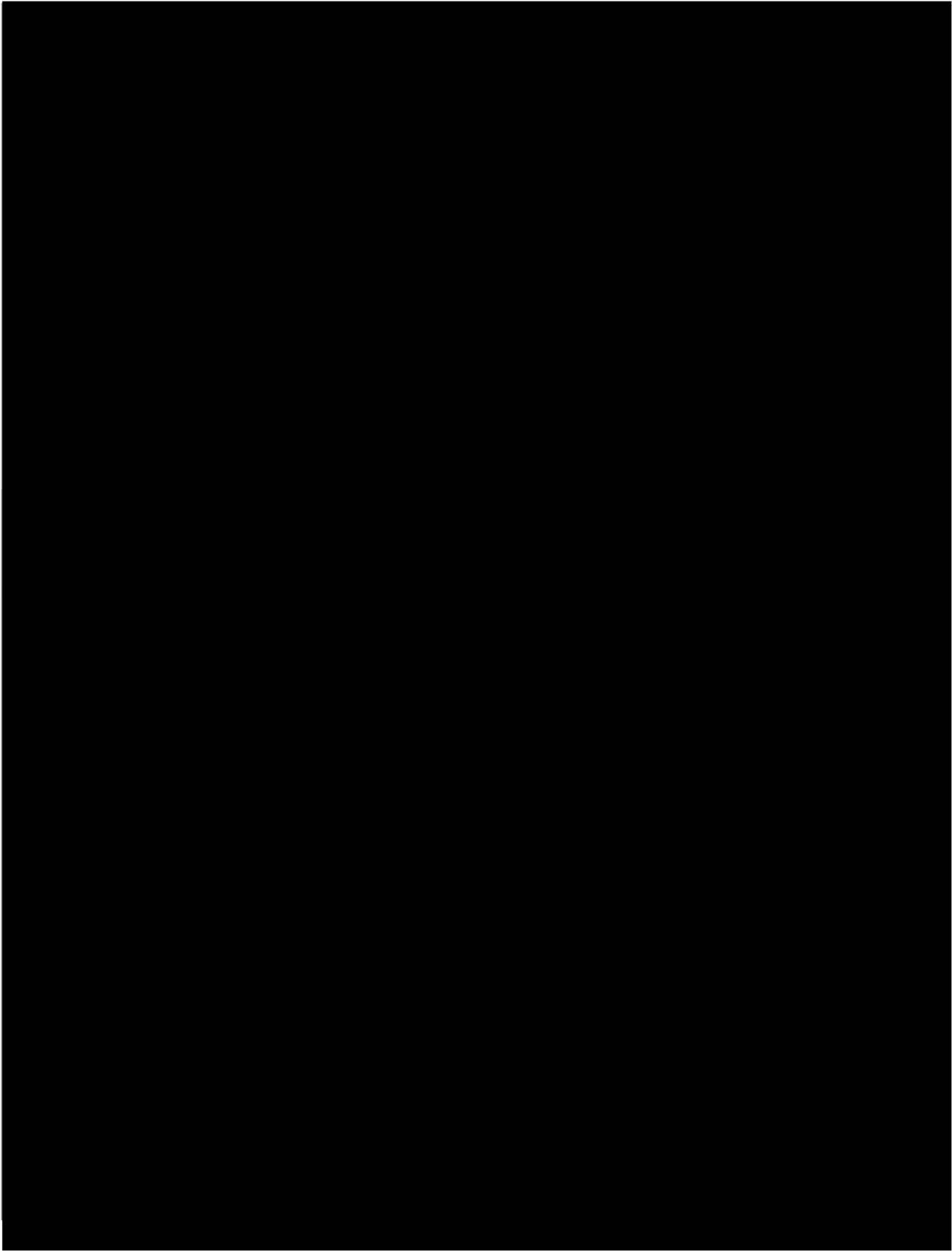
<sup>10</sup> Complaints of Lisu predation in this region stretch back to before the founding of the modern nation-state. In Putao, I heard stories of extraction levying taking place in the 1920’s under *Lisu* Lords, who are alleged to have also taken slaves. These stories are corroborated by the British colonial administrator of Putao, J. T. O. Barnard (1925:140-141) who reports in the 1920’s that Dvrù and Anong (Nu) communities in the upper N’Mai River Gorge had been displaced into neighboring valleys at the turn of the century “owing to fear of the Lisu” who “began to levy blackmail” upon them. As several Lisu elders in Putao clarified (August 2019), these Lisu were likely not collecting debts for themselves, but for feudal lords in the Salween River Gorge or Lijiang. Recent scholarship exploring the imperial archives in Tengchong has uncovered records of the Qing Dynasty government using of Lisu living in the southern reaches of the gorge country as “imperial resources” to secure trade routes and negotiate relations with locals (Zhong 2015).

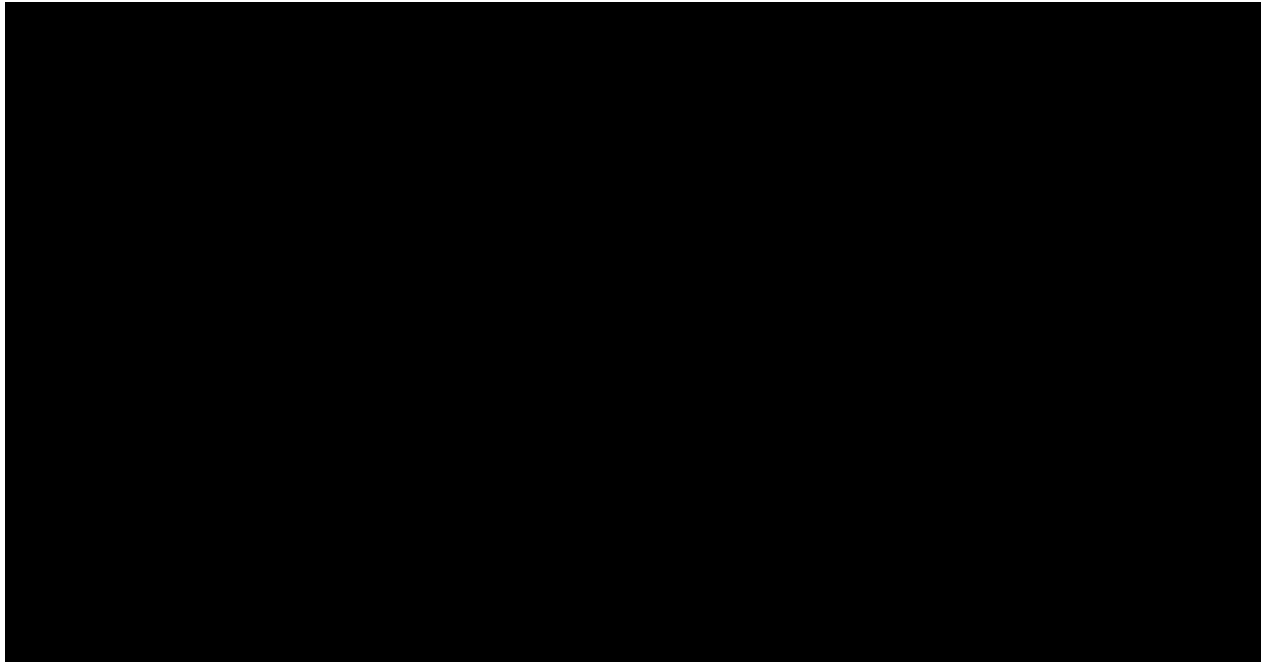
<sup>11</sup> Other former members I met of from Gorge Country militias tell the same story, painting the militia as a defender not only of local communities but also the environment.

spheres of large regional and national economies in the borderlands. They create indigenous political economies by not only asserting (profitable) control over trade flows and resource access through this international boundary, but more importantly, by 1) placing indigenous community members in the positions of management and 2) protecting the indigenous foundations of the area's resource economy—its gorges (*cf.* Neville and Coulthard 2019, 12). However as Gwa Wumi bluntly points out, their strategy of taxing paths that simultaneous function as lines for indigenous supply chains, indigenous subsistence, and regional trade gives these militias a different “balancing” challenge: trying to find an equilibrium between the levying of trade and the levying of the indigenous economy. This is the precarity of the indigenous political economies that militia attempt to establish in the Myanmar-China borderlands. For groups who fail to find balance between these modes of predation, lurks the risk of their indigenous constituents out-migrating, and their areas collapsing.

### *C. A Present Day Kingdom and the Indigenous Political Economy*

The Sewlew River area offers one example of how the borderland political economy is structured by checkpoints, and balancing act militias must perform. An indigenous militia was established in the area in the late 2000's, and I learned about the region and its militia through outmigrant medicine harvesters I met in Putao and Myitkyina. Their stories highlights one way in which these militias are working to balance their levying and controlling activities: by providing medicine brokerage services for indigenous communities in their territory.





The Sewlew River, nicknamed for the peaches or *sewlew* (SṚ: LṚ:) that villagers grow throughout the valley, lies in a small but strategic section of the gorge country. It flows from near the China border, winding through several mountain ranges before joining the larger Lemedo River or N'mai Hka in central Kachin State. Its settlements and its network of trails and roads are organized around the central rivers and accessible mountain passes. The central east-west path in theory connects the markets of China's Salween River Gorge in the east to the Myanmar government-controlled lowlands of central Kachin State in the west. In 2018, locals estimated that traveling between the two required anything from 7-10 days due poor road conditions. Even with graveled roads advancing as far as Bosade in the east and Dawode town in the west by 2020 (reflected in the map), the travel time still remains 5-6 days due to the undeveloped central passage. This problematic path is little more than a thin walking path cut out of cliffs, that can be driven by motorcycle with significant risk. The endurance of this path and the development of graveled roads



that can support 4-wheeled vehicles suggests that the region's economy is not being driven by a flowing tradeline between Myanmar and China (as seen at Pianma), but more so around resource extraction and production.

The development of checkpoints is likewise skewed towards protecting and regulating the utilization of resource commons. Harvesters report that the Heuzha Kha and Xopo Waci checkpoints are based next to militia-run logging facilities. These facilities allegedly not only serve as a base for militia-managed selective logging, but also serve to keep unauthorized Chinese business interests from encroaching into the resource-rich Amogapha and Gwazha River valleys. However, it is not only the borderland checkpoints that protect resource commons. As one harvester noted, the Dawode checkpoint near the northbound trails also serves to control access to the resource rich northern areas, even though former militia members and emigrants from the valley emphasized the necessity of that checkpoint for keeping the KIA at bay. The harvester noted that locals traveling with large quantities of forest products were regularly subjected to questioning and faced levies if their activities were deemed excessively commercial. In a similar fashion, the Bosade checkpoint is reported to regularly inspect locals who appear to be traveling with commercial volumes of forest products.

Overall, these checkpoints seem to attempt a balance between restricting outside groups from taking indigenous resources and levying commercial taxes. However, in recent years the militia has struggled with its image around two checkpoint controversies. The first is the increasing practice of identity checks that require locals to present their national registration cards and/or precisely identify the location of their home, name their family, and give detailed of their travel plans. These not only include obvious entry points like the 29-Mile Bridge and Zeupa Kheu, but also the interior checkpoint of Bosade, which has become a particular sore spot. The central

conflict reported at these sites<sup>14</sup> is that Lisu communities claiming to live in the Sewlew River Gorge are interrogated as potential outsiders looking to engage in unpermitted resource extraction or accused of being migrants from China. With many Lisu living in the Gwazha and Upper Sewlew River valley (below Zeupa Kheu), the Bosade checkpoint creates substantial challenges for these communities in connecting with central Kachin State and Myanmar and has fueled claims that the indigenous militia is little more than a platform to privilege and advantage other communities.

However, the Zeupa Kheu checkpoint suggests discontent that is drawn less around community lines and more around perceived imbalances between the militia's levying of local peoples and its business avenues for medicine harvesters. Stories of wildly extractive levies reaching as high as 50%, have been reported by *xachi* and cardamom harvesters attempting to cross the border here to access Chinese markets. The complaints are not limited to any particular community,<sup>15</sup> but the majority cited a frustration that harvesters who engaged in the militia's plan for harvesting and selling these medicines were able to do so without paying taxes. Their repeated claim was that the militia was less involved in security and more involved in the process of fashioning itself into a resource cartel that favored cardamom growers from militia strongholds like the Lemedo and Bazi River Gorges. Such participants were not only seen as benefiting from disproportionately from the cartel but were also claimed to enjoy free movement through checkpoints.

When I spoke to former representatives of the militia's trading company<sup>16</sup> about cardamom, their responses were surprisingly less defensive than imagined, and their voices bespoke frustration and resignation. Most accepted that there would be *descenders* who decided to leave the valley,

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<sup>14</sup> From 14 informants, including 4 former militia member informants (August 2019).

<sup>15</sup> From 12 informants including Lisu, Lhaovo, Ngochang, Rvwàng, and Jinghpaw (August 2019, April-May 2020).

<sup>16</sup> 3 informants (April 2020).

but they pointed out that many locals who complained of border tolls did not realize that they were imposing similar tolls on Chinese merchants who came from the other side. While firmly denying any practices of favoritism in selecting who could participate in the militia's brokerage services, they were quick to admit that the militias were struggling to manage the trade and that they were personally taking losses on cardamom this year. Showing me bags of dried cardamom pods at one of their business offices, they pointed out that Chinese brokers had completely misrepresented their demand and potential prices at the start of the season, flooding the market. Now they were mostly selling cardamom at a loss and struggling to find new buyers (in fact such games were widely reported across the borderlands in 2019). They further explained they generally did not pay participants in their cardamom business before the point of sale, but in this year they had made small advanced payments in light of the delays in offloading the produce. In their view, they were struggling to find imperfect solutions to sustain community business in a free market that would easily take advantage of their community if let in.

#### IV. THE FREE MARKETS AND ILLIBERAL INTERVENTIONS

The narrative that both Atsi Jacob and the Sewlew militia men struggle with is a common narrative that I encountered throughout my fieldwork: that indigenous communities had moved out from the mountainous gorges with their trade strictures and networks of militia extraction to pursue more free livelihoods and access to markets in the lowlands. In my conversations with indigenous settlers moving into these outposts of the Burmese state, I heard common talk of easily acquiring “vacant land” (မြေလွတ်) and working “freely” (လွတ်လွတ်လတ်လတ်) and “leisurely” (အေးအေးစေ့စေ့) in the surrounding lowland jungles, away from the “tangled” (ရှုပ်ထွေးတဲ့) politics of the gorge country.

However, in moving down to the lowlands, borderland communities were entering into active spaces of state-backed, settler colonial expansion where lowland Tai and Kachin (Jinghpaw) communities who had long inhabited these spaces were negotiating to retain access to their own lands and resources. While indigenous communities from the gorge country came seeking free markets and free livelihoods in these frontiers of the Burmese state, my interviews with settler harvesters point to the challenges that many face as they grapple with the market play of brokers and the increasingly protective strategies of lowland indigenous militaries like the KIA. Rather than the an escape from the indigenous political economy of borderlands, my time with settler harvesters suggested they were part of a process of extending the indigenous borderlands into the interior of Upper Myanmar.



Image 4. A variety of bleeding vine harvested. 2019.

### *A. The Bleeding Vine Trade*

During the first year of my fieldwork (2018), the struggles borderland communities encountered in the lowlands were most apparent in the bleeding vine trade. Bleeding vines are so named for the red resin which comes from the inner bark and earning them Chinese market names like “chicken blood vine” (鸡血藤) and “big blood vine” (大血藤). Lisu traders call the plant *niguca* (NYL, GU: C) meaning “the rib vine” or “ribcage vine” for its tendency to branch out at its base with multiple thick vines extending from a central vine trunk, like ribs from a sternum.<sup>17</sup> When I arrived in Myitkyina in 2018 to carry out concentrated fieldwork in the area, the trade in bleeding vines was in full swing. My introduction to the vine came one afternoon during a Lisu lesson in one of the migrant settlements outside of town. In the middle of reviewing grammar, a large Chinese truck arrived in the settlement center. Its truck bed was overfilled with gnarled vines, whose cut ends were crusted with crimson and black dried resin and dust. My teacher stopped our lesson so we could watch as the villagers began unloading and dividing the vines among the households of the collectors. Some immediately went to work cleaning and thin-slicing the vines for packing in medicine bags while other sorted through the large pieces in an effort to identify if any were uniquely valuable.

My instructor, a local pastor, explained that the trucks had come back from the Putao-Myitkyina road where Burmese construction companies were taking liberties with state laws that entitled them to “clear the land for road stabilization purposes within 500m.” In a practice common throughout Myanmar, the companies had reportedly auctioned off sections of the roadside to loggers. The loggers had taken the liberty of cutting over 1 km into the dense jungle. When the

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<sup>17</sup> In Burmese the plant is called *ma-c'i-nwe* (မန်ကျည်းနွယ်) or “tamarind vine” because of how its complex leaves resemble those of the tamarind tree.

villagers heard about the clearance operation they jumped on the opportunity, resulting in the flood of bleeding vines.

Their harvest was in many ways typical of the way in which settler colonial and franchise colonialism intersect (Wolfe 2006), with developmental initiatives opening up resource extraction opportunities. Kachin forests that had remained free of Burmese influence for much of the nation's history turned into denuded lands wiped clean of trees and valuable medicines. For the settlement harvesters from the gorge country, the bigger problems came at the market. As the pastor later explained in private, the brokers who kept egging the villagers on to collect the vines were to blame: "In the end they never buy that much, and then we just have bleeding vines sitting around everywhere and where's the money? They're shrewd and cunning (လဲတယ်). It would be better if the people could find work in the city."

As I investigated the trade over the following months in the settlements surrounding Myitkyina, I found that those who had been working in the bleeding vine for longer had similar complaints. In a neighboring settlement, I interviewed Jeremiah Bya, a young Lisu whose family had moved down when he was five. He had gotten in on the bleeding vine trade when it first arrived in the area, and like the pastor he had become thoroughly disillusioned:

We started harvesting four years ago [2014]. It was very easy. The Chinese broker showed us pictures of the plant and a piece of dried vine. We knew the plant. Healers in our village use it as a medicine for blood diseases, lady problems. I think Kachin doctors also use it, I'm not sure. So we went to Chyang Hkrang. That's the Kachin village before the Mali-Nmai river confluence. You know it? It's maybe 10 km from here. We didn't have to climb very high above the village to find lots of the vine. We were just 3 people. We spent a day cutting vines, filled up a small truck and drove it back. Sold it to the broker the next morning and we each made almost two 300,000 kyat [~US\$285] for a day's work. I think he paid us maybe 40,000 kyat per viss. Easiest money I ever made.

But the brokers weren't loyal at all. They played with us. They went around telling everyone. They would say high prices in the village to encourage people to collect. 60,000 kyat per viss. 70,000 kyat per viss. They never bought what they said.

Sometimes they didn't even come back at all. Maybe they got it from another village so they didn't come. They became very picky. Things they didn't like they didn't take. They would say 'oh the quality is bad' or 'the market is bad' so they paid us less. Sometimes we collected 30-40 viss each. So much work, and then they would only buy 10. It's so wasteful. Then we hear from another village that they came and told more villagers to harvest! They were just playing. We wanted to run them out of town, but who else is going to sell the roots? With all the people picking, the vine is gone here now. The only way we made money was to keep going further and further north looking for the old vines. Big vines. Especially the ones higher up the hills. Those we could sell for high prices. By the third year my friends and I were having to drive our motorbikes six or seven hours up the Putao road into KIA country. But the price kept going down every year. We were lucky if we could get 10,000 kyat per viss. Finally, this year I quit.

In Jeremiah's view the problem was not simply one of over participation in the market creating a flood of goods. To him and the pastor, the problem was that brokers engineered this dynamic by promoting 'gold rushes' by advertising false prices and false levels of demand. Rather than a monopolistic manipulation, where a single producer can "sabotage" (or reduce) the availability of a good on the market to drive up its price and charge "what the market will bear" (Veblen 1919, 91), Jeremiah and the pastor were encountering a monopsonistic strategy. A monopsonistic manipulation of the market aims to tilt the market in the buyer's favor with supply that far outstrips demand. By encouraging a glut of overproduction, the brokers were creating an abundance so great that a buyer could (modifying Veblen) "pay what the traffic will take." The side effect of this strategy is an immense waste, resulting in the rapid exhaustion of the resource. In response to such tactics, some harvesters like Jeremiah's uncle have taken to holding back in hoping that after the exhaustion passes they can sell their goods when prices climb again with scarcity:

"I call her the camel!" Jeremiah's uncle laughs, gesturing at a gnarled bleeding vine with three long branches at its base, "Look at her legs. It's like she's walking! I'm not selling her for less than maybe 5 or 7 lakh [~US\$365-510], she's art. All those vines outside—you see them stacked up outside over there? Those are medicine. I cut them into even pieces, and I sell them at bulk prices. But not right now. Bleeding vine is everywhere. But wait a few months and those brokers won't be able to find a single vine. I'll wait for the market to come back. However, this camel: she is for beauty. So they have to pay beauty price. I'll wait a year if I have to—even longer!"

Jeremiah and his uncle's experiences reflect the multifold struggle that settlers from the gorge country face in the free markets, and the struggles they report are hardly unique to the bleeding vines industry. *Shachi* harvesters, sassafras tree hunters, amber miners, otter trappers, and others I interviewed in the lowlands encountered similar broker games of scarcity manipulation.<sup>18</sup> The result of these manipulations is not only a volatile and unprofitable medicine industry that leaves behind a trail of waste. It also accelerates the exhaustion and destruction of lowland resource commons once held by local Kachin and Tai indigenous groups.

### *B. An Indigenous Political Economy Expands to the Lowlands*

As the lowland medicine trade continues to grow in diversity and scale, indigenous groups in the lowlands and the borderlands have both sought to protect their interests: be it lands and resources or out-migrant populations. The result of their efforts is the expansion of the indigenous political economy in distinctly illiberal interventions.

Jeremiah Bya encountered firsthand the response of KIA soldiers in his third year of bleeding vine harvesting (2017). While gathering bleeding vines 10 hours up the Putao-Myitkyina road, Jeremiah was caught with a 70 viss cargo of bleeding vines. While his companions managed to escape, Jeremiah was taken to a jungle detention site where he was held for several days while the brigade attempted to contact his family. The brigade commander eventually managed to reach his father who was a pastor in the Myitkyina area. Jeremiah credits his father's work in the church with helping to persuade the commander to release him with no further fines or punishments. However, in addition to his harvest they confiscated his motorcycle. All in all, he estimates his detention cost the family 10 lakh (~US\$730) including the lost vines, the price of replacing the

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<sup>18</sup> 37 participants, Myitkyina (March-December 2018).

motorcycle, and the money his dad spent on fuel driving to pick him up from their camp. Before releasing Jeremiah, the commander instructed him that he would need to purchase harvest permissions from the central Kachin National Union (KNU) office in Myitkyina and that he would need to check in with the local brigade before and after harvesting. No guarantees were given that his harvests would not be levied.

In 2019, the KNU permits were available with a 3 month validity at a rate of 50,000 kyat (~US\$35).<sup>19</sup> While the office of the KNU maintains that they have long required permits for the commercial harvest of minor forest products, *xachi* harvesters from the Myitkyina and Putao area both report that the enforcement of this law and the extortion by soldiers is a recent development of the last ten years.<sup>20</sup> As in Jeremiah's case, most of their stories are of courteous extortions. In 2017, a party of Lisu women harvesters from a settlement near Putao was caught with a load of *xachi* in the lower reaches of the Pasang River near a key crossing on the trail to the India border. The women were similarly warned, their goods confiscated, but to their surprise the soldiers took no inappropriate actions. The commander even offered to escort them to the nearest village.<sup>21</sup> Another group of Rvwàng and Lisu youth harvesting *xachi* in the hills between Putao and Myitkyina had their goods confiscated by KIA soldiers who caught them at a new checkpoint set up on a popular access trail outside the Kachin settlement of Sumpiyang. In addition to confiscating their *xachi* harvest, they were threatened with conscription, but the soldiers relented after they explained they were students. At the increasing number of KIA checkpoints along pathways into the jungle from Myitkyina, Lisu harvesters report a growing practice of soldiers attempting to levy anywhere from 50,000 to 100,000 kyat (~US\$35-70) fines on unpermitted *xachi* pickers, which

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<sup>19</sup> Interviews with 2 participants, Myitkyina (January 2019).

<sup>20</sup> 9 participants, Myitkyina (2019).

<sup>21</sup> Interview with 4 participants, Putao (April 2019).

could be paid in an equivalent portion of their harvest at the soldiers' assessment. Considering that most of the *xachi* harvesters I spoke to report earning less than 200,000 (~US\$140) kyat per month, such tolls were devastating.<sup>22</sup>

Four features of these cases suggest parallels to the practices of borderland militias in regulating resource extraction: 1) the use of checkpoints to regulate access points to resource commons; 2) the increasing establishment of checkpoints along major trade routes like the Putao-Myitkyina road; 3) consistent levying; and 4) the discretionary reduction of levies based on perceived community status. The final feature was reported by nearly 22 harvesters that I interviewed in the Myitkyina (2018-2019), who had all adopted a surprisingly consistent genre of performance to get around the evolving landscape of checkpoints. The performance involved creating a "Kachin identity" by 1) using Kachin names, 2) by representing themselves as part of a Kachin clan, and most importantly, 3) by only speaking in the Jinghpaw language. Successful performances allegedly reportedly enabled them to get away with paying a trivial levy of 4-5,000 kyat. Their experiences reflect an insight that anthropologist Pradeep Jeganathan (2004, 78-9) has pointed out about the checkpoint: checkpoints functions to demarcate the lines of political membership by means of mutual performances of presenting and checking one's identity.

For indigenous militias and militaries alike, the checkpoint then becomes one of the simplest tools to regulate participation in indigenous resource economies. As in the case of these KIA checkpoints, the goal of resource regulation and levying at checkpoints is not simply to conserve or make profits, but also to produce (or rebalance) inequalities that are ongoing in the broad political economies of colonization (Neville and Coulthard 2019). The combination of resource regulation and profiteering for indigenous soldiers is what makes this an indigenous

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<sup>22</sup> 84 participants, Myitkyina (2018-2019)

political economy. In practice, it reorients the profits of extraction from peoples and commons alike to indigenous communities who have been disadvantaged.

However, the effort to refigure the region's economy in favor of indigenous communities through military means and military privilege goes beyond strictly extractive measures. With increasing numbers of out-migrants, indigenous militias have taken an increasing interest in their community members working in lowland industries. During the sassafras harvesting boom that ran until the early-2010's, Lisu militia commanders in several different militias (including the one Atsi Jacob is part of) offered stable prices to Lisu harvesters who were working in Myitkyina, Tanai, and even the distant jungles of Hkamti near the India border.<sup>23</sup> Again in 2020, militia leaders offered brokerage services for communities involved in the harvest of *paeci*—offers which remain open into the present. In both cases these efforts reportedly utilize the militias' control over checkpoints and their ability to move products across the border tariff-free to provide harvesters and militiamen alike with profits.

What is most striking about both efforts is the fashion in which indigenous armed groups are not restricting their activities to their traditional territories, but rather expanding the economic institutions and strategies that they use in the highlands to new lowland settlements. In looking at militias and ethnic armed groups in India's conflicted Northeast, Sanjib Baruah (2009) has suggested that these armed groups should be seen as akin to civil society organizations. Baruah's provocation is powerful, but perhaps too constrained by an ultimately liberal vision of political reconciliation. By contrast, the militias and armed groups of Kachin State point to a different vision of a future with increasing cartels—one that even spreads across borders as even Lisu in China come under the economic organization of borderland *sipha*.

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<sup>23</sup> Interview with 5 participants (2019).



Images 5a-5c. Sending a bike to the jungle, Chindwin River.

CHAPTER 2:  
“EXPLORERS”

(MN: 7: d:)

I. THE LISUCYCLE

“Down... down... down... Stop!”

The boatman’s voice is quickly carried away by a steady wind, which courses down the wide Chindwin River. His wife and several passengers are helping lower a motorcycle from the ferry’s deck into the river near a small village. The village lies somewhere beyond the jungle bank, but sandy shallows keep the diesel ferry from drawing nearer. The bike like other cargo is being offloaded to disembarking passengers who now stand waist deep in the river.

As the motorcycle’s front tire enters the water, one of the men fires the engine and revs the throttle vigorously. Water sputters as the bike plunges into the shallows and he continues working the throttle while dragging the bike across the river towards the village bank. His efforts to keep the engine from flooding fail long before the shore. The whine of the 125cc motor suddenly halts, and a series of expletives and laughter follows as the motorcycle’s owner and two others try to wrestle the bike away from the river current.

The boatman chuckles as he hollers out teasing the young men, and in a moment we are pulling away, pressing further north up the river. As the village scene disappears and is replaced with the monotony of unbroken jungle along both banks, I ask one of the boatmen about the bike.

“What are they going to do with a bike here? There aren’t even roads here.”

“No, no, that’s not right. It doesn’t have to do with roads! No road no matter!” He shouts over the roar of the diesel engine with a grin. “A place where you can’t use a motorcycle doesn’t exist, don’t you know?”

He laughs pausing to take a betel quid from one of his deckhands and slips it into his mouth, before continuing loudly.

“You just watch for those Lisu guys.” He tells me around the wad of chew in his cheek. “They come up here looking for what is that tree, *thiq-hmwe?* *Thiq-kā-do?*”

“*Thiq-hmwe!*” The deckhand shouts back with a red grin. The betel is already filling out his smile, and the aroma wafts over the back end of the boat.

“*Thiq-hmwe*. Some tree, I don’t know. They drive those motorcycles right through the jungle looking for that tree. They break bones, snap tendons, break their whole bodies! But you know, I hear some get really rich!”

His wife nods along, and the deckhand chimes in, “They do. They got those Lisucycles.”

“That’s right! They got Lisucycles!” The boatman echoes with a laugh, repeating the word, “Lisucycle. They put everything on those bikes. And they go everywhere. I heard up in Putao they even drive them to the top of the snowy mountains!”

This was not my first encounter with the “Lisucycle.”<sup>1</sup> Tales of “Lisucycles” (လီဆူဆိုင်ကယ်) or “Lisu wheels” (လီဆူဘီး), and their adventurous use were almost constant throughout my field research. Forest rangers told stories of Lisu disappearing out of their grasp deep in the jungle on hidden motorcycles. Locals spoke of Lisu driving through the forest understory at high-speed pulling medicinal herbs and vines without even applying the breaks. Others recalled tales of Lisu carrying multiple barrels of gasoline on the back of their motorcycles across 100’s of kilometers of washed-out mud roads to refuel gas-starved villages. These legends centered around the improbable use of cheap, mass-produced 125cc underbone motorcycles—commonly known as *wan-t’u-p’ain* (1-2-5) in Burmese—as a tool to work across both the physical, as well as political obstacles of the resource extraction frontier.

The wildness and freedom of these tales echoes a theme found in scholarship on motorcycles culture in the West. These authors emphasize the conspicuous consumption of motorcycles for status (Arai 2011) and their alternately rebellious or vigilante use in political movements (Malone 2017; McBee 2015). Such scholars present a vision of motorcycles that accords well with American motorcycle culture: a form of industrial consumerism that wraps Harley Davidson and Hell’s Angels together in a sometimes lawless/lawful culture that fits well within the model of industrial production-based capitalism, that could just as easily be called

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<sup>1</sup> The heroic mythology of Lisu that I encountered was most noticeably was *not* perpetuated by Lisu.

Harley Davidsonist as Fordist. It produces ideas of “wildness” and “freedom” that retail for anywhere from \$12,000-50,000 with ape-hanger handlebars. This wildness is markedly at odds with the “wildness” described on Lisucycles which are typically retail new for \$250, but are more often bought on recycled grey markets for under \$150.

The difference is not unknown in Upper Myanmar. When Harley Davidson opened a sales room in Mandalay in 2016, talk of acquiring “American wheels” (အမေရိကန်ဘီး) was frequent and I was encouraged by many of my interlocutors to get one. Instead, I purchased one of the generic 125cc motorcycles for my fieldwork and had it outfitted with a metal rack for carrying my backpack or plant specimens. I had not realized that this was a hallmark of harvest bike, and as soon as my neighbors in Myitkyina saw it they teased me for driving a “Lisucycle.” In contrast to the “American wheels” which ground freedom in consumption, stories of “Lisu wheels” speak of adventure, exploration and freedom that takes place during the course of production in the frontier: a kind of freedom in motorcycles at work.

Looking beyond the phenomenon of American motorcycle consumption, recent scholarship has drawn attention to the use of less charismatic motorcycles in flexible taxi labor and “rideshare” platform markets across the Global South (Jenkins et al 2021; Blimpo 2015; Daramola 2018; Mustika & Savirani 2021). Rather than suggesting an emergent Honda-ist epoch of capitalism in appreciation of the broad global use of light “lowbone” motorcycles like the Honda Super Cub, these authors focus on the platform technologies (Guyer 2016) that connect drivers. Their work contributes to a growing body of scholarship that sees virtual platforms like Uber (Peters 2020) rather than the actual vehicle or a vehicular *mode of production* at the center of these new flexible labor markets. Soprzanetti’s (2018, 65-71) work on motorcycle taxi drivers in Bangkok, is a rare and promising step in this direction, documenting how motorcycles “weave

together” the post-Fordist economy of the city with their point-to-point transportation. Looking at the rural economy of Upper Myanmar, the Lisucycle and the workers who ride them suggest that the “weaving” power of motorcycles is not limited to the city, but an important part of how workers negotiate the fragmented infrastructures of the frontier to create new livelihoods.

In this chapter, I consider how motorcycles are used by frontier laborers as tool to explore and negotiate naturally diverse and rapidly changing landscapes in the interior of Kachin State—ones that displaced indigenous communities like the Lisu now turn to for livelihoods. To do so I track how these motorcycles are involved in long-distance harvest strategies that carry harvesters across the varied ecological matrices of Upper Myanmar, be that to reach different biomes and climatic zones or to work their way across the fragments of roads left behind by resource extraction efforts. At the same time, this chapter considers how motorcycles allow harvesters to work around the checkpoints and the many obstacles of the militarized interior. In conclusion, I consider how the motorcycle, as an exchangeable recyclable commodity, serves as one of the more important forms of wealth in this frontier. Rather than simply a commodity, the motorcycle appears as a commodity at the center of the rural resource extraction economy.

## II. MOTORCYCLES AND LONG-DISTANCE HARVESTING STRATEGIES

Ruth (RU-LE) and Elijah (YI-LI-Y) are a brother-sister duo of Lisu harvesters in their late fifties that I frequently joined on harvest trips while living in Myitkyina. It was from them that I first learned the importance of motorcycles in the settler economy of Gorge Country emigrants, and how Lisu use these machines to fashion new long-distance livelihoods in the lowland valleys of the settler frontier.

Originally from the southern end of the Gorge Country, war and increasing militia control over their home area caused Ruth and Elijah to leave the region in their twenties for the lowlands. The auctioning of their valley to cross-border Chinese logging firms, was apparently the final straw. In the lowlands, both had married and together with their spouses taken up seasonal logging and mining work in the distant jungles of the Upper Chindwin. Within a decade, malaria and other illnesses had robbed them of their spouses. Widowed, the two had moved into a small compound that Elijah built on the outskirts of Myitkyina. It was there that I first met them at by way of a pastor's introduction. As the two got older they returned to their parent's vocation of medicine making, supporting themselves financially with donations from their healing services and by collecting forest products for the Chinese market. While the two had learned medicine from their parents in the cool forests and high valleys of the Gorge Country, ongoing conflict and economic strictures (checkpoints) meant that they had to find new sources for their medicines, as well as developing new strategies of long-distance harvesting. As I learned after one of my first harvest trips with them, these new strategies entailed a life on the back of their motorcycles:

When we finally arrive back home at their small compound, the sun is low in the sky and smells of cooking waft through the settlement. Elijah disappears into the bamboo kitchen to get a charcoal fire started while Ruth runs off to buy something from the night market along the highway. She leaves me with instructions to offload the bleeding vines from our motorcycles into piles underneath their stilt house. As I unload the vines, I notice that the duo has left tarps of cut of roots, herbs, and even grasses drying in the courtyard's sun all day while we were away. When Elijah emerges from kitchen I ask him about these other medicines.

“Yes *Mapha*, this root here. This root Ruth got yesterday at Tawlawgyi. She went with your friend the doctor, didn't she? This is a very good medicine for diarrhea, you take 4 slices of this and combine it with...”

He continues, explaining the different medicines one by one offering a short recipe with each. While Elijah knows all the plants, Ruth was selected by their parents to carry on the family medicine tradition, and in her presence, he is careful to defer to her knowledge. While she is away, he relishes in the chance to demonstrate his knowledge. After the root from Tawlawgyi, a kidney drug from Gwehtu. two herbs and a root from Tsawlaw for joint pain, a vine from Mohnyin for the liver, and

several herbs and vines from Mount N'hkai and Tingnyangzup for worms and parasites. As I try to follow the geography of their harvests in my mind it is almost dizzying. Tsawlaw is well to the north in the mountains near the Chinese border, while Mohnyin is halfway down the road south to Mandalay [see Figure 1].

“*Mapha*, are you saying you two went all these places in the last week? That’s half of Kachin State?!”

He pauses, “Yes, the last week or so... We have been going out a lot. Ruth went up to Tsawlaw and I went down to Sagaing [chucking]...then she followed me down, and we came back... Going here, going there ... This time of the year is very good for the harvest. If you don’t go to out, you won’t get enough. If you don’t have enough, you won’t eat your fill.”

He smiles as he says the final saying, one I’ve heard many times from many harvesters in the medicine trade.

“So, are you planning on selling all these?” I ask gesturing at the dried herbs he has shown me.

“No these are our medicines. We’ll make them into compounds,” he clarifies, continuing, “But that stuff [he points at the bleeding vines we collected today], we’ll sell with all the other things like that [trade herbs] we collected this week. Some for us and some for them [the market].”

“*Mapha*, how did you go all these places?”

“Just with that bike, the very bike we went on today!”

“You drove that all the way to Shwebo?”

“Yes. We Lisu are *muhgheupha* (Mŋ: ɿ: d:). You know *muhgheupha*? We travel to lands—*muh* (Mŋ:)—that are far, far away—*agheugheu* (A ɿ: ɿ:). No matter how far it doesn’t matter. Come over here. See what I brough back.”

He leads me back to the large red tarp that appears to have regular grasses spread all over it, and starts in, “These are the medicines I got from down in Shwebo and Indaw, you know in Sagaing. They’re very good for your kidneys and ---”

Before he can finish Ruth arrives with a steaming plastic bag full of charbroiled fish in each hand.

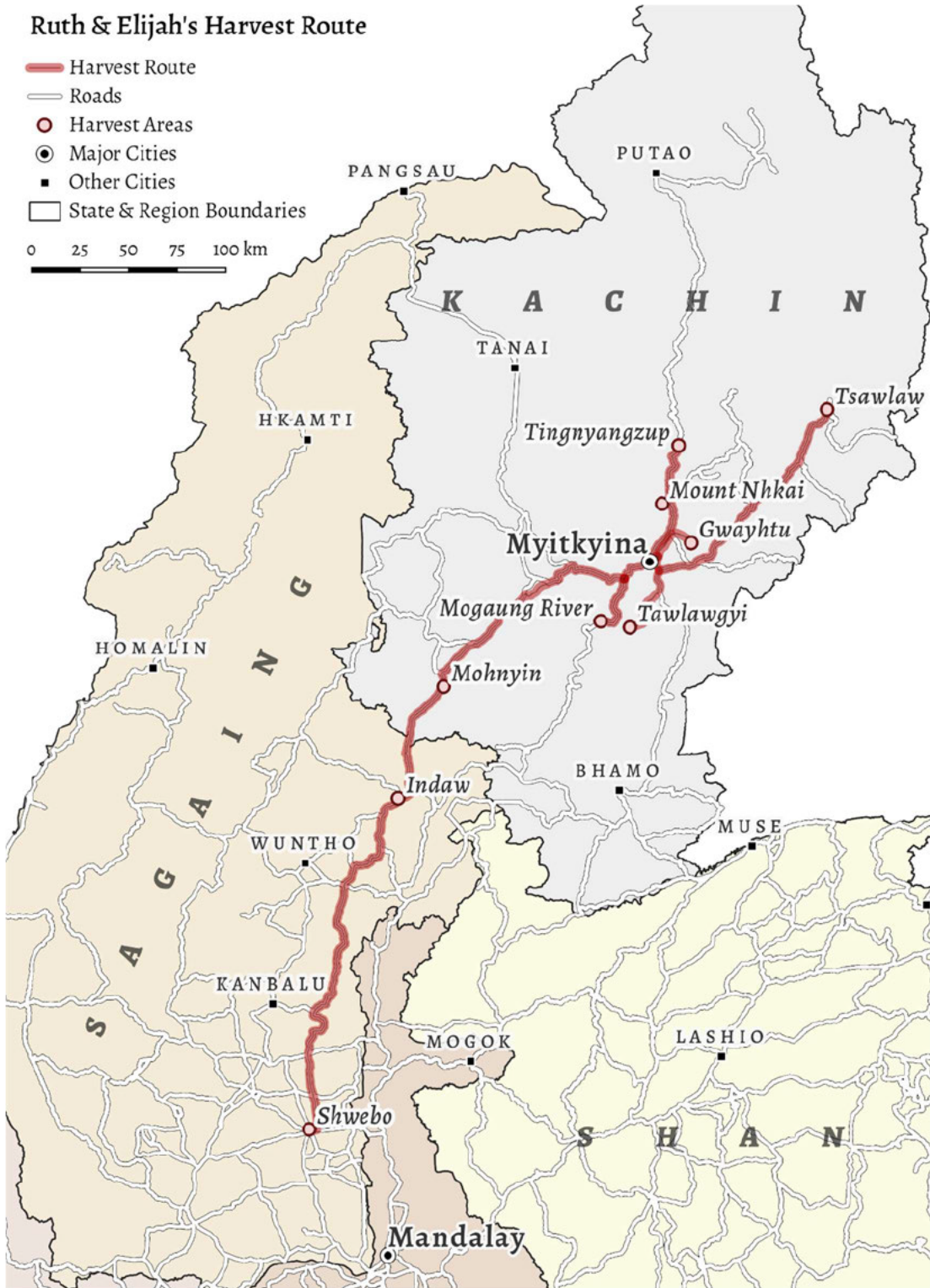


Figure 4. Map of a long week's harvest rounds (by motorcycle).<sup>2</sup>

<sup>2</sup> All cities, regions, geographic areas, and motorcycle pathways drawn by the author. Administrative boundaries and roadways from MIMU (2021b, 2022).

When I had sorted through their various harvest trips and stories, it was well past dark, and we had finished two whole river fish and a small pile of roasted yams. The harvest in their compound courtyard was the sum of six separate harvest trips over the last week to various parts of Kachin State and neighboring Sagaing Region. Each of them had driven nearly 1,700 km of major roadways, not counting likely hundreds more kilometers of off-road driving to reach specific harvest sites (*see* Figure 4). While Ruth had not made it all the way down to Shwebo, and Elijah had stopped short of Tsawlaw, the two seemed to mostly follow each other. Ruth led the way on finding species for the trade, and Elijah often wandered further afield to seek out herbs for their formulae.

Ruth and Elijah's long-distance harvesting by motorcycle is hardly unique. The overwhelming majority of the harvesters that I interviewed during my three years of fieldwork reported relying on motorcycles to access resource commons and/or to get their harvests to market (91%).<sup>3</sup> This reliance on motorcycles is difficult to separate from a history of emigration from the Gorge Country: the outlying 9% were harvesters in the Gorge Country who picked near their villages and sold their harvests to militia brokers.<sup>4</sup> As I studied with Ruth and Elijah that night and with other harvesters on subsequent harvest trips, I not only began to understand the reasons for this dependence on motorcycles in the interior, but also the ways in which these vehicles were being used to continue harvest livelihoods from the Gorge Country. I began to see motorcycles as a tool these communities were using to carve out a livelihood for themselves.

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<sup>3</sup> 144 participants.

<sup>4</sup> Even harvesters who spent months at a time in the jungle reported accessing roads storing motorcycles in jungle hollows or at stores and houses in remote villages and road stops near trailheads.



Images 6a-6b. Another motorcycle harvester duo securing their harvest. 2019.

### III. CLIMBING ACROSS CLIMATES, BEFORE AND AFTER DISPLACEMENT

As Ruth and Elijah told me about their diverse harvest, I learned that their efforts over the prior week had not only involved extensive driving but also substantial climbing—something they accomplished not just by hand and foot, *but now by motorcycle*. Over half of the herbs in their yard were picked from “mountain tops and ridges” (W: ZΞ; W: CΠ), a few of which they even pointed out to me on the distant horizon. Most of the rest came from somewhere along the way up. The herbs, they explained, were part of their family medicine practice, “heritages” (L∇; W) passed down from generation to generation which they learned from their parents in the high mountains of the Gorge Country—the “cold country” (JY MΠ:), as she called it. While these medicines were close at hand in their old home, in their new home accessing these medicines now entailed climbing through the roadside jungles of “the hot country” (LΞ MΠ:) up myriad paths to the patches of “cold country” atop nearby ridges and mountains. Motorcycles, Ruth explained were not just part of keeping these traditions alive in the cold country, but part of a traditional strategy of harvesting medicines across climatic zones:

We grew up climbing, *Mapha*. In the Gorge Country, in Waliphe. The Gorge has everything, *Mapha*...all of our medicines...but you have to climb. Up down. Up down. Caterpillar fungi, *di-kwa*, five-finger root... [she counts several more on her hand]... We didn't have to go far. We could climb the mountain above our home to get them. The mountain is very tall. So tall it snows there *Mapha*, the great cold country (JY MΠ: D: M)! If we left before dawn, we would get there by lunch. If we went quickly, quickly, we could go and come back in a day.

When we went, we would always get some of that medicine [she gestures at a root Elijah has been showing me], the stomach medicine. Yes, that one. It is good to carry. “Stomach-closing-medicine”! [Elijah nods, chuckling]. You can't climb mountains if you have to shit, right? When you have diarrhea it's a great antidote. It grows between the hot country and the cold country, in the little cold country (JY MΠ: ∅ ∅). There are many medicines there, famous medicines, everything. Nearby is magnolia bark, then above that *xachi*, then above that goldthread, then above that peumeu, and so on... everything... all those medicines people sell to China! Those were close to our village then, just a few hours climb. Now it is far, and we have to use motorcycles to get there. In the gorge we climbed by foot, we climbed by hand. Now we climb by motorcycle [she laughs, shaking her head].

I'm getting too old, *Mapha*. My legs can't climb like they used to. You should go to Waliphe and study medicine there someday... when its safer. But if you go, you have to be careful *Mapha*, you can't slip. I see you slip sometimes. You can't there. You'll break bones or die. Especially when descending. Descending is scary, *Mapha*. Going down towards the river, the dark waters (Nṽ ṽl.). The paths are so steep, you climb with your hands and feet... and it's very hot in the bottom of the Gorge, its real hot country (Lṽ Mṽ):... like here. We would get *lu-zi* and the fragrant tree and agarwood... down there. The fragrant trees there are the most fragrant in all of Kachin, *Mapha*. I wouldn't descend all the way. Elijah would go. He wasn't afraid of the dark waters. He would go all the way down. I would stay above... where we had many medicines. I would harvest off the path when he went down. Stone ears, *bulu* flower, that herb of there, the one that kills insects [she gestures to an herb Elijah was showing me from Mount Nkhai]. All of these are above, *Mapha*. They're not in the hot country, the scorched country (Lṽ Mṽ; ṽ, Mṽ):. They're in the little hot country (Lṽ, Mṽ: ṽ ṽ)... Now it's the opposite, upside-down. We have to drive so far to get out of the hot country and climb up to get our medicines!

More than poetics, Ruth's description of their harvest grounds as spaces of immense climatic diversity echoes what botanical and ecological scholarship on Upper Myanmar have long found remarkable about the region (Stamp 1924, Kingdon-Ward 1944, Davis 1960, Murray et al. 2020). Kachin State contains a dense layering of tropical, subtropical, temperate, and even boreal biomes in startling proximity. Located north of the Tropic of Cancer (23° 26' N), Kachin State's lowland forests are unique for being "almost tropical" with deep "floristic affinities" to the forests of Thailand but occurring at "unusually high latitudes" due to an "atypical climate": the flow of the warm, moist monsoon along Myanmar's many north-south mountain ranges (Murray et al. 2020, 77, 83; cf. Kingdon-Ward 1944). Where these floristically tropical forests<sup>5</sup> cover the low plains and hills of Kachin State up to around 700 m asl (Murray et al. 2020, 83), temperate forests can be found creeping as low as 1,300-1,500 m asl (Murray et al. 2020, 171, 174), with subtropical rainforests filling the narrow gap in between. The mountains of Upper Myanmar accordingly encompass a sharp transition from tropical to temperate (and even boreal) climatic zones, one

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<sup>5</sup> They are generally classified as subtropical due to their latitude, even if their flora appears tropical, and they are part of contiguous forest complexes that run well into the tropics.

which is all the more present in the Gorge Country where 70-80° slopes are common and walking a kilometer often entails gaining (or losing) 500 m of altitude.

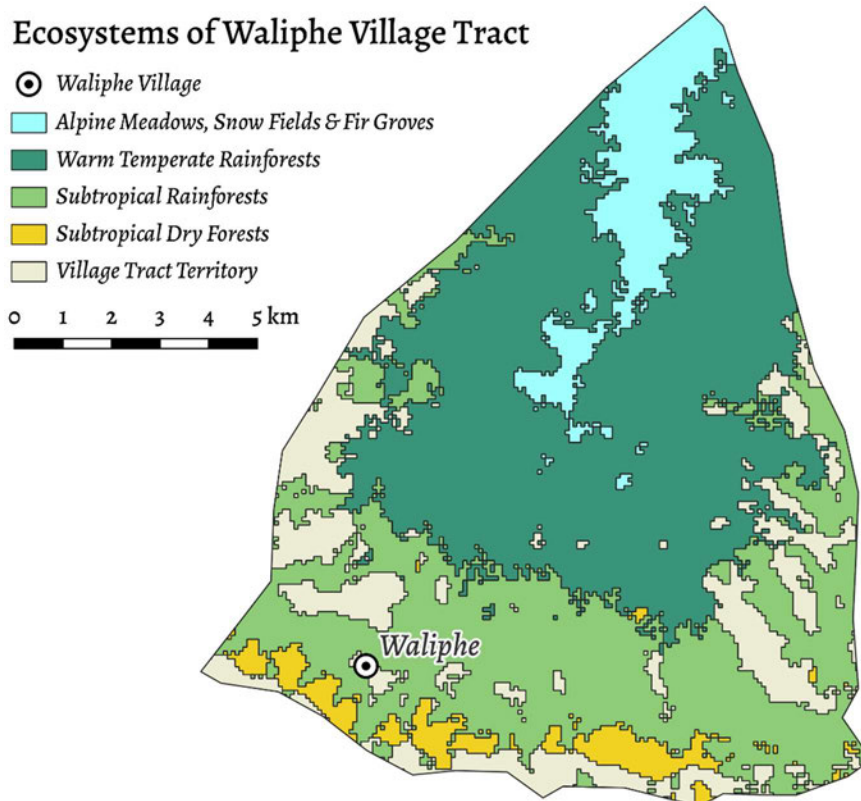


Figure 5. Ecosystem Matrix of Waliphe Village Tract.<sup>6</sup>

Looking at the ecosystems that surround Waliphe village at 1,350 m asl (Murray et al. 2021),<sup>7</sup> one can see how Ruth and Elijah would have moved across these climatic and ecological zones during their harvests in the Gorge Country (*see* Figure 5). By Murray et al. 2020's classification system, Waliphe Village Tract contains no less than 8 ecosystems representing 4 biomes in a territory small

<sup>6</sup> Administrative boundaries and town location drawn by author. Ecosystem mapping from Murray et al (2021).

<sup>7</sup> Murray et al. 2021's map combines remote sensing analysis of satellite images, with climactic data and modeling to create a projection of terrestrial ecosystems checked against field data from the project's in-country conservation partner: Wildlife Conservation Society.

enough to fit inside New York City's Brooklyn borough.<sup>8</sup> The transition between these zones takes place in less than 10 km. Alpine meadows and snowfields of the boreal biome begin roughly 6 km above the village, while temperate rainforests are closer still, starting 2-3 km up slope. Subtropical rainforests surround the village, and less than a kilometer below is a belt of dry forest that is of the same variety as those that surround Myitkyina, and points further south in the tropics of central Myanmar (Murray et al. 2020, 148-150). Ruth and Elijah's parents taught them to gather medicines and commodities in a microcosm of Myanmar's (if not our very world's) climatic zones. However, this was a microcosm that they had to leave behind as the militia tightened their control over these lands, auctioning the forests and slopes of their home area to cross-border logging and mining companies.

In their new home in the lowlands, Ruth and Elijah now reach, and "climb" to harvest grounds by motorcycle. Tracing Ruth and Elijah's harvest routes across Murray et al.'s (2021) ecosystem maps of the interior, one can see how the duo uses their motorcycles to accomplish this feat: driving to points where the highway system draws close to mountain complexes that rise out of the tropical plains. The well-known route that the duo took from Myitkyina to Tingnyangzup (*see* Figure 5) serves as one example of this strategy. While there is a large temperate forest complex around 30 km from the outskirts of Myitkyina (their new home), it is reportedly an exhausting four-day journey on foot. By contrast, the highway north to Tingnyangzup brings Ruth and Elijah to within 10 kms of four smaller temperate forest complexes. While these mountains lack the high boreal (alpine) ecosystems and the "great cold countries" of the Gorges, they afford a similar transition of dry forests to subtropical and temperate rainforests, and they allow Ruth and Elijah to gather many of the same "little cold country" and "little hot country" medicines, like the

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<sup>8</sup> Waliphe Village Tract is approx. 155 km<sup>2</sup> while the Borough of Brooklyn is approx. 180 km<sup>2</sup>.

“stomach closing” (VE; M FI NV.. ㄱ;) and “insect killing” (B1 DI SE; NV.. ㄱ;) drugs. The closest of these mountain outcroppings to Myitkyina, is the harvest site where Elijah acquired these medicines: Mount Nhkai.

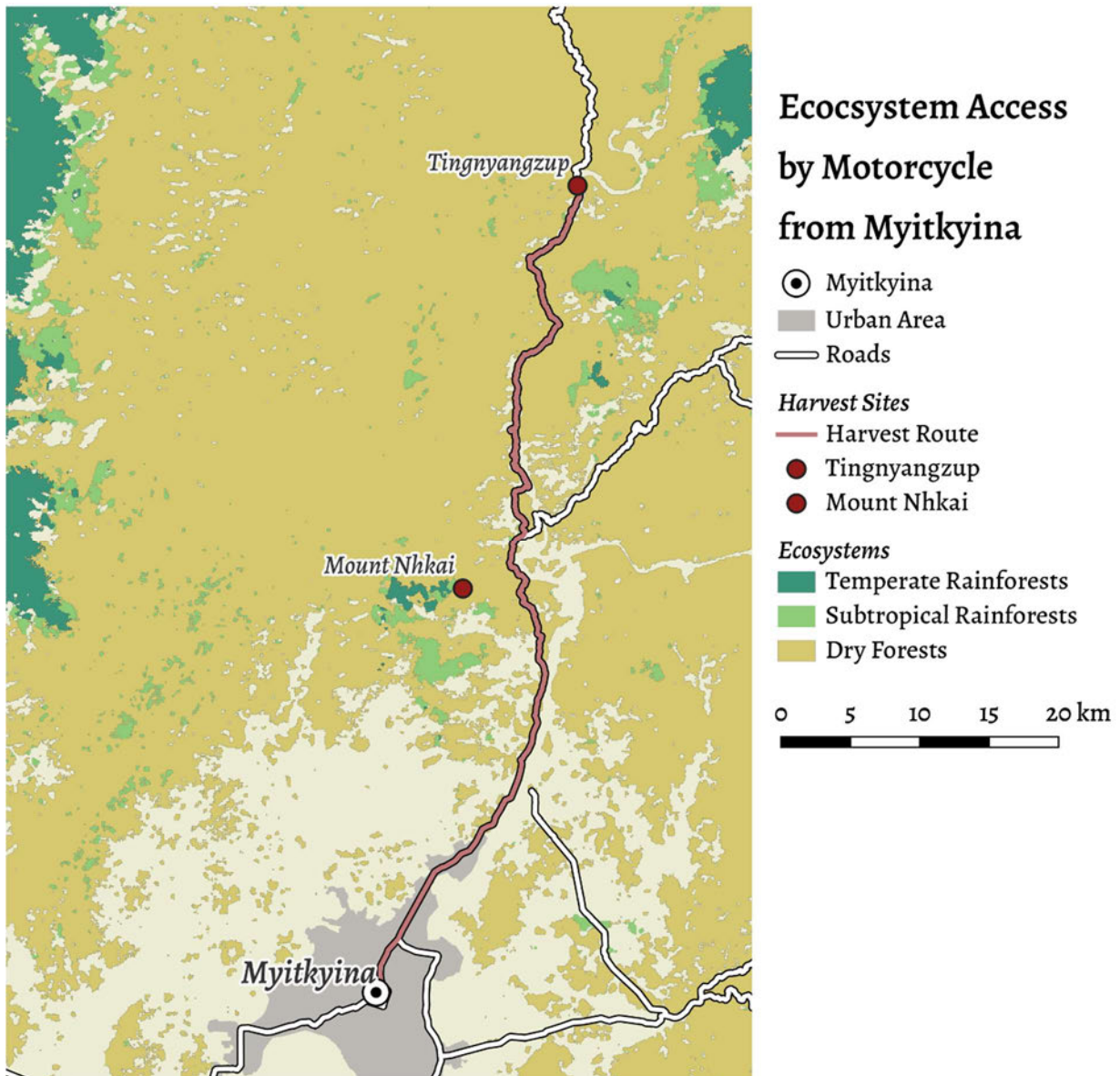


Figure 6. Map of Harvest Route and Ecosystems near Myitkyina.<sup>9</sup>

<sup>9</sup> Cities, urban areas, and harvest route drawn by the author. Roadways from MIMU (2022). Ecosystem mapping from Murray et al (2020).

As I traveled with the duo and other harvesters in the following months, I learned that these mountains and others along Ruth and Elijah's itinerary were regular harvest areas for Gorge Country emigrants living in the Myitkyina settlements. Indeed, similar tropical-temperate ecological transitions can be found close to the other harvest routes Elijah mentioned: the mountains above the Gwayhtu road, along the steep valley road to Tsawlaw, and at various places where the Myitkyina-Shwebo highway draws near high mountain ridges, particularly in the hills around Mohnyin and Indaw (*cf.* Murray et al. 2021, *see* Figure 6).

Motorcycles enable Ruth and Elijah to continue harvesting across comparable biological and climatic diversity after sub/urban resettlement. Scholars exploring the relationship between indigenous resource economies and personal transportation technologies, from the literature on “snowmobile revolutions” in the circumpolar region (Kemp 1971; Ingold 1980; Brody 1982; Pelto 1987; Helander-Renvall 2007; Istomin et al. 2017; *cf.* Stammler 2009, 49-51) as well as new studies on motorcycle herding in Mongolia (Fraser 2018), have often debated how these technologies increase indigenous communities' reliance on “outside” markets. Their conclusions often debate if these technologies are responsible for pulling communities away from life in the countryside and into urban (re)settlement. While these debates and studies valuably point to the increasing role of transportation technologies in rural livelihoods and resource industries (*cf.* Greaves et al. 2016), they often frame these technologies as being part of what causes communities to live in urban areas, rather than recognizing that many indigenous communities and livelihoods have already been displaced to urban settings by larger processes of primitive accumulation and dispossession.

Like many emigrants of the Gorge Country, Ruth and Elijah, were pushed out of their homes by increasing military predation on the local economy and the auctioning of their harvest

lands and resources in concessions—processes entwined with larger regional and (inter)national projects of imposing land ownership, administering borders, and controlling resource trades. In a landscape of dispossession, where indigenous communities find themselves living in exurban settlements after losing access to the land (and becoming landless *cf.* Li 2014), motorcycles allow communities to not only continue their harvest practices but also continue participation in resource trades. Where “technology revolution” debates have often cited vehicle maintenance and dependency on markets (for parts and fuel) as forces leading to the settlement of indigenous communities (Stammler 2009, 49-51; Fraser 2018, 344-345), for indigenous communities who find themselves living on the fringes of markets—like Ruth and Elijah—these costs are seen as part of a new sub/urban life brought on by their displacement from the gorge country. When I asked them about the cost of the (then) \$40 worth of fuel they likely used to travel 1,700 km over the long week, Ruth and Elijah were quick to point out that this was just part of the cost of the “medicine business,” far outweighed by their ability to investigate an even vaster swath of lands and move ahead of other harvesters.

At the same time, Ruth and Elijah’s harvesting across climatic zones by motorcycle encourages anthropologists (and others) to rethink how indigenous communities engage with landscapes and seasons. Building on the work of Franz Boas (1964) and E. E. Evans-Pritchard (1940), an influential body of anthropological literature has sought to understand indigenous resource usage as moving with seasons in “seasonal rounds” particularly in the temperate and boreal landscapes of North America (Cronon 1983, Hunn 1990; Norton et al. 1999; Turner 2014; Gwixsis̱alas 2016). The spirit of their findings is in some ways encapsulated in archaeologist Tim Ingold’s (1993, 157-163) conception of harvest landscapes as “taskscape,” where the social rhythms of hunting and gathering labors are in continuous dialogue with the natural rhythms of

seasons and other life forms. As Ingold (1993, 163-164) summarizes, this allows the archaeologist or anthropologist, like hunters and gathers, to see the world as an “organism” which “we do not act *upon*...or do things *to*...rather we move along *with*”—eventually grasping the “fundamental temporality of the landscape,” just as the move of the seasons shape the movements of the harvest.

Rather than moving with the flow of seasons and taking cues from ambient changes in temperature, Ruth and Elijah harvesting, sometimes crossing multiple biomes in a single day, is more noticeable for the speed with which it seeks to moves across a climatic differences.<sup>10</sup> It moves against the rhythms of temperature and season, making temperature a feature like part of a topography, one that can be crossed by climbing with hands and feet, or with tires and gasoline. Instead of a naturalistic language of holism, and harmonized movement, Ruth speaks of leaving hot seasons to reach cold countries and descending during cold seasons in hot countries.<sup>11</sup> She seeks out and looks for specific temperatures, accelerating across seasons, to hunt out spaces of climatic transition: the little cold and little hot countries where bounties of medicines could be found. In this, the motorcycle works to her aid.

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<sup>10</sup> One could also read the crossing different temperature zones Ruth and Elijah often spoke as if crossing seasons. In Lisu the names of these climatic countries parallel the names of seasons: the monsoonal cold season (JY FI) matching the cold country (JY MN:), and the monsoonal hot season or “scorched season” (J., FI) matching the “hot country, scorched country” (LƏ MN: J., MN:). As if to fill out monsoonal three-season system, the “little hot country, little cold country” was explained to me by several harvesters as a place of “bountiful rain” (Mŋ V A: Xŋ, V) in which “year-round” (Lŋ Xŋ; LƏ;) flowers were blooming (SI, WE WE) like in the rainy season (Mŋ V V FI).

<sup>11</sup> It should be noted that there are some seasonal limits that harvesters commonly observe. Lowland florally, tropical jungles are generally avoided for the first month or month and a half of the monsoon (late-May to early-July) when heavy rains make these ecosystems muddy, overgrown and malaria infested. However, by July many harvesters are returning to either transit these forests for ecosystems further above (like with the caterpillar fungus harvest in the Putao region), or to seek out flowering plants and medicines for market. Still, at least 23 of the harvesters I interviewed reported harvesting year-round in the lowlands, not taking this break. Another expectable limit for those climbing into the cold country is the variable 1-4 months of snow in the very highest mountain meadows: a short winter season that grows shorter by the year but makes the many perennial varieties of herbal medicine unavaible from these areas. In both cases, these windows of inaccessibility a relatively short, and in general harvesters are able to work across *most* ecosystems for the *majority* of the year.

### *A. Ecological & Climatic Surveys of Two Motorcycle Harvest Routes*

In the following months, as I joined Ruth, Elijah and other harvesters on motorcycle-aided climbing trips, I began to survey their routes in an effort to learn about how they negotiated these new “upside-down” environments by motorcycles. With the harvesters’ permission I mapped several of these routes using a Garmin GPS unit I had brought from America, not only recording route waypoints and harvest sites, but also where the harvesters demarcated different climatic zones. From the 14 motorcycle routes I mapped with Lisu harvesters, I have selected two that represent the most common type of motorcycle harvest travel: the day trip or *nigule* (NĒ GU: LE;) to the mountain complexes that rise out of the plains.

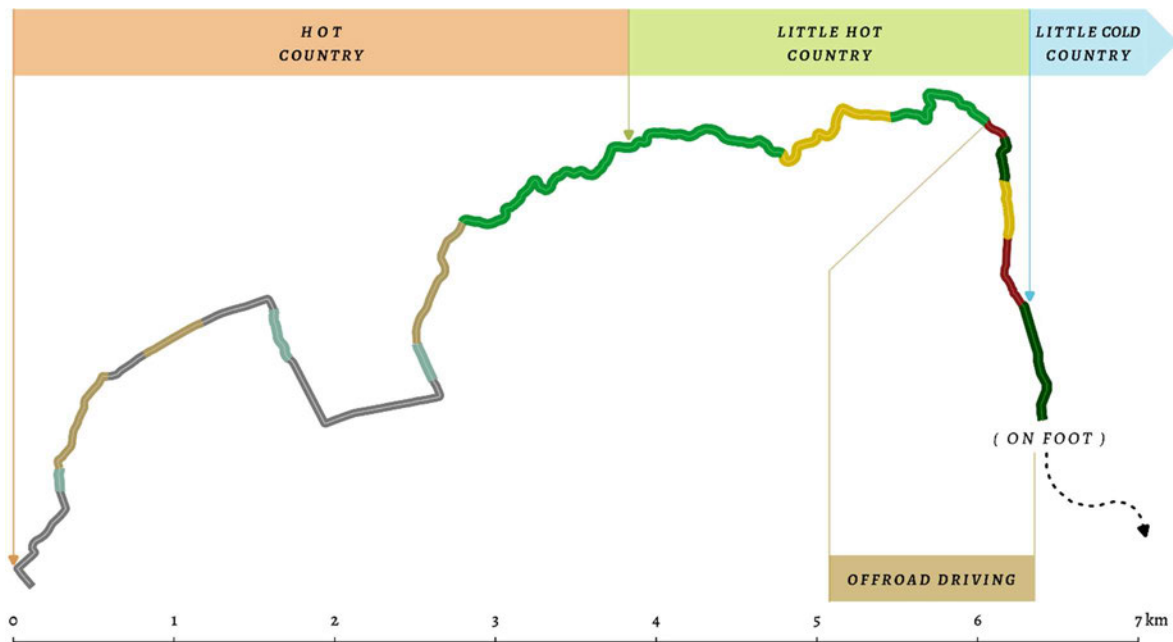
The first route (*see* Figure 7) is a roundtrip journey—*ă-thwa-ă-pyan* (အသွားအပြန်) in Burmese, or *jeje lala* (JE JE L L) in Lisu—that we undertook in the late rainy season (August). On this journey (12.6 km), we drove a country road up a low mountain pass, leaving the road to climb a ridge by motorcycle. At an altitude of approximately 850 m we could drive no further, and so we continued up into the mountains on foot, returning by the same route. The second survey (*see* Figure 8) follows a cross-cutting route—*p’yaq-lan* (ပြတ်လမ်း) in Burmese, or *jaguphe* (J GU dE;) in Lisu—that we took in the dry season (March). On this journey (26.4 km), we drove along a highway that wound close to the mountains, before using a diversity of small paths to climb up *and across* the crest of one mountain (1,070 m) descending to a different highway on the other side. In the figures below, I have intentionally removed any geographic references as to avoid revealing the location of these two harvest sites, instead only displaying the different forest ecosystems and forms of land use that we crossed through. To identify the forests, I use Murray et al.’s (2021) ecosystem maps, while for the description of land use I rely on categories used by my interlocutors: urban or village areas (မြို့ရွာ), agricultural fields (ခြံခင်), bamboo groves (ဝါးတော),

mining areas (မေ့၌), and slash-burn rotational farming areas or “swidden” zones (တောင်ယာ). I have also marked off what I term offroad driving to signify times when we left well established roads to use paths, fields, and other terrains that would otherwise be challenging if not impassible to other vehicles.

On both trips, we used our motorcycles to cross a stunning array of forest ecosystems, climbing out of the tropics to reach harvest grounds scattered across the subtropical-temperate transition. During the first trip this entailed crossing through 3 ecosystems ranging from lowland dry forests to high subtropical rainforests. On the second trip we crossed an even broader matrix of 7 forest ecosystems representing 3 biomes as we literally drove *over* a mountain (albeit a small one). This route included everything from weaving through 1.1 km of warm temperate rainforest on narrow ridgetop trails, to an offroad shortcut through the open understory of an Indaing Forest—a type of tropical dry forest primarily found in the plains of central Myanmar hundreds of kilometers to the south. The majority of harvest sites we visited on these journeys were high elevation subtropical rainforests (7 sites) and warm temperate rainforests (6 sites) that fell inside what the harvesters called the little cold country. The mid-elevation subtropical rainforest complex was the next most targeted ecosystem (5 sites), with the upper reaches of this forest system falling into what the harvesters called the “little hot country.”



Image 7. Motorcycle trail across an old slash-and-burn field in the “little hot country.”



### Types of Land Use

Swidden Zones    Agricultural Fields    Bamboo Groves    Urban

### Types of Forest Ecosystems

Subtropical Rainforests    Tropical & Subtropical Dry Forests  
 High Elevation    Semi-Evergreen Forest  
 Mid Elevation

Figure 7. Ecosystem & Land-Use Survey of the First Motorcycle Harvesting Trip<sup>12</sup>

<sup>12</sup> Ecosystem mapping derived from Murray et al (2021).

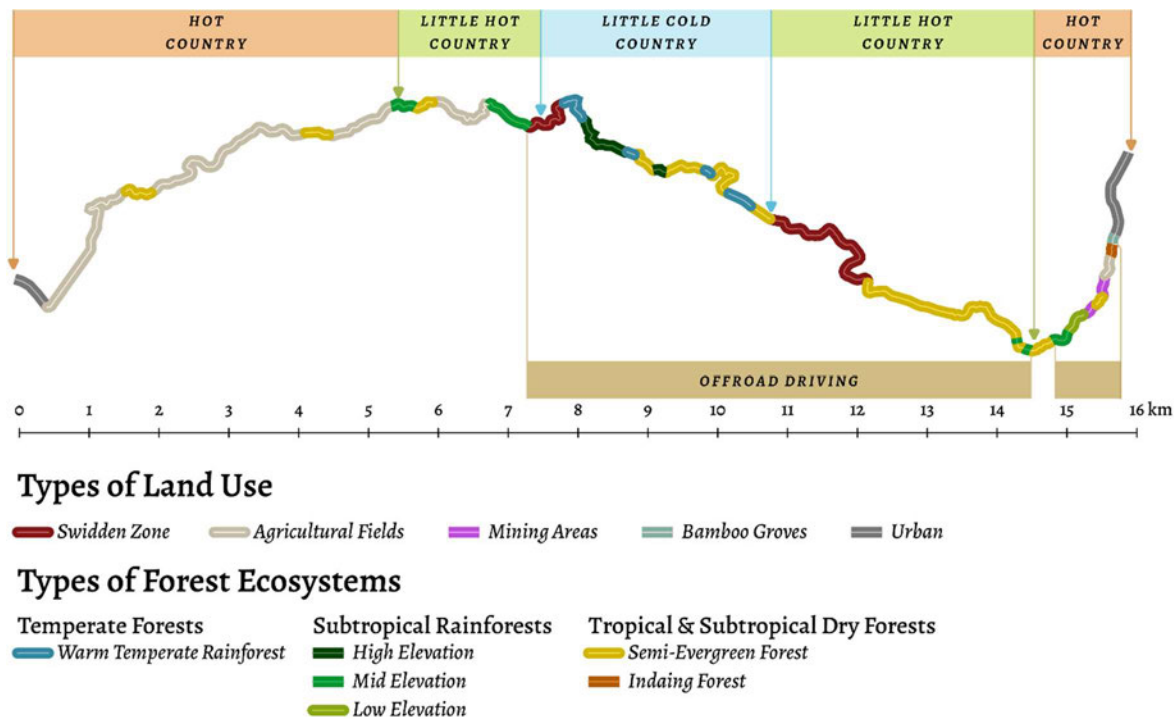


Figure 8. Ecosystem & Land-Use Survey of the Second Motorcycle Harvesting Trip<sup>13</sup>

While temperate forests often our goal on these harvest trips, I found that the season defying logic of their harvest strategies were most evident in the high subtropical rainforests. At 4 of the 7 sites I visited in this ecosystems, I was surprised to find my harvesting companions not only collecting medicines they knew from the Gorge Country, but also vines and herbs that were common in the lowlands. The presence of these lowland plants so high up was not a surprise. Botanists since Kingdon Ward (1944) have noted with excitement the strange mixing of floras that takes place in these transitional forests: tropical plants common to the Bay of Bengal comfortably growing next to plants that one can find plentifully in the mountains of central China. Instead, it was surprising because most of the lowland species that they were harvesting were ones we had passed on the drive up! When I asked one harvester why they bothered driving all the way through such

<sup>13</sup> Ecosystem mapping derived from Murray et al (2021).

challenging terrain to pick these medicines up high, he explained to me that these medicines were strongest in the cold. While it was good to harvest in the lowlands during the brief winter, he continued, that during the long hot seasons (most of the year) it was better to get it from the hills. Others repeated similar logics, and when I later asked Ruth about this, she not only agreed but was quick to point out that there were also medicines from the cold country that were more potent in the heat:

That's why I said it's upside down *Mapha*! When we lived by the little cold country, there were some medicines that grew all around us in the cold country. But we would climb down into the little hot country to get them there. They were stronger in the heat! You could pick them in the hot season but the rest of the year it was better to go down. Now we're in the hot country, we learn new medicines. They are everywhere, but they're strongest when its cold. So we go up to get them from the little cold country. Our whole lives climbing!

Where I had presumed that harvesters like Ruth were primarily climbing to the little cold and little hot countries to get medicines they had grown up with (in the Gorge Country), Ruth's comments reveal that these transitional zones with their diverse floras are also part of an herbalist logic of potency and temperature—one which inspires the discerning medicine hunter to drive their motorcycles across climatic zones and seasons in search of potencies and profits.

Though these results were expectable, the surveys also point to the importance of two other ecosystems that are central to long-distance motorcycle harvesting activities<sup>14</sup>: semi-evergreen forests and swidden zones. Despite driving through semi-evergreen forests more than any other kind of forest on the second harvest trip (<7.0 km), we only stopped to harvest in this ecosystem once. Instead, most of our time in these dry forests was spent driving on poorly marked trails, or more often offroad, through the leaf fodder of the forest understory. As Murray et al. (2020, 81-84) notes, the semi-evergreen dry forests of Myanmar closely resemble rainforests during the rainy

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<sup>14</sup> Or that motorcycles could take advantage of.

season, but in the dry season their understory sheds its foliage. The result, as I found out, is a surprisingly open forest floor that permits extensive offroad motorcycle travel. Moreover, as these forests rise high up the hills on rain-shadow slopes, they provide an extended infrastructure for vehicular ascents—one that we weaved in and out of to access high subtropical and temperate rainforests at both sites. Where these ecosystems cover much of the lowlands of the interior (*see* Figure 3), motorcycles allowed them to not only move across these landscapes with speed but also use these forests as an infrastructure to access higher more valuable ecosystems.

Alongside semi-evergreen forests, our harvest trips also suggest that harvesters' ability to drive through these forests was based on how motorcycles could utilize the infrastructures of swidden zones. Swidden zones are complexes of new and overgrown slash and burn fields which often contain myriad foot paths winding between them. On both trips, recently cut slash and burn fields served as our entry point to the offroad trails of the forest, and as can be seen in both surveys, the small paths we traced through the jungle out of these swidden zones often led us to other swidden zones deep in the jungle. More than the ease with which one can drive through newly slashed and burned fields,<sup>15</sup> it was this network of paths that we often relied on to move through the jungle. My traveling companions were familiar with these sorts of pathways from having grown up swiddening. While the width of these paths was often under 50cm, our small, lightweight 125cc bikes were able to thread these narrow trails where other vehicles could not. They could also be lifted to get over any felled logs that might block the path.

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<sup>15</sup> Recognizing that the obstacles posed by felled logs and debris are relatively more negotiable than standing trees in the forest.



Images 8a-8d. Motorcycle pathways. 8a. “Broken rock” road (top left). 8b. Dry forest meadow (top center). 8c. River path (top right). 8d. Muddy highway (bottom).

Beyond their infrastructural value as passageways or *jaguphe* that allowed one to move through the jungle, I learned that swidden zones were at the same time important semiotic guides to climatic transitions for the motorcycle driver. When I asked harvesters to explain how they knew they had arrived in the little hot and little cold countries, I generally received lists of plants. At the fore of these lists were not wild plants, but rather cash crops that were commonly grown in swiddens at different altitudes. Signs of entering the little hot and little cold country included the cultivation of elephant yams (LO; YV), Chinese quince (MU KW 木瓜), and Chinese cinnamons or “tree bark chile” (SI, XU: L, ZQ), which they distinguished from the other varieties by approximating the Chinese name *kui-phi* (KUI-di 桂皮). Walnuts (WU DN. S7:), especially the kind grown for Chinese markets *fu-thao* (FU LAO 胡桃) and Chinese cardamoms, called *tsaoko* (JAO KO 草果) were indicators of entering colder lands still. As we talked of navigating these forests of the interior—forests that my harvester companions often described as “new environments,” abundant with “unknown species”—I found them using the familiar cash crops of the borderlands to guide their searches: weathervanes that pointed towards cooler climates and valuable medicines.<sup>16</sup> Where harvesters on foot might have time to examine the slowly changing floras, along trails—and certainly there were several distinctive plants that my companions taught me to look for—for the harvester moving at speed, the abundance of these cash crops in swiddens served as a reference that hardly required applying the brakes. More than tools that allow harvesters to move across a matrix of ecological and climatic zones, motorcycles with their capacity to travel through the narrow footpaths of diverse forms of agriculture, allow harvesters to survey social landscapes looking for signs.

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<sup>16</sup> Indeed, on my own trip to the Pianma region of the Gorge Country in China I walked with local healers through swidden fields of walnuts and elephant yams enroute to forests where we collected medicines for market.

#### IV. SIGNS OF A NEW MODE OF MOTORCYCLE PRODUCTION

Of the harvesters I interviewed in the interior, well over half (62%)<sup>17</sup> had engaged in some version of motorcycle harvesting that resembled these surveys. The rest engaged in an older form of long-distance harvesting “on foot”—*chiphaele* (ᠴᠢᠯᠠᠭ, LE)—that involved spending weeks if not months in the jungle to reach cooler climates. Ruth and Elijah’s story suggests that the movement across climatic zones to gather plants is hardly new, however looking at the volume and diversity harvests on *nigule* trips versus those of “on foot” *chiphaele* trips, it appears that this change in means of production is shaping a different mode of rural production.

While the overwhelming majority of *chiphaele* harvesters I interviewed use motorcycles to access trailheads for their long journeys, they spoke of different strategies of movement. Swidden fields were sometimes used to enter the jungle, but the majority (38) spoke of hiking for days along the banks of riverbeds to get across the large complexes of lowland dry forest on their way to the cold country, following streambeds high into the mountains, with a small minority of hunters (3) using hunting paths and game trails to the same effect. Others (14) spoke of primarily using old trails to remote and abandoned villages in the forest, but these were only available in certain areas. By either strategy, the typical time to reach the little cold and little hot countries was a week, one-way, with the subsequent time spent searching out a target commodity like *xachi*. While times varied, most harvesters would return after a few weeks with yields ranging from 5-15 kg per person. By contrast, the yields from *nigule* harvest trips were not only typically larger—I measured the yield of the two surveys above at 22 kg and 16 kg per person (respectively) upon our return<sup>18</sup>—but were often made up of a greater diversity of plants. Between the various vine stalks,

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<sup>17</sup> 89 participants.

<sup>18</sup> By way of comparison, Ruth and Elijah estimated that they had collected just over 105 kg (wet) of commercial forest products, not including the many herbs they gathered for their medicine making vocation. Both agreed this was far more than they ever recalled harvesting in a week in the Gorge Country.

barks, and tangled webs of rhizomes the harvesters pulled out on the above surveys, the yield of the first trip comprised 3 different market commodities, while the second yielded smaller harvests of 5. Across my other 12 surveys, the volume and diversity of plants was similar. The shift to motorcycle-based harvesting not only entails an acceleration of forest product production, with *nigule* day trips by motorcycle putting an exponentially greater volume of commodities into circulation, but also a rapidly growing diversification of forest product markets.

The difference between these strategies is also evident in how these commodities are taken to market. Of the 55 *chiphaele* harvesters, I interviewed all focused on hunting commodities that were well-known, and stable exports to Chinese markets like *xachi* (see Chapter 3), which they sold to local or traveling brokers in their settlements on the outskirts of major interior cities like Putao, Myitkyina, or Mohnyin. As I observed during my time in each of these locations, these interactions often involved a contact in the settlement who would call the traveling brokers and alert them to the arrival of a new harvest. In some cases the contact was a broker themselves. From the settlement pick up sites, these commodities were reportedly sent directly to China.

*Nigule* harvests instead entered into a multitude of different markets, with some being sold on locally in Myitkyina and Mohnyin, while others were sent to medicine vendors in Yangon, and still others were personal driven and hawked at regional markets like those in Monywa, Mandalay, and Lashio. A portion were even exported to China via brokers or taken by harvesters directly to border markets for sale themselves. Where *chiphaele* harvests were part of relatively more stable labor relations of production, *nigule* harvest strategies using motorcycles allowed harvesters to fulfill orders for distant Chinese markets while fashioning themselves as local entrepreneurs. Indeed for Ruth, the work hardly stopped with the harvest, in the weeks following our conversation she not met with brokers to sell a portion of their harvest, but also took different portions of their

harvest to sell at different markets. These ranged from roadside markets in the north suburbs of Myitkyina, to multiday trips to Bhamo and the Chinese border. Her travels to market like her travels through the jungle were (of course) by motorcycle.

The emerging *nigule* strategy of harvesting points to the use of motorcycles in a form of mobile production where capital is generated as much in the circulation of goods as in the circulation of entrepreneurial harvesters—moving them across harvest grounds and markets. Looking at the use of motorcycle taxis in Bangkok, Claudio Sopranzetti (2018:109-126) has tracked how these vehicles are part of a post-Fordist urban economy where the proletarian workforces of a pre-1997 factory economy of industrial production have transformed into an post-Fordist entrepreneurial workforce (engaged in flexible, gig-work). Motorcycles in this context are not only essential to the flexible entrepreneurial labor of taxi drivers in the increasingly traffic congested capital, but also part of carrying a new class of “entrepreneurs” to move between their diverse worksites in this city of gig-economies. As Sopranzetti observes, the way in which post-Fordist economies generate capital through the circulation of both commodities and labor forces across varied sites of production, makes motorcycles as the most widely deployable and rapid mode of circulation, central to the post-Fordist economy.

While cities throughout the Global South have been loci for studies of flexible labor regimes (Simone 2004), by contrast, studies of resource extraction in rural environments across the Global South have often focused on multinational corporations and their coordination of labor forces in industrial production for the economies of the Global North (Jacka 2015; Welker 2014; Appel 2019; Tsing 2004). A smaller body of scholarship considering flexible labor regimes in the rural Global South has largely focused on agriculture (Turner et al. 2015, 2019; Borrás et al. 2016; Besky 2014; Li 2014) and other forms of smallholder production (Peluso 2019; Zhan and Scully

2018). Where these studies consider flexibility in “flex crops” or other means of production at single sites of production, they overlook the significance of the *means of circulation* (pace Sopranzetti 2018) that lie at the center post-Fordist accumulation: the motorcycles and other personal transportation vehicles that communities use to work across shifting sites and varieties of production, the motorcycle.<sup>19</sup> even as they describe their interlocutors working in these spaces with motorcycles (*i.e.* Peluso 2019).

*Nigule* harvesting strategies point to the way in which motorcycles underpin the increasingly flexible and entrepreneurial livelihood strategies that communities are adopting in the resource extraction frontier of interior Upper Myanmar, if not more broadly in rural locations across the Global South. They suggest how motorcycles are at the center of post-Fordist production taking place not only in the cities but in the vast rural resource frontiers of the Global South. Far from limited to forest product harvesting, throughout the course of my research I observed the same 125-cc motorcycles used in diverse forms of frontier work from gold and amber mining to cash cropping, to cell-tower maintenance and even concession logging (*see* Images 18-20). However, as Sopranzetti (2018, 56-64) astutely observes, what makes motorcycles able to carry out this work at the center of a post-Fordist urban economy is how they can negotiate across the obstacles and broken infrastructures of industrial capitalism and the nation state—an act he calls “weaving.” Looking to the frontier of the Upper Myanmar’s interior, with its landscapes fragmented by shifting extraction projects and extortive checkpoints, it is possible to see how these weaving capabilities allow motorcycles move across the social worlds of the Interior.

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<sup>19</sup> This is not to say motorcycles are absent from these studies, but rather untheorized and generally treated as part of the anecdotal flare. Studies like Peluso 2019, a fine study of small holder gold mining, vividly recounts visiting small holder sites on motorcycle but do not theorize what it means that motorcycles are a central means of transportation in this economy.



Image 9a-9c. Concession logging by motorcycle.

## V. SEEING AND MOVING LIKE A MOTORCYCLE IN AN EXTRACTION FRONTIER

Alongside its ability to move across diverse forests and climatic zones (the ecological matrix), the motorcycle also serves to move harvesters across the fragmented infrastructures of the interior with speed—the infrastructural matrix. This is a task which not only involves “weaving” (*pace* Sopranzetti 2018) paths across the jumbled infrastructure fragments—what I call the infrastructural matrix—but also detouring and evading the various checkpoints and military constrictions that impede the rural flow of goods and people. Motorcycles allow for a responsive, prosthetic relationship with their owners that allows the two to explore this landscape together—embodied in the cyborg figure of the frontier—the Lisucycle.

### *A. Racing Across the Infrastructural Matrix*

In subsequent meetings Ruth explained how the motorcycle not only helped negotiate the shifting landscapes and roads of the interior, but more importantly with the speed needed to keep up with the shifting market. The flurry of long-distance motorcycle harvest trips on the long week, Ruth explained, had been necessary to take advantage of a narrow three-to-four week period when bleeding vines at all altitudes were most heavy with their crimson resins: “their bloodiest season” (XŃ: A. TI JO M VY; NYI), and for the market, “their most valuable season” (A. TI dU., M VY; NYI). With the market already being flooded by over-harvesting (*see* Chapter 1), Ruth saw this as one of the few chances to ensure a profitable return—picking the vines from their bloodiest locations and the bloodiest time of year. However, this meant not only searching out where the vine could still be found, but also outpacing other harvesters.

To do so required Ruth to move rapidly across the fragmented landscapes of the interior, and its diverse pathways at speed—a task she accomplished by motorcycle. She not only searched

“far off lands” (MṆ: A Ṇ: Ṇ:), like Mohnyin and Indaw, but also in places harvesters “passed over” (XO JEO) or picked years before but in which the vines might “now grow again” (A MṆ Ṇ: HW YO, L ṆO). The journeys to the Mogaung River and Tingnyangzup had been these sorts of efforts, but on her arrival she had encountered an array of new logging areas (SI, ZI XṆ Ṇ.), new banana plantations (Ḃ. M Ṇ GU), and swidden fields (V., MI) that had changed the routes and harvest ground she had previously accessed in this area. By motorcycle she worked across this new matrix to reach forests new and old. At the same time, she explained, the motorcycle allowed one to “move quickly” (NI Ṇ, Ṇ, JE) between areas hoping from “one [harvest] road to the next” (Ṇ: CṆ, KW BE A MṆ Ṇ: CṆ, KW Ṇ) along highway corridors to keep ahead of other harvesters. Sometimes, she explains, this meant moving between sites hundreds of kilometers apart “in a day” (Ṇ: NYI: KW) to follow a lead—distances “impossible by foot” (ṆI dV, LE GI M: D..O). The trip to Tawlawgyi had been one such trip: on her way back from Tsawlaw, she had heard a tip that a large section of jungle would be cleared for new plantations, so she raced through the logging zone to scavenging vines and other valuable plants from the logging debris and the soon to be cut tracts of jungle. In both cases the motorcycle allowed her to move across these changing landscapes.

Where our discussion of their family medicines had led to a conversation about climates, when I asked Ruth about the actual harvest sites they visited, she spoke not of forests but of “roads” (CṆ). Recalling their trip to Tsawlaw, she counted off eleven such harvest “roads,” before giving up and concluding that they had searched out “the entirety of the roadway(s)” (Ṇ: CṆ, LṆ:). She spoke of these roads in terms of strata like “mud” (Ḃ), “broken rock” (ကျောက်ခွဲ), or “pavement” (ကပ်သည်); but also the different projects they were part of like “logging roads” (သစ်ခုတ်လမ်း), “swidden paths” (တောင်ယာလမ်း), and “mining roads” (မှော်လမ်း). Where I had been expecting some sort of natural markers, instead, Ruth delineated the bounds of these harvest paths with markers

like gates, mileposts, and soldier's pillboxes. As I tried to make sense of the verbal flow of geographic data, I found myself leaning on my own prosthetic technologies to keep up with her: scrolling across Google Maps on my cell phone leaving a trail of pins with notes like "soldier's post," "gravel," "landslide?"

Ruth's infrastructural description of their harvest was one of the first map like descriptions I encountered in my interviews, but it was far from the last. Many harvesters relayed similar micro geographies of road types—varied passages that crossed a matrix of shifting mining, logging, agricultural, and state projects. Their accounts highlight the dynamic ability of motorcycles to move across the shifting map of extraction projects in the frontier and their varied infrastructures—one which I experienced first-hand on the second motorcycle harvesting trip (*see* Figure 9). The country highway we took to reach the mountain base was a small, paved-road built years before by the military, ostensibly for rapid deployment, but now lined with military-owned plantations. Leaving the highway through a small plantation service road, we entered the jungle by crossing a recently burned swidden field littered with felled tree trunks and debris to reach a jungle path on the far side. To climb the mountain, we not only used narrow jungle paths and other swidden fields, but also a network of logging roads, old and new. An old hunter's path took us down the far slope to reach a new highway and a final section of forest which we exited by following, to my companion's surprise, through a warren of small paths through a riverside mining area through mining pits in a new goldmining area.

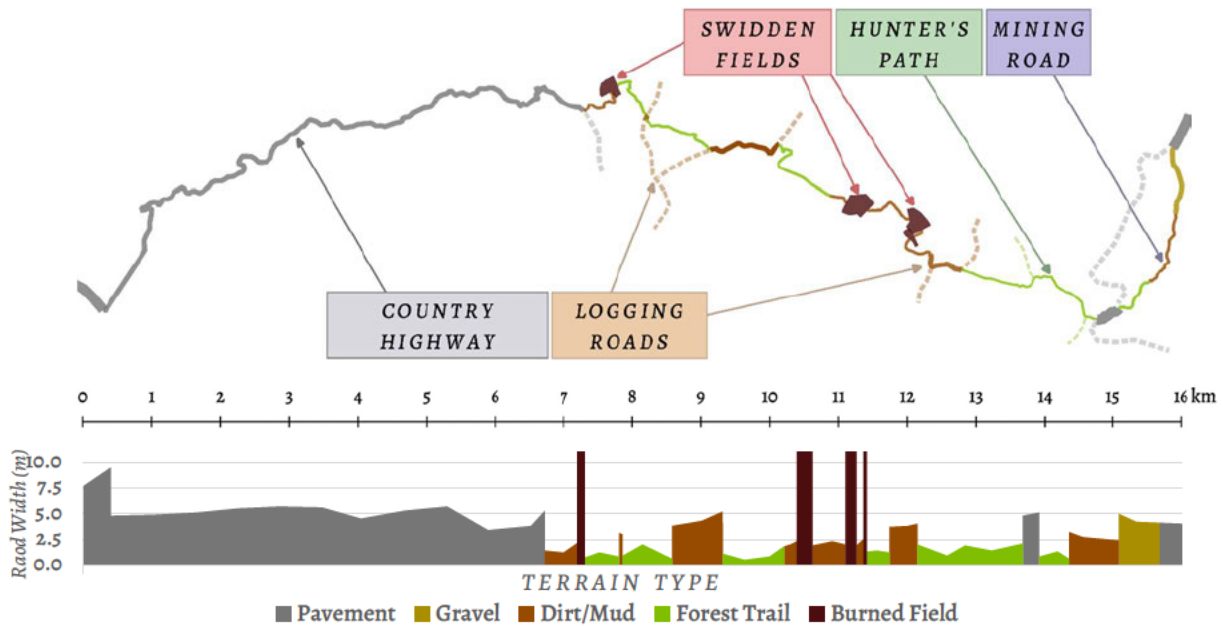


Figure 9. Road Width & Terrain Survey of the Second Motorcycle Harvesting Trip

Our journey along the route relied on the motorcycle’s ability to maneuver along narrow trails between swiddens and through the forest understory—some less than 50 cm wide. The road widths and terrain types, which I recorded on a follow up visit to the harvest route with one of the harvesters,<sup>20</sup> give a sense of the diverse paths that the motorcycle was able to move across. Where a car could hardly proceed beyond the paved and gravel sections, my companions estimated that trucks would have been able (with varying degrees of difficulty) to drive along many of the mud roads over 2.5 m wide. However, the true strength of the motorcycle lies in its ability to not only utilize these wider roads, but also the tiny networks of jungle paths and swidden fields which were

<sup>20</sup> I measured road widths every kilometer along these paths, or when the terrain/road type changed using a 30 M open reel measuring tape. For short road segments I made sure to capture at least three measurements to cover the range of widths along these paths. For sections of offroad driving in the forest—what locals call “forest trails”—this often entailed measuring the distance between obstacles (*ie.* buttressed tree roots, trees, rattans, etc.). Swidden fields that we drove across I measured in terms of their width (up to 30 M) as debris was often not a major obstacle to transit and there were no clear pathways. In both tables I have indicated these areas as having road widths over 10 M. The categories of road terrain reflect the categories used by locals.

either too narrow (<2.5 m) or too debris crowded (burned swidden fields) for trucks to navigate. In a landscape shaped by diverse extraction projects, motorcycles are uniquely able to cut across an infrastructural matrix—and as we found on our “Lisucycles,” to even climb mountains.

The motorcycle is a tactical machine that joins with the well-developed muscles of Ruth’s almost 60-year body to move her with speed across rugged terrain, “annihilating time and space through its dynamic performances” (Virilio 2006, 84). Her use of the motorcycle, like that of other *ni-gu-le* harvesters, highlights how these vehicles direct and organize the economy in logistical possibilities (Virilio 2006, 86). Where Sopranzetti (2018) shows how motorcycles keep the entrepreneurial class of Bangkok in motion by filling the gaps in urban infrastructure planning—traffic jams and limited public transportation—in the resource extraction frontier of rural Upper Myanmar the motorcycle plays a similar role for the entrepreneurial harvester. It allows these enterprising resource workers to navigate a constantly changing landscape of extraction projects: projects that are often the outcome of crony deals, resource concessions, and land grabs (Ferguson 2014; Woods 2011; Woods et al. 2021)—to work across harvest “roads.”

### *B. Tools of Detour and Evasion*

As motorcycles expand the logical spaces of from the road to the offroad, they help harvesters also navigate around attempts hold the roads: gates and checkpoints. With militias, militaries, and companies imposing new networks of closures and inspection points (*see* Chapter 1) the motorcycle serves to move harvesters around on detours and evasions.

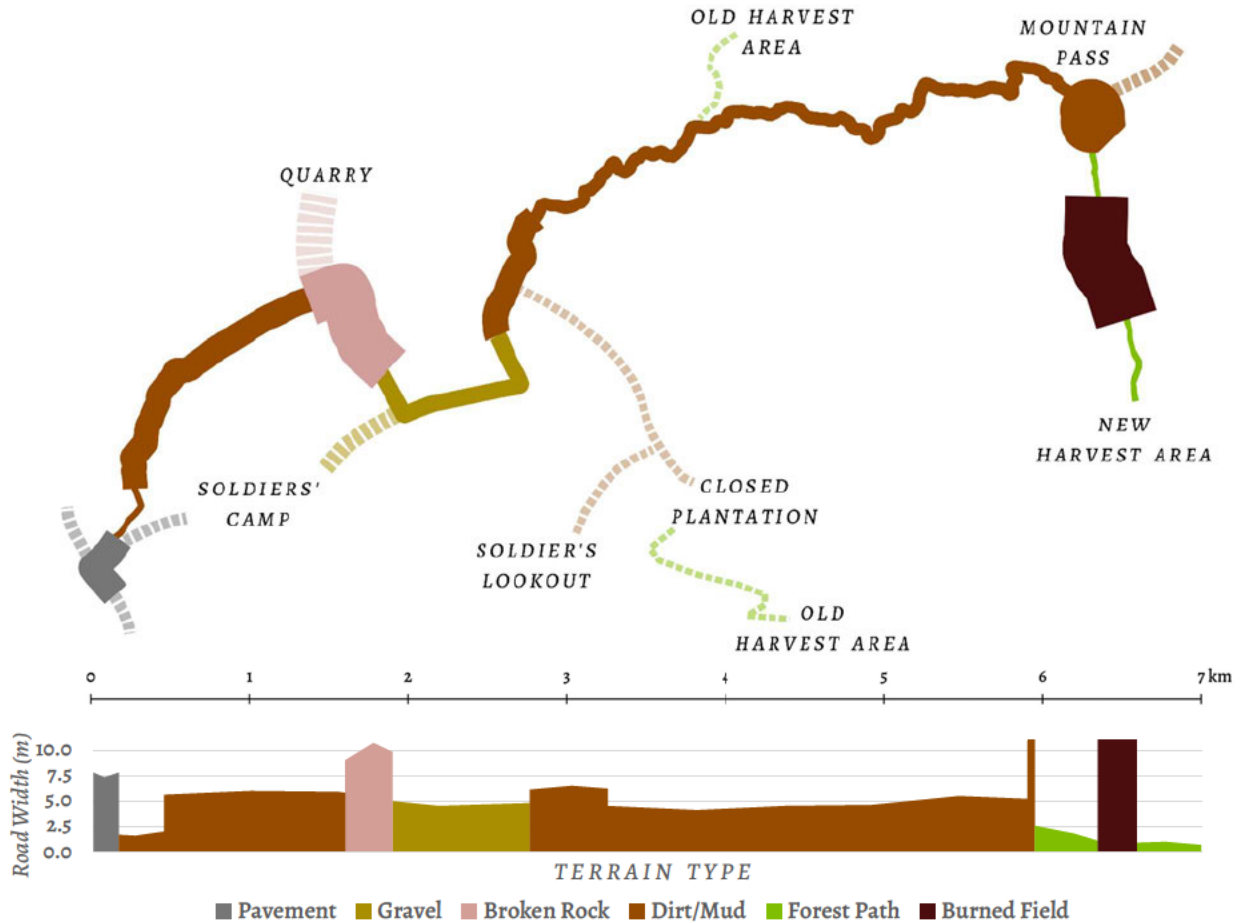


Figure 10. Road Width & Terrain Survey of the First Motorcycle Harvesting Trip.

On the first harvesting trip this was evident from the beginning (*see* Figure 10). Rather than exit the village via the main road to the mountain pass, which passed through to a soldiers' camp, we drove down a mud and cobbled alleyway winding through outlying houses to reach an oxcart path through the village's agricultural fields. At the far side we use a wide broken rock road that led from a riverside quarry back to the main road—a road type typical to mining areas. Slowly driving up the shifting stone fragments with our feet out to catch the bike if any stone gave out under our wheels, we made it to the main road on the outskirts of the village. However further along, we stopped as one of the harvesters drove ahead to check the news he had heard. The old path they used to access the harvesting area was closed by a new plantation gate, and a new soldier's lookout

had been erected nearby, making circumvention risky. Muttering “cronies” (ခရိုနီ) the harvesters decided to try accessing the same area from the low mountain pass, passing by an old harvest route that was now blocked by a cardamom plantation. As we were in the height of the rainy season, we had the road to ourselves with much of the trip involving sliding our bikes across mud trenches. At the pass we tried a narrow jungle path (2-1.0 m wide), which broke through to broad swidden field and continued high up the ridge on relatively stable ground, parking where the path petered into a game trail (<0.5 m wide). In the end, despite the closures and encampments, we reached an adjacent harvest area—an alternative entry point.

In addition to checkpoints and military obstacles, our trip highlights the obstacles posed by absentee owned lands, but it also points to how motorcycles are used to explore detours into resource commons. However, as I learned during another trip, motorcycles are not only used to access resources, but also to move cargoes past potentially extortive inspections:

Nehemiah and I are in the middle of securing a bundle of vines onto the back of his bike when we hear the noise. We are more than an hour’s drive up a forested ridge from the highway, and all afternoon we have heard little other than the sounds of the jungle and our own passage. Now a faint buzz can be heard echoing through the forest. It grows louder, and soon I can make out the stuttering whine of a motorcycle engine struggling uphill.

“People coming,” Nehemiah mutters, glancing down the narrow dirt road we drove up.

“Do many people come up here?”

“When people come, they come,” he returns to the work of securing our load, winding a bungee cord in elaborate figure eights over the vines and around the bike rack.

I keep my eyes on the trail, and after a minute a motorcycle emerges. The driver is dwarfed by a mountain of electronics strapped to the back of his bike which now crash through the palm fronds and foliage that line the narrow path. Radios, televisions, and old tape players teeter in a precarious pile behind the driver, tied together with a tangle of cording which the driver has fixed to a headband. Pushed to the front of the bike’s seat by his oversized load, the driver’s arms and neck are tense as he strains to keep the bike balanced. Sweat rolls down his face and his legs

flex as he walks the bike through a small bend. When he passes us, he neither looks in our direction nor makes any acknowledgement of our presence. Instead, his eyes are locked on the dirt path. Soon after, he disappears around the next bend in the path and once again becomes an echo in the forest.

“What was that?” I ask.

Nehemiah shakes his head.

I ask again, “He had TV’s and radios, what was he doing up here?”

“They set up that new checkpoint on the highway. He can get across to the far side if he takes this path.”

“It goes through?”

“Yeah.”

It takes me a few minutes to figure out Nehemiah’s insinuation. “So he doesn’t want to take all that through the checkpoint?”

Nehemiah nods, “That’s probably it (ဟုတ်မှားပေါ်). Let’s go.”

## VI. EXPLORERS, THEIR LISUCYCLES, AND THE MOTORCYCLE TRADE

Motorcycles enable the profitable flow of peoples and goods in this frontier by weaving across a shifting landscape of resource extraction with its diverse roads and checkpoints, allowing harvesters to search across ecological matrices and even cross climatic zones and biomes. In describing the harvest roads that they followed, many of my interlocutors spoke of this weaving in what Donna Haraway (1991, 101) has called a cyborg heteroglossia, describing a natural resource landscape not in the typical dualisms of nature and artifice, but instead a jumbled language that ignores dualisms to focus on the possibilities of action in this “matrix of complex dominations.” In their discussions, checkpoints are just as important as the material substrate of the road, and roads are just as important as cold and hot countries. Their speech reflects an increasing integration of motorcycles into daily life in a cyborg identity that is embodied in terms like the “Lisucycle”—

which apparently can just as well be applied to the bike of a foreign researcher as local Lisu harvester. The commonality is participation in a mode of production, as Lisucycle drivers move across a matrix of complex dominations by embracing their relationship with the motorcycle, pushing its logistical possibilities to explore, acquire, and vend profitable harvests in a rural economy that appears increasingly post-Fordist in its orientation. Where Sopranzetti (2018, 65) suggests that in urban environments motorcycles carry out “channel-making labor,” in the frontier this cyborg activity—the flexible circulation at the center of this rural post-Fordist capitalism—can be seen more clearly as an act of exploration.

When, I asked other Lisu about the word that Elijah had taught me, *muhgheupha* (MN: ၇: d:), some explained it as he had, but others pointed me to the figure of the “explorer” in both English and Burmese. They explained *muhgheupha* with as one who “investigates” and collects”—*su-san sha-p’we-thu* (စူးဆန်ရှုဖွဲ့သူ)—a variant of a more common term used in Burmese to describe the adventurers and scientific explorers of the colonial era.<sup>21</sup> The translation of *muhgheupha* as an explorer, specifically one who “investigates and collects” draws attention to the shared economic work that both harvesters and many colonial and scientific explorers have and do continue to carry out. Be it George Forest hunting rhododendrons in the upper reaches of the Gorge Country for gardening markets (Mueggler 2011, 119) or bioprospecting teams hunting through the jungles of central America for new pharmaceuticals (Hayden 2004), exploration has long been linked to the extraction and marketing of valuable plants.

Rather than the “savage” or “wild” inhabitants of a wild natural landscape, as some early Western visitors would deem them (Rose 1909, Young 1906), the Lisu harvesters I spoke to

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<sup>21</sup> The common term is *su-san le-la-thu* (စူးဆန်လေ့လာသူ) or one who “investigates and studies.” With a mix of respect and mockery, I was even called a “real” *su-san le-la-thu* when I shared the news with friends in Myitkyina that I would be joining a botanical expedition to the rainforests of the Upper Chindwin River (2019)—the very place where I would encounter motorcycles being offloaded at remote villages deep in the jungle and talk of Lisucycles.

claimed themselves as those who could locate valuable things in a landscape long under human transformation, replete with the lively and overgrown infrastructures of others: logging and mining roads, swidden fields and fallows, ghost towns, and old hunters trails. Exploration, and the hunting of medicines, was encompassed by an oft repeated Burmese saying among harvesters, one I heard Ruth, Elijah, Nehemiah and many others repeat:

မသိတဲ့လူကြောသွား၊  
*Mã-thi-deh lu caw thwa*

People who don't know,  
 pass it by.

သိတဲ့လူဖော်စား။  
*Thi-deh lu paw sa.*

People who do know,  
 dig it up and eat [and make a living].

Exploration is accordingly less about finding unexplored space, so much as combing resources, and finding routes to access commons amidst the increasing complexity of the interior. Myitkyina, and the surrounding valleys of interior have been flagged by conservation agencies and scholars as one of Myanmar's fastest growing deforestation zones (Woods et al. 2021). The resulting landscape, as is evident in my interlocutors' accounts and our surveys, is one of ecosystems fragments where forest patches are imbedded in monocrop plantations, rotating slash-burn zones, mining sites and new settlements, connected by a diversity of roads and obstacles. As Erik Mueggler (2011, chap. 4) has shown in his careful study of Forrest's expeditions drawing on local archives, the Naxi (L: Mၵ d:) guides who lead Forrest to rhododendron fields in the Gorge Country were not simply following paths to target species but rather cosmologically and politically significant trails to<sup>22</sup> Indigenous guides accompanying explorers moved across old paths, negotiating various obstacles, to acquire newly valued goods—unbeknownst to other members of their community.

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<sup>22</sup> Among Lisu from the Gorge Country, there is still talk of the potential value of their beloved rhododendrons (MV, L WE:) to this day and some elderly have memories of botanical expeditions from their childhood.

While one could stop there, to do so would miss an essential element of the post-Fordist resource extraction frontier, and the procurement of goods through exploration: that the means of production, or rather *means of circulation* not only facilitates the flexible flow of workers and commodities, could also be the subject of its own harvesting, exploration, and circulation. This came to my attention when on the first Christmas of my fieldwork, my Lisucycle and Fujifilm camera were stolen from the parking lot of the house I was staying in. Afterwards, we joked that the thief must have felt they received a Christmas present when they cracked open the bike's storage compartment to find the high-quality Fujifilm camera inside, but at the time I was in less good humor as I attempted to track down my bike and camera with the help of friends. A trip to the local police station turned out to be fruitless, and with exasperation they pointed out that 125cc motorcycles were likely the “most stolen” possession in Myanmar. One officer even showed me a tool—a simple wooden peg with a key like metal prong—that was commonly used break built in motorcycle locks, while another demonstrated that three to four strong twists of a locked bike's handlebars could generally snap the locking mechanism of a bike.

With few leads from the police, Lisu and Kachin friends suggested that the best way to track down the bike and the camera down would be to scour the many “old stores” (အဟောင်းဆိုင်) where stolen goods were frequently resold. As we visited bamboo garages tightly packed with hundreds of motorcycles and pawnshops across the greater Myitkyina urban area, I learned that there was a thriving gray market for 125cc bikes, which was all the more enabled by their illegal import. Many were not only unregistered, but unregistrable as they were brought in missing a single part and/or with missing papers, creating a vast pool of motorcycles—*means of production* or more specifically, *means of circulation*—that could only tenuously be owned. Resold stolen

bikes and new illegal/incomplete imports typically ranged from \$100-250, making them well within the range of possibility for a local medicine harvester.

After much fruitless searching, and no luck on either the bike or the motorcycle, I was encouraged by one “old store” to meet up with a Lisu man who could allegedly retrieve my bike. When we met at a tea shop, it became apparent that he could not actually get my bike back. Rather he showed me pictures of typical bikes that could be acquired through his services at affordable prices, including 150cc and 250cc Honda CV’s, which he declared were the “best Lisucycles.”<sup>23</sup> His prices were significantly lower than retail, and even in strong competition with the gray-to-black market of the “old stores.” When I later asked around in the Lisu community, I learned that he was a notorious bike thief who had made his living (and apparently built a rather large mansion which they pointed out to me), by ripping off motorcycles from casinos in the borderlands. As one informant who admitted joining him explained to me, the thief would catch lifts up to the border where he would search through the parking lots of casinos, brothels, and cheap hotels looking for motorcycles to fill his orders. The motorcycles were largely unregistered, or if they were registered it was in China rather than Myanmar. According to the informant, the bikes were almost all ones that had been driven across by cross-border revelers, and in this vein, there was a Robin Hood like spirit around the whole enterprise that echoed the exploratory work of harvesters as they picked across forests and fields that had been made into concessions by powerful outside forces. In the post-Fordist extraction frontier, the exploration and extraction work of the new entrepreneur not only targets routes and diverse landscapes but also commodities.

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<sup>23</sup> As he showed me the bikes on his cell phone, I could not help but be reminded of the many *nigule* harvesters, who also showed me images of herbs that they had been sent by Chinese medicine buyers, always accompanied with estimated prices.

CHAPTER 3:  
“APOTHECARIES”

(Nṽ.. 卩I; XY, d:)

I. THE PROBLEM OF RURAL MIGRANT HEALTH

It is written on the container. You should only spray one tank of pesticide per day. But when I tell the *laoban* [boss] he just yells and tells us to get back to work. We spray three tanks per day, sometimes four. Fertilizers too. It's the same. He can read the Chinese on the tank. I can read it too. He knows I can read it. But he just yells at me. Now my skin is black. I'm tired. My head hurts. I don't get much and it's not easy, but I have to work. So, I come here.

Here is the home of a ‘barefoot doctor’ (赤脚医生) on the outskirts of Myitkyina, the capital of Myanmar's Kachin State and the northernmost gateway to China. The doctor, an old immigrant from across the border, is off grinding a mix of ‘liver and kidney strengthening’ herbs in his mortar while Ngwa Ta tells me of his plight. His eyes have yellowed, and his skin has acquired a blue-black hue since our first meetings two months earlier at his nearby camp. Like other Lisu people at the camp, he is not from Kachin State, but rather a migrant laborer from rural Shan State trying to support his family by working in this newly opened contract farming frontier. He explains he chose to move here because he can barely speak Burmese and he lacks full legal papers—despite having been born and worked his entire life inside the nation. Kachin State offered the possibility of working under bosses who spoke Chinese or Lisu, people who ‘could understand’ his situation. Where others in the camp had balked at the bad conditions and left for the jungle, Ngwa Ta stayed on, and even now insists he will keep working: ‘Wherever you go, whatever work you do, you'll get sick.’

This chapter is about what rural migrant workers do when they get sick. It examines the material and social means that migrant workers, their families and community members use to fix

working bodies that have been pressed to dysfunction in the rugged worlds of rural production. More precisely, it is a critical inquiry into the place of medicine in rural production, and the specific role that barefoot medicine can and does play in the reproduction of migrant labor. Combining herbs, drugs and other medicinal resources that can be easily sourced in rural settings, “barefoot medicine” is a legacy of the “barefoot doctoring” movement in revolutionary China—a movement that focused on the dissemination of practical therapies that could be easily learned and acquired by even the “barefoot” rural working class (Fang 2012). In the present, barefoot medicines give migrants a way to repair damaged bodies in the field. They are not only tools to overcome the injurious conditions of the production frontier, but also valuable resources which migrants use to barter their way past the many predators of this social space. Their practices show how medicine is an integral material and social component of the means of production in rural inter-Asia.

Ngwa Ta’s assessment drawn from a life of rural work appears to be painfully correct: you get sick. His story echoes the physical abuse and social precarity that migrant workers face in rural industries across the globe (i.e. Bolt 2016, Lowthers 2018, Thetkathuek 2017, Linardelli and Goldberg 2018). Scholars following migrant farm workers in the Americas paint similar scenes of unregulated labor conditions that break bodies and organs (Holmes 2013, Horton 2016), while also documenting the diverse forms of violence that migrants are exposed to in their journeys through the rural working worlds and borderlands of global capitalism (Vogt 2018, De León 2015). It is not only farm work that extracts a toll from migrant populations. Studies of rural infrastructure workers in long-haul trucking report similarly grueling conditions that run drivers’ health against the clock of profitability leaving kidneys and reproductive lives damaged (Viscelli 2018, Wentzell 2013). Meanwhile, research on migrant gold mining points to these sites as deadly convergence zones for chemical, environmental and social diseases across continents (Stuckler et al. 2013, Soe

et al. 2017, Douine et al. 2018). Though, as Peluso (2017, 863) reports from Indonesia, despite these “dangers” many gold mining workers view the “labor and property relations” of the mines as “more respectable” than those of the plantations.

Ngwa Ta’s assessment drawn from a life of rural labor appears to be broadly accurate: you get sick. His story echoes the physical abuse and social precarity that migrant workers face in rural industries across the globe (Lowthers 2018; Thetkathuek 2017; Linardelli and Goldberg 2018). Scholars following migrant farm workers in the Americas paint similar scenes of unregulated labor conditions that break bodies and organs (Holmes 2013; Horton 2016), while also documenting the diverse forms of violence that migrants are exposed to in their journeys through the rural working worlds and borderlands of capitalism (Vogt 2018; De Léon 2015). It is not only farm work that extracts a toll from migrant populations. Studies of rural infrastructure workers in long-haul trucking report similarly grueling conditions that run drivers’ health against the clock of profitability leaving kidneys and reproductive lives damaged (Viscelli 2018; Wentzell 2013). Meanwhile, research on migrant gold mining points to these sites as deadly convergence zones for chemical, environmental and social diseases across continents (Stuckler et al. 2013; Soe et al. 2017; Douine et al. 2018). Though, as Peluso (2017, 863) reports from Indonesia, despite these ‘dangers’ many gold mining workers view the ‘labor and property relations’ of the mines as ‘more respectable’ than those of the plantations.

What is missing in these stories of rural labor is how migrants like Ngwa Ta respond to the injuries and diseases they suffer at work. While these scholars offer important windows into the brutal conditions that displaced and dispossessed rural populations face as they seek out migrant livelihoods in an increasingly extractive global economy (Li 2011, 2014; Day and Schneider 2018; Moore 2018), they offer little to no discussion of the treatment strategies that these rural workers

take to sustain their bodies in productive labor. Instead of looking at the potentially transformative agency of these migrants, many of these academics (*i.e.* Holmes 2013, Ch.7; Horton 2016, 178-184; Stuckler et al. 2013, 646-647) call for policy and legal reform, encouraging privileged medical professional and academics to seek solidarity with these victims of the global economy. Their calls are valuable and important, but in the meantime, the migrants appear to be left waiting for governments and social activists to secure them better protections and means of healthcare.

Like Ngwa Ta, many migrants do not wait. From Argentina to Kazakhstan, the ILO's recent report on Labor Trafficking, Exploitation and Migrant Health (Buller et al. 2015) documents cases of migrants carrying and using medications in a diversity of self-treatment therapies from mixes of over the counter drugs and local herbs (82,125) to industrial lubricants (47). The study also shows the diverse forms of medical counsel migrant workers seek from camp cooks (82) to local mullah's (125) and community doctors (47). Here Fischer-Mackey et al.'s (2020) recent effort to bring the voices of rural Guatemalan community health workers (CHW) into academic dialogue is doubly valuable. First, they draw attention to the grassroots health infrastructures that are actively responding and negotiating the crises of rural health. Second, they point to a lineage of health movements and medicine practice that has empowered rural labor communities for over 70 years: the "barefoot" doctoring movement, first formed in Maoist China (Fischer-Mackey et al. 2020, 901). Conceived as part of the people's revolution, this movement afforded medicine a prominent role in the transformation of rural society (Fang 2012, 1-3), and continues to have consequences for rural labors in the present—from the advocacy efforts of CHWs in Guatemala to the healing work of the "barefoot" doctors that Ngwa Ta and I wait upon in northern Myanmar.

It is this legacy of barefoot doctoring that I investigate to understand the role of medicine in migrant labor and production. However, medicine is not an easy target of study in the context

of production. Marx (1967) did not clearly situate medicine in his portrait of production, focusing instead on how the vitality of the working class depended on the provision of proper sleep and the resources of food and energy (*i.e.* 375-377). Where the later have become a central locus of provocation in rural and peasant studies (Friedman 2019), medicine has not. This study seeks to remedy this lacuna by first locating barefoot medicine in the process of production as both a resource and a means of production, before considering how the forms health and sociality that these medicines enable underpin the reproduction of migrant labor in the rural production frontiers of inter-Asia.

## II. CASE STUDIES FROM A LABOR FRONTIER

To document the role of medicine in production, this chapter offers six case studies of medicines used by migrants and barefoot doctors, drawn from my ethnographic research. I begin by looking at the role of medicine in the exurban camps (cf. Harms 2011) where rural migrant laborers and truckers temporarily live, rest, and seek out work. From there I proceed to the jungle camps and remote villages of the frontier where they carry out their extractive labor. Tracking medicine across these rural infrastructures to see how medicines are “integrated” in capitalist relations of rural production and supply (Aga 2019, 1462). As the chapter proceeds, I turn to the jungle, untangling an “underground” (Marston 2020, 826-827)—or perhaps ‘overgrown’—history of barefoot medicine by looking at the sites where this practice confronts the social and of natural worlds of resource production “most directly” and “negotiate[s] labor relations”: the war-torn, malarial forests of Kachin State.



Image 10. Pointing out a medicine on the move, on the way to camp.

### III. THE MEANS OF LINE TRUCKER HEALTH (CASE 1)

Aunty Fish grinds a Biogesic® (500mg paracetamol) in the mortar and pestle before blending in a spoonful of *taiq-nga-loun*—the Chinese herbal medicine “Five Pagoda Brand.” Transferring the yellow-brown powder to a large metal spoon she gingerly adds water and works it into a thin paste with her fingers before administering it to her husband, Win Soe in a large gulp. He is a line trucker and has been badly feverish since he got home after nearly forty-three hours of driving on the notorious Myitkyina-Putao road to the Myanmar Himalaya. However, in the midst of being pampered he is happy to share his story.

With talk that fighting had broken out between the Myanmar military and the Kachin Independence Army, he and his crew had left Putao early in the morning to avoid running into soldiers who might “beg for help” (*ă-k’u ă-ni t’aun*)—a euphemism for conscription that could entail carrying uncompensated loads with his truck at great risk and cost. While they had dodged the soldiers, the rains set in just after nightfall and they were forced to stop in a village high in the mountains. The village was abandoned, a displacement that had happened in the last week. Not wanting to get out and see what had befallen the residents he parked near the now-empty market and he and his crew slept cramped in the cab of the truck. It was a cold and short night with as much shivering as sleep, he tells, and by 1am he gave up on sleeping and set off, driving well into the next night to make it back to

Myitkyina. After getting in he passed out awaking late the next day to Aunty Fish and I talking about medicine.

The paracetamol-five pagoda concoction—a “heat reducing medicine” (*ǎ-pu-ca-s'e*)—is only the first of several therapies, and while she works on him, she takes the opportunity to explain her practice. Oral medications alone cannot resolve the dangerous internal heat, or *ma-k'a-laun*, that is causing his fever. Instead, the heat must be released by scrapping his skin with the rim of a condensed milk can. As she rakes his neck and back with the aluminium can, she continues that in extreme cases it is sometimes necessary to beat the back of the calf and knee with “Japanese sandals” (*ja-pan pǎ-naq*)—a generic brand of blue and white rubber sandals—until a large red welt forms marking the release of *ma-k'a-laun*. Thankfully Win Soe has no need of this treatment. When his neck and chest are covered with red streaks she applies the final therapeutic, a bowl of chicken soup with *daw-na* [*Artemisia* sp., cf. Kress et al. 2003], a medicinal herb gathered from the camp commons.

Her efforts are just in time. In the middle of our conversation, Win Soe’s boss calls and “begs for his help” (*ǎ-k'u-ǎ-ni t'aun*) to rescue a stalled truck half way up the Putao road—a task that will garner him no pay and risk exposing him to at least another night in the truck. After a long pause he consents and Aunty Fish leaves in a storm. As she explains in the backyard, his boss is a devious “squeezer” (*tsoni*) who squeezes him badly ever since he fell into debt and was forced to take out a mortgage on his truck from his boss. As work dwindled—or as Aunty Fish suspects, as his boss intentionally reduced his hours—he became unable to keep up on payments and his boss predictably took over ownership of his truck, creating entirely new conditions for “begging help.” As he sets out the door he calls for his wife to bring him a new jar of “Working Man” (*louq-tha-maun*) a Burmese brand “strengthening drug” (*a-s'e*), that he often consumes while on the road. He ate through the last jar on the trip back. She gives him a new jar and he heads back to work.

While Aunty Fish’s husband is exhausted, he is also ill and neither see rest as a sufficient remedy. Rather, they turn to medicine to get him back to work. When Win Soe’s boss calls to extract free labor, it is medicine that enables him to work past illness and exhaustion. In this context medicine seems to be yet another “cheap” resource that is taken for granted in the extractive production of surplus. But what manner of resource is it?

Neatly summarizing one of Marx’s central arguments, Moore (2018, 241) suggests “labor, food, energy and raw materials” as the “Big Four inputs” or “Cheap Natures” at the core of capitalist production and accumulation. Building on Marx, Moore calls for a reconceptualization

of value that encompasses the reproduction of “work, energy and life” beyond “the cash nexus” to address the exploitation of free labor and natures—an exploitation that is still done in the service of capitalist accumulation but takes these “cheaps” for free (*ibid.* 242). Moore’s point is perhaps more easily digested looking at Win Soe’s case. His illness-inducing marathon drive for fixed wages constitutes a classic cheapening of the resources that power production—regardless of how much labor time, energy, or food the work might induce he receives the same wage. By contrast the unpaid service his boss extracts when she forces him to drive back and rescue her work force by “begging help” relies on these same inputs, but as Aunty Fish explains “that \$\*%# won’t pay anything.” Yet to produce this free labor, Aunty Fish’s husband needs more than food, energy, and raw materials. He needs medicinal varieties of each: *daw-na* Chicken soup, Working Man “strengthening drug,” and a condensed milk can. What then is the role of the medicinal in this process of production?

Reading the purported effects of the “strengthening drug” Working Man offers some clues. Far from being a cheap energy, its benefits include treating “aches and pains (*nyaungnya- kaiq-k’eh-c’in*), haemorrhoids (*leiq-k’aun*), urinary and stomach troubles (*s’i-wun-măhman*), and indigestion (*s’a-mă-win*) leading to insomnia (*eiq-mă-pyaw-c’in*).” These conditions are well-known to long-haul truckers, brought on by long driving days, supplemented by caffeine and other cheap energies, as well as the exposures of having to eat and sleep along the road (*cf.* Viscelli 2018). Rather than giving more energy the “strengthening drug” appears a way to help workers who struggle to intake food and are unable to rest— conditions that limit the body’s ability to regain spent energies and resources. “Working Man” is a tool to help the worker regain inputs for productive labor, fixing a dysfunctional body that has lost its ability to naturally regain its vitality.

In this sense medicines are not just resources that are input into a capitalist process of production, but tools that change laborers' ability to accumulate the resources needed for productive labor.

Something of this unique place of the medicinal has been raised in Moore and Patel's (2017, Ch. 4) extended discussion of the "cheaps" of capitalism, where the authors use the topic of "care" as an opportunity to examine the historical exploitation of women, particularly the domestication of spouses as cheap labor supporting production at home and beyond. While they see how relations of care, or more broadly relations of health, underpin production, their discussion strangely omits the role of medicines or any consideration of the material means of health. While their point is well taken looking at Aunty Fish's free provision of care in service of her husband's un/paid labor, it is not only her labors but also the diverse material resources that she uses as medicines which allow her husband to return to work. Medicinal resources are not just a means of health, but a means of production.

The point that medicines are a means of production is not novel. It is a core conjecture of barefoot medicine, that the "experimental" use of medicinal herbs and other therapeutics will empower workers to create "the new wave of industrial and agricultural production" (ITCMH 1974:569)—a claim "Working Man" brand would readily endorse. However, what is revolutionary about barefoot medicine is the relationship that this tradition seeks to establish between the laboring classes and this means of production. Here Moore's point that natural resources should be seen as "matrices" that represent "bundles of relations" to avoid complicity in their cheapening (2018:254-255), is helpful in thinking through what manner of resources are mobilized in the barefoot-style of medicine Aunty Fish practices and who controls this means of production.

While not directly trained in the barefoot doctoring movement, Aunty Fish resembles one in her practice. From the relieving of dangerous internal heats by scraping treatments (*guasha*), to

the use of Artemisia weeds (*hao*) in a therapeutic recipes (*shiliao*), and the more obvious use of “five pagoda band” herb concoction—Aunty Fish’s medicine would not be out of place in Southern China. Indeed, both scraping “folk therapies” (ITCMH 1974:79-80) and the use of Artemisia weeds (*ibid.* 689) feature in the Hunan barefoot doctor’s manual. However, what is most pronouncedly barefoot in medicine is her pragmatic willingness to draw diverse forms of drugs and therapeutic practices from her environment to resolve health problems—that is her willingness to “experiment” and “develop a combined practice” with “simple, easy to use” resources at hand (*ibid.* 569, 94). To fix her husband she uses industrial commodities common to supply chains like condensed milk cans and mass-produced drugs— Western, Chinese, and Myanmar—alongside a pan-tropical weed that is commonly found along roadsides and village commons around the world. In doing so, she gathers medicines without discriminating over their nature or culture from the potent substances that form the capitalocene/capitalist material environment of her migrant labor camp in order: all to get her trucker husband back to work. Barefoot doctoring is then a style of doctoring and domain of knowledge that keeps medicine—a means of production—within the reach of the working classes, by drawing on the potent nature/culture resources at hand.

To see medicine as a means of production, that is a tool that is used to produce goods or services, one must believe that these medicines actually work, or at minimum that workers require these inputs to complete their role in production. While Aunty Fish’s husband appears to rely on his wife’s medicine and care, and indeed he insists he needs medicines to do his work (sufficient for an anthropologist), the less anthropologically sympathetic reader may view these medicines as cultural or consumerist behavior not actual means of production. To address this concern, I turn to the two most commonly used medicines among rural migrant workers in the jungle: anti-retroviral therapeutics (ART) and the herb *Coptis teeta* RANUNCULACEAE.

#### IV. THE MEANS OF PRODUCTION IN THE JUNGLE (CASE 2)

A few weeks later, I am back in Aunty Fish's camp, this time visiting a harvester, Jay Wusae who has returned from a month-long ginseng hunting trip in the jungle. We look through his harvest—a muddy pile of rhizomes, some as long as my arm—while he tells me of his work. Skirting a gauntlet of military checkpoints that mark the frontline of the conflict zone, he and his hunting companions scramble up the rivers and jungles north of Myitkyina to hunt for the valuable roots in the mountains of the Kumon Bum range.

I ask him if he ever gets sick traveling through the jungle, and he responds he has only been sick seriously once, but is better now because he is “taking his pills.”

“What pills?”

The conversation stumbles. I wait. After a moment, he slowly opens up. In the past when he first moved to Myitkyina, he became badly addicted to heroin. When the addiction spiraled out of control, he became incurably sick. His relatives intervened and brought him to the hospital, where he tested positive for HIV/AIDS—likely due to a long history of sharing needles. They encouraged him to seek therapy from a local mission that was providing free ART drugs to those in need. Ever since then he has been careful and grateful for his health. While he still spends upwards of 10 months per year in the jungle, he restocks his ART each time he returns to town and takes his pills carefully each day.

At that point, our interview is cut short by a call from his broker. He encourages me to leave and come back later since he does not want my presence to give the broker an excuse to manipulate prices any further. In the last year, the broker has pushed the price down by more than half. He cannot afford to be “squeezed” (*ni*) any further by this “squeezer” (*tsoni*), he explains, invoking the same term Aunty Fish had used to describe her husband's boss. When I returned later, Jay-Wusae was out. When I asked where he is, his uncle shakes his head, “He's a good man, he takes good care of us. God bless him. But the drugs still have a hold on him (*swe-the-deh*). He'll be back tomorrow or in a few days.”

Jay Wusae's case is hardly unique. During my time with jungle harvesters and miners, I found that many suffered from HIV/AIDS after histories of drug use. Echoing connections that anthropologists have drawn between addiction and the dispossession and ruination of capitalism

in rural frontiers (Garcia 2009, Pine 2016), my own research came face to face with the opioid epidemic that is ravaging migrant labor camps and villages across northern Myanmar. In one camp, not far from Jay-Wusae's I was even recruited into helping to pick up used-needles in the adjacent teak plantation where the camp children often played. Two sweaty hours later, we had collected over 230 needles (*see* Image 11), a similar “harvest” to what the local youth pastor had collected a few weeks before. As he explained, it was worst when work was low during the rains or when money was flush after payments from brokers. Like Jay Wusae, many migrants are addicted but still working.



Image 11. Used needles in a teak plantation, Myitkyina outskirts.

Far from debilitating, the opioid and resulting HIV/AIDS epidemics have not stopped work but made it reliant on new drugs. As has been shown in other areas where HIV/AIDS is prominent, but ART drugs are free or affordable (Campbell et al. 2011; Hendrickson et al. 2019; Tompsett

2020), migrant workers like Jay-Wusae take ART therapies and keep working. The drugs are not just a lifeline for the young harvester but underpin their ability to engage in productive work. These drugs are a critical *means of production* for HIV+ laborers.

However, they are not owned by migrants, nor are they owned by the broker monopsonists who buy their harvests. Instead Jay-Wusae and other migrants rely on the nonprofit fundraising and labor of healthcare-providing NGOs who purchase these drugs from the pharmaceutical companies who retain the monopoly over this means of health. The point is not academic. It chafes at many workers who have also utilized barefoot medicines which are *means of production* that can be easily acquired. When I later meet up with Jay-Wu-Sae he is intent to clear up the matter: “ART is not a real medicine for the jungle. If you want to know about our jungle medicine, you need to know about *xuh xuh*.”

## V. THE MEANS OF PRODUCTION IN THE JUNGLE, CONTINUED (CASE 3)

I first learned of *xuh xuh* weeks before my meeting with Jay Wusae at a barefoot doctors’ training held by the Lisu Apothecary Association. Several of my interlocutors were attending and invited me to join. As the training came to a close, one of the senior herbalists *Mapha No Le* approached me with a concerned look in his eye:

“Teacher, do you have any *xuh xuh* where you come from? Do you know *xuh xuh*? *Huanglian*?”

He repeats in Chinese to insure I understand. When I explain I do not, he presses on, “It is one of our great medicines. Fevers, diarrhea, infected wounds—it can cure all of them. You say you are going to the jungle soon, right?”

I nod.

“Then you need this medicine. Carry it with you when you go to the jungle. Wherever I go, I carry some with me.” With that he produces a small handful of the roots from one of his robe pockets and breaks one open to show me the bright gold color within, before pressing them in my hand.

His gift is neither eccentric, nor boastful. *Xuh'xuh*, or *huanglian* in Chinese, is a drug derived from the roots of *Coptis* species (RANUNCULACEAE) and has long been prized for its diverse efficacies in Chinese medicine (NATCM 1999:1398; NUCM 2006:2020-2021). Accounts of the drug's export to China feature prominently in early European accounts of northern Myanmar (i.e. Wilcox 1832:425, Kingdon-Ward 1956:47-48), and it is even listed as a one of the many common commodities in which debts (*hka*) can be measured in Leach's (1964:146) analysis of the region. Studies of agroforestry projects in neighboring parts of China suggest the drug often makes up in excess of 50% of rural household income (Huang and Long 2006). In my own research, the valuable drug became a prominent subject of conversation, but not for its profitable sale: among those who collect forest products, the plant is often reserved for personal use.

Gwa Sayae is one of the many harvesters who holds on to the roots. I first heard about him from worried neighbors in his village near Putao. He and his companions had been gone for over five months on a ginseng harvesting trip along the mountainous Myanmar-India border—far longer than their usual four-five week trips. Those close to his wife and parents were worried about his family's fate if he did not return. When he finally trod through the rice fields with a great sack of ginseng roots slung across his broad shoulders there was an outpouring of joy, and I went to hear his story. Yet on arrival it was not a celebratory scene.

Joy has given way to frustration and resignation in Gwa Sayae's house. As he tells me of his experience, surviving in the wilderness on palm pith and goral flesh, his family's finances loom heavy. His harvest was no greater than a usual trip, earning his family a little less than \$950 dollars for nearly a half year's work. He speculates whether he will give mining a try, or hunt for other forest products next time. As I ask him about health in the forest, his mother intercedes telling him to show me what else he collected. He pulls out a small plastic bag of *xuh xuh*, with dozens of roots.

"I picked them in the jungle. This is the medicine I use when I get sick. It heals whatever makes you sick," he explains in plain terms. His mother chimes in to expound on its value, and he carefully reties the bag and stores it in a cupboard. I ask if they plan to sell it. "No. I won't sell it. I use it."

His mother and wife agree without hesitation, “We won’t. He needs it, and we do to.”

Their resolve in the face of poverty speaks strongly to their belief in the herb as a means of life and livelihood on the frontier: a means of production that the jungle workers can and do freely extract from their environments. Their belief is not unfounded. The efficacy of the drug is well documented in Chinese national pharmacopeia backed by chemical assays and laboratory studies (NATCM 1999:1398-1400, NUCM 2006:2023-2033). Despite professing no knowledge of Chinese or Chinese medicine, Gwa Sayae’s mother nearly describes these efficacies in complete as she explains her folk medicine—a testament to the profusion of this knowledge (Figure 11).

Beyond Chinese national efforts, a wealth of biochemical studies from global laboratories have shown *Coptis* roots to be a major source of the alkaloid berberine among some 124 other phytochemical compounds (Meng et 2018). As Wang et al. (2019) have shown in their diligent review of more than a hundred pharmacological studies, *Coptis* root extracts and berberine have demonstrated antiviral, antibacterial, and gut flora promoting effects against a range of infectious diseases—from both environmental and social vectors. Pharmaceutical companies like AdvaCare Pharma even market berberine extracts from *Coptis* roots and other sources as an “antibiotic” for international markets alongside their generic versions of Azithromycin and Amoxicillin (AdvaCare 2020). Far from a simple folk remedy among Lisu migrant workers, *xuh xuh* is a means of health across markets.

ART and *xuh xuh* are two examples of the many drugs that make work in Myanmar’s extraction frontier possible, sustaining a steady flow of natural resource commodities out of this frontier and onto Chinese and other global markets. Yet where one is a *means of production* owned by pharmaceutical corporations, the other can be acquired by hand in the field and is readily used to cure a body rendered unproductive by disease.

| Uses of <i>Coptis</i> root according to Gwa Sayae's Mother in <i>Lisu</i>                                      | Corresponding Uses of <i>Coptis</i> root in Chinese Pharmacopeia ( <sup>a</sup> NATCM 1999, <sup>b</sup> NUCM 2006)   |
|--|---|
| 1. <i>Tsasaemya'ama</i> (excess heat in the body)<br><i>Chewheu</i> (fever)<br><i>Oduh hwamachi</i> (delirium) | <i>Rebingxie</i> (hot pathogenies) <sup>a</sup><br><i>Gaore</i> (high fever) <sup>a</sup><br><i>Zhanwang</i> (delirium) <sup>a</sup>  |
| 2. <i>Tseuveu tzi'ama</i> (coughing phlegm)<br><i>Beumeuna</i> (lung illnesses)                                | <i>Reshi xiongpi</i> (moist-heat chest congestion) <sup>a</sup><br><i>Feijiean</i> (tightness in the chest) <sup>b</sup><br><i>Bairike</i> (pertussis) <sup>b</sup>             |
| 3. <i>Vemana</i> (stomach illnesses)<br><i>Vemaga</i> (diarrhea)<br><i>Sidola'ama</i> (blood in stool)         | <i>Futong</i> (abdominal pain) <sup>b</sup><br><i>Xiexie</i> (diarrhoea) <sup>a</sup><br><i>Liji</i> (dysentery) <sup>a</sup> , <i>junli</i> (bacterial dysentery) <sup>b</sup> |
| 4. <i>Beunachuh</i> (infected wounds)<br><i>Beunayizi</i> (infected boils and ulcers)                          | <i>Redu chuangyang</i> (inflamed, infected sores) <sup>a</sup><br><i>Dingdu zouhuang</i> (infected boils) <sup>a</sup><br><i>Yongju</i> (gangrenous carbuncles) <sup>b</sup>    |
| 5. <i>Beudisenetsi</i> (insecticide, antiparasitic)  | <i>Shachong</i> (kills insects, parasites) <sup>b</sup><br><i>Huichongbing</i> (parasitic roundworm) <sup>b</sup>   |
| 6. <i>Moenoekwa'ama beuna</i> (mouth sores)  | <i>Koushe shengchuang</i> (mouth sores) <sup>a</sup>  |
| 7. <i>Nyasoe ola'ama</i> (swollen eyes)<br><i>Nyasoe sisika'ama</i> (red eyes)                                 | <i>Muchi zhongtong</i> (swollen, red eyes) <sup>a</sup><br><i>Huoyan</i> (conjunctivitis) <sup>b</sup>  |

Figure 11. The circulation of barefoot medicinal knowledge. Peasant and official knowledge of *Coptis* roots in Chinese pharmacopeia (<sup>a</sup>NATCM 1999, 1398-1400; <sup>b</sup>NUCM 2006, 2020-2033)

## VI. THE PRICE OF MALARIA (CASE 4)

As I began to go into the jungle with migrant workers, I started to hear and worry more about malaria. The treatment dose of anti-malaria medications that I had spent over \$250 on in American was destroyed by a monsoon flood. My anxieties were perhaps loud enough that eventually one of the better-known herbalists from the Lisu Apothecary Association, Mapha Zaw Tar, invited me out on a walk to show me some of the plants I could use if I fell ill. More than plants, on that walk he taught me something about the practical form of health that these medicines offer as a means of production: they make bodies “sound” for work.

From the margins of the village we set out through plantations and swidden fields until we eventually reach an area of old forest where the high canopy offers a break from the sun. Winding past groves of towering torch gingers and hanging “rib vines” thicker than my arms, we enter a meadow where *Mapha Zaw Tar* stops.

“Here, this is a malaria medicine: *phyaxyape*.”

He carefully removes the small herb and its root for my inspection, and I asked him about the name. *Phya*, he explains refers to *phyalo* a term for the spleen in his dialect of Lisu, but it also refers to the liver *xuhphyu*. The medicine, *Mapha Zaw Tar* continues, works on both and its name can be translated as “spleen-and-liver-fixing herb,” for it has the ability to “shrink the swelling of these organs during and after malaria.”

As we continue our hunt for herbs in the forest, he tells me of a pamphlet series he drafted for the Myanmar Ministry of Health on his larger theory of how to treat chronic forms of malaria by healing the spleen and liver. Those who do not take medicines like *phyaxyape*, he warns, can develop a debilitating condition of “blood weakness” leading to exhaustion and an inability to work [*cf.* Zaw Tar 2016:5-6]. “Blood weakness” is common, he explains because malaria is often left untreated in Myanmar, allowing it to progress and do “functional damage” to the liver and spleen which “renew the blood.”

When we leave the forest, we stop by his home so he can show me the pamphlet and a formula for treating “blood weakness.” Alongside the Lisu names of each plant, he has written a phonetic approximation of the plant’s Chinese name along with Latin botanical names. He explains he got these names from Chinese medicine books given to him by a doctor on the other side of the border [KMPH 1970, RCYMPH 1971]. Looking through the books I see the drugs he lists are well-recorded in these Yunnanese barefoot medicine manuals: *Verbena officinalis* [KMPH 1970, 142-143; RCYMPH 1971, 154-155] and *Berberis pruinosa* [KMPH 1970, 40-41] are “anti-malarial” drugs, and *Sargentodoxa cuneata* [RCYMPH 1971, 68-69] is a drug for anemia. As he explains further, these are not just barefoot medicines in writing but in practice:

“These are not like your Western drugs which are very expensive and hard to find. What will you do if you get sick in the jungle? No hospital. No pharmacy. Anyone can find these drugs in the forest, if they know what to look for. By strengthening the liver and spleen which make new blood, you can regain your body’s strength and do what you need to do [work], wherever you are.”

*Mapha Zaw Tar*’s attention to the chronic effects of malaria have scientific precedent. Though some strands of malaria can be quickly fatal, many create chronic symptoms and recurrent fever, leading to spleen and liver inflammation and enlargement (hepatosplenomegaly) as well as anemia,

jaundice, and exhaustion (*cf.* Menzes et al. 106-110). Such effects have a profound impact on rural labour and production that is well recorded in the present (*i.e.* Lukwa et al. 2019, Rose et al. 2020) and was even recorded in the early plantation systems of 18-19th century America.



Image 12. *Mapha Zaw Tar* harvests a medicinal root in the forest.

As historian Todd Savitt (1978:20) notes, plantation slaveowners in the American south were not only concerned about the threat of death during the “initial attack” of malaria, but also that the chronic disease might “incapacitate” laborers at “the height of the harvest season,” incur “relapses” that led to a progressive “loss of time from work,” and increase the likelihood of death “from weakness and infection.” Compared with other diseases common to the tropical frontier like typhoid, pneumonia, or cholera which struck in periodic outbreaks, malaria was less deadly but more problematic as its “intermittent and remittent fever” incurred “economic waste” throughout the year (Savitt 1978:21,143-145). For rural labor frontiers in the tropics from the 19th c. American south to the jungles of present-day Myanmar, malaria is not just a disease threatening populations but an economic disease that threatens production.

In the “free ticket”-style (Tsing 2015) extraction taking place in Myanmar’s jungles where laborers search out resources for brokers in uncontracted labor, there is no authority with an interest in the laboring body to invest resources in keeping them functional. Rather, workers—often indebted by loans taken to pay for extraction equipment and transportation— gamble on the health of their own bodies in these disease-ridden frontiers with little access to healthcare. Considering the appalling conditions recorded in the cases of migrant labor on agricultural sites even in the United States (Holmes 2013, Horton 2016)—let alone that of Ngwa Ta—it is not clear they would be better even if they were contracted. Here *Mapha Zaw Tar*’s point is well taken: barefoot medicines offer a means of health when no others are available or affordable for the worker who must sustain and pay for his or her own body’s labor power. His point became particularly clear as I joined migrant workers in the resource extraction frontiers of the Upper Chindwin.

## VI. THE PRICE OF MALARIA, CONTINUED (CASE 5)

“His breath stunk so bad, I didn’t even want to kiss him,” Ma Yiphyu laughs as she gently rocks her 5-month old daughter in a cloth sling. She is telling me about the time when her husband fell badly ill with malaria while they were gold mining in the jungle. We are at her home in a small Shan village on the banks of the Chindwin River set deep in the forests of Htamanthi. It is a day’s walk through the rainforest to the nearest village after which it can take up to a week to reach the next settlement by foot. Her husband is off preparing for our upcoming journey into the jungle and as we sit out on a bench in the village commons, she shares her story.

They had gone out to gold mine together soon after they were married. A few people from their village had come along but eventually they had pressed further up the river alone. There were other miners in the area that they would see every now and then, and in the months that followed many fell sick with malaria. Her husband fell ill in the second month. He recovered, but his condition gradually worsened throughout the year as they remained by the riverside—trying to recoup the money they had invested in renting a washing tray and a boat. The first bout of fever had not been severe, but after the second bout his spleen and liver had swelled large and worsened as the fever reappeared. Not only was he increasingly confined to bed, struggling to get sleep, but his appetite was fading.

“He was only eating a little rice and a few tubers each day. You could see his ribs,” she shakes her head and continues. As his health and ability to work diminished, she recalls worrying they barely had found enough gold to pay for the fuel it would take to drive back to their village let alone pay off their investment. Eventually she took matters into her own hands and sought help from the other goldminers working in the area.

The nearby workers were Lisu, and they freely taught her one of their “spleen fixing” medicines when they heard about his condition. The medicine is a mix of ingredients found around the frontier camp:

- 1) one leaf of *hpun shakau*, a “weedy” orchid that grows thickly on tress in the jungle
- 2) an entire *t’i-kā-youn* [*Mimosa pudica* LEGUMINOSAE, cf. Kress et al. 2003, 301], a common pantropical weed found along riverbanks, roadsides and in other ruderal commons
- 3) a piece of lead, roughly the size of her fingernail, or “half of a musket bullet” in reference to the homemade blunderbusses often carried by migrants to hunt

Before boiling the ingredients, she was to wrap the lead in a white cloth to seal in the poison. Her husband was to drink the remedy no more than three times. With apprehension, she collected the ingredients and gave him three cups of this “Lisu

medicine.” A few days later his appetite returned, his swollen midsection lessened, and he was able to return to mining.

As Ma Yiphyu explains, her husband’s illness posed an unfavorable equation between how long their dwindling supplies could last before they would have to abandon their mining venture (and eat the debt), versus the number of days she and her husband could work—their combined labor power. While she no doubt cares about her husband’s health, the economic realities of jungle work invade even her story: health is part of the business of extraction. This standard of health echoes one used by slaveholders in the American south. As historian Sharla Fett (2002, 20-21) documents in her study of plantation medicine and healing practices, slave health was a significant part of the “daily business of running their plantations” and was measured and evaluated in terms of their “capacity to labor,” or their “soundness.” Medicine was in turn one the tools that they used to manage production and “preserve the status quo” by keeping laborers “sound” (Fett 2002, 20-21).

The therapy Ma Yiphyu employs follows a similar principle. It is not meant to cure the malaria which even she acknowledges likely remains in his body. Instead, the easily gathered ingredients are meant to resolve the symptoms and disorders that impede his ability to work, rest and eat—much like Aunty Fish’s remedies had for her husband. In both cases their medicine did not pursue a perfect cure—certainly not the sort that I sought with my Western prescriptions drugs—but rather an accessible means to resolve symptoms and return one to productive life. Barefoot medicine aims to make one “sound” again.

How well Ma Yiphyu’s Lisu therapy ‘works’ is beyond the scope of this paper, but it is noteworthy that the therapy not only resembles a barefoot medicine in form but also in content. *T’i-kǎ-youn* is well documented in Burmese herbal medicine handbooks (*i.e.* Nagathein 1972, vol. 2, 49-51), and the plant identified there, *Mimosa pudica* features as a treatment for abdominal swelling and digestive disorders in the barefoot medicine handbook referenced by Mapha Zaw Tar

(RCYPHB 1971, 408-409). The long-leafed orchid *hpun shakau* is a medicine that the Kachin Baptist Convention's herbalist group have shared in their own barefoot training since the early 2000's (interview), and is documented in their own medicine handbook series as a treatment for malaria (KBCHD 2015, 120). Even the lead is recorded as a therapeutic for "bloating and swelling" of the midsection in a local alchemical medicine handbook that was in circulation at the time of my fieldwork (Sai Wai 2018, 9). While it is unclear if these books contributed to the formulae Ma Yiphyu acquired, these medicines as a means of production are made available to the public in accessible illustrated texts, even as they are shared by word-of-mouth among migrant workers in the field: a form of medicine that radically differs from the anti-malarial pharmaceuticals I took to the field. In the desperation of the moment Ma Yiphyu was willing to take a chance on such a remedy in order to regain her husband's productive labor, even as she acknowledges that "it sounded crazy."

#### VIII. MODES OF FRONTIER SOCIALITY (CASE 6)

That barefoot medicines can be shared among workers and others, is also part of the ideology that surrounded their original dissemination: a "cooperative" people's "struggle against disease" that bridged communities in the name of production (ITCMH 1974:94). The generosity displayed in the preceding cases above suggest something of this ideal spirit. Yet, in my conversations with long-term migrant workers who had spent decades in Northern Myanmar, I found that this generosity often had a practical side in dealing with the volatile social environments of the rural extraction frontier.

As we sit in his wooden house on the outskirts of the Putao valley, the old muleteer tells me his story. He had moved to the frontier from the Salween River Gorge in China to get away from war decades ago. Not the class-based violence that had targeted the old landlords and "squeezers" (*tsoni*), he clarifies. He had joined in that

“just” struggle, but as the Cultural Revolution swept through the valley even Lisu caravanners who eked out a modest living selling and transporting goods across the eastern Himalaya became targets. He fled first to Myitkyina and then north to Putao in the Myanmar Himalaya where he took up an apothecary trade. The skill, he explains he picked up like many caravanners facing the challenges of having to heal himself on the road, collecting knowledge from local herbalists along the way and experimenting with plants in times of need. Yet, he also credits a series of “barefoot doctor’s” trainings in the early days of the revolution that had provided valuable illustrated guides to medicine and medicinal plants.

Off in Putao, on the frontier, he took a new name, “Waba Lae,” and became a healer, as well as a key merchant of valuable plants. Each year he would harvest and trafficking forest products back to Chinese markets where he could now safely be viewed as a barefoot doctor and migrant labourer.

Not long after arriving in Putao, the Kachin Independence Army launched their war of independence and in the decades of fighting that followed he found safety—much like modern aid agencies—in his medical positionality. One evening, he tells me, his family was awoken to the banging of a badly ill Myanmar commander and several of his men. The man was so sick he could barely stand, feverish with bloody stools. The doctor moved the man to just outside the kitchen and immediately set to work boiling his most reliable stomachic: a small alpine root he called *dikhwa* in Lisu, or *xue xiang ku cao* in Chinese. After choking down a glass of the bitter, yellow decoction, the commander collapsed into a deep slumber, and the apothecary covered him in a blanket. In the morning the commander was better, but in style typical to the armed forces he began interrogating his healer. “Where is that opium smell coming from?” He barked in rapid Burmese, and after the apothecary let him smell the root he nodded and departed. Waba Lae laughed off the incident, “he probably just didn’t want to give anything in return for my services, that *tsoni*... though *dikhwa* does kind of smell like opium.”

While the commander offered little show of thanks at the time, in the years that followed he called on Waba Lae for his medical expertise to treat members of the brigade—a trust and repute that left the apothecary free to continue moving across the war-torn hills and carry on with his business without interference from the Myanmar side. As his repute grew the apothecary was visited by the other side for services. Three armed soldiers appeared at his door one day demanding he travel to their base. After giving him time to grab a few essential medicines, including *dikhwa* which Waba Lae explains he regularly carries alongside *xuh xuh*, the group set off. It took over two or three days of travel along muddy paths and up narrow rivers to reach their camp in the hills, and upon arrival he was taken to their ailing leader to inspect him. He was badly bloated, belching and had been suffering repeated bouts of dysentery for months. Once again *dikhwa* served the apothecary well, and in a few days the healed commander offered him an elephant and a gun in gratitude. “I didn’t need either, so instead he had his men slaughter me a cow and we ate beef.”

Waba Lae does not need or carry a gun. Instead, it is medicine that allows him to negotiate the changing social landscape of the Sino-Myanmar borderlands—on both sides. In the same way that medicine allows his return to China, his medicines and his reputation as someone who handles medicines allow him to carry on extractive work in a conflict zone where militaries and even ceasefire groups, regularly capture and extract resources from civilian populations (*cf.* Woods 2011, 2019). In its materiality, medicine is not just a strategy of negotiation or a charade. It is materially depoliticizing—a point aid agencies around the world have relied upon to carry out work in conflict zones for decades. Yet, like aid agencies, Waba Lae acknowledges the limits of this neutrality, as he explains from his home on the outskirts of the valley, “they leave me alone, but I also don’t live too close to any of them.”

This medicine is not free of its own politics. It emerged from a people’s politics born in revolutionary China, where cooperation is not just an imperative but a material possibility of a people’s medicine—one that as the barefoot manuals envision will unite “workers, peasants, and soldiers” alike (ITCMH 1974, 569). As I scoured my notes and computer for images collected during an early field research trip to the Upper Salween River, I came upon a photo I had taken of a Lisu doctor’s notes from a barefoot doctor’s field training in November of 1965—quite possibly one of those attended by Waba Lae before he left for Myanmar. At the top of the page is Waba Lae’s drug:

*Di khwa* [Lisu] – *xue xiang ku cao* [Chinese], a medicine for bloating (*vephu*), belching (*katu*), vomiting sour (*ceuceu’ama phila*) and various stomach illnesses.

The drug that Waba Lae has used to negotiate life on the frontier is not just part of this movement in style but also in content, a legacy that allows for the continuation of productive labor and overcoming of social divides across borders.

## IX. BAREFOOT MEDICINE AT WORK

The above cases suggest how the self-treatment and extra-clinical therapies that migrant workers and their families use are not just (resources or) *means of health*, but *means of production* that are relied upon to keep their bodies “sound” and working in the extraction frontiers of rural Myanmar. By documenting how barefoot medicine entwines with processes of rural production as well as the domestic relations of care that support this rural labor force, I have sought to highlight the place of medicine in livelihood struggles that many rural migrant households face as they negotiate different of extractive “controllers” (Wolf 1966, 10) or “squeezers” (*tsoni*).

Medicine as a resource and means of production that rural migrant laborers utilize is situated in the same “janus faced” conflicts (Shanin 1973, 78) that have been central to peasant studies: the balance of sustaining rural families, households and labor power while participating in the extraction of many of the same resources for outside markets. While barefoot medicines offer workers a means of production drawn from their environments—in sharp contrast to western pharmaceuticals—herbal medicines also have long histories as commodities extracted from the rural global south (Schiebinger 2004, Osseo-Asare 2014). Cases like Gwa Sayae’s retention of the valuable medicine *xuh xuh* show how the peasant conflict of competing claims (Wolf 1966, 9-10) can play out over medicines as well as food in the households of rural laborers. Medicine too is a resource that is simultaneously necessary to sustain life, labor, and family in the rural world, but also one that is pulled by the extractive pressures of outside markets—another field for the workers struggle to retain control over the means of production.

By bringing forward these cases, this chapter aims to foster further discussion and investigation of medicine in rural and peasant studies, drawing attention to the place afforded to medicine and disease in rural production by the barefoot doctoring movement—a movement that

has spurred community health initiatives across the global south (Fang 2012, Brotherton 2012, Fischer-Mackey et al. 2020). In parallel ways to how Shanin's pathbreaking work in Russia (1972) helps us see our "agro-food system as a dynamic center of accumulation" that abstracts and recombines "activities once combined in peasant households" (Friedmann 2019, 1103), the legacy of barefoot medicine in the global south helps us see how corporate and state healthcare regimes abstract and reassemble processes of production, disease, care, and healing in rural working worlds that in other places and other times have been and can be united.

Doing so directs us to another side of Mao Zedong that I learned of from healers trained in the barefoot education campaigns. Overwhelmingly devout Christians who fled Maoist China, these doctors still found a point of agreement in his conviction idea that medicine and healing could lead to social transformation. Indeed, Mao not only called for the barefoot doctoring movement, but also a broader cultivation of valuable medicines, naming *Coptis* roots as his first example (Mao 1986, 465). As he explained, such medicines are part of "the people's struggle against disease through the ages" and central to the reproduction of the laboring population (Mao 1986, 486). The movement that followed in barefoot medicine manuals (*i.e.* KMPH 1970, RCYPHB 1971, ITCMH 1974), barefoot doctors trainings and medical reforms (Fang 2012), new documentation of rural therapies (Farquhar and Lai 2021), and even programs to cultivate medicinal plants (Huang and Long 2006) worked to make the means of health and productivity within the rural workers' grasp.

Tracing this movement's international legacy in present day northern Myanmar— where it has inspired new trainings, barefoot doctors' associations, and healing collaborations at the sites of rural production—this chapter draws attention to barefoot medicine as one of the socialist moments of praxis that is relevant to the present and merits further study (Levien et al. 2018, 878).

More than looking back, the cases in this chapter suggest how barefoot medicine is part of a process of rural workers struggling to retake the means of production and build new solidarities among an otherwise divided workforce. These findings offer forward looking relevance in a world of surplus labor and dispossession (*i.e.* Woods 2019; Li 2011,2014; Day and Schneider 2018; Regassa et al. 2019; Toivanen and Kröger 2019) that sees rural communities divided and transferred in migrant work amidst grueling and hazardous conditions.

The collaboration and solidarity that barefoot medicine makes materially possible is not only the sharing of medicines and medicinal knowledge among workers in the field. Waba Lae's case shows how medicines more broadly are a way of negotiating the vertical relationships and forms of predation that abound in de/militarized spaces of rural extraction (Woods 2011, Smith 2015, Lund 2018). The submerged gift economies that this chapter uncovers in rural migrant labor interactions, offer lines for future investigations that can better understand the substance of migrant "collaborations" observed by others working in "open-ticket" resource harvest zones (*i.e.* Tsing 2015, Ch.5). At the same time it points to the relevance of historical work on the practices and sharing of medicines in rural labor and peasant frontiers in the global south (Savitt 1978; Fett 2002; Schiebinger 2004, 2017) to broader global migrant labor worlds that extend well into the global north (Levien et al. 2018, 878). Alongside Fischer- Mackey et al.'s (2020) attention to the role of community health workers in negotiating state-society relations, the social and material practices of barefoot medicine observed in this paper also point to another semi-proletarian strategy of "mitigate[ing] precarity" (Zhang and Scully 2018, 1032) while remaining engaged in migrant labor markets.

However, perhaps the greatest potential that the study of barefoot medicine opens is how these practices "by-pass" (Ye et al. 2020, 173) the clinical-pharmaceutical market nexus, and form

local mediums of medicinal and intellectual exchange that challenge the role that capitalism has played in our healthcare systems. From Michael Taussig's (1980) foundational essay "Reification and Consciousness of the Patient," critical anthropologists and historians have shown how clinics and pharmaceuticals are increasingly overdetermined by capitalist ideologies (Sunder Rajan 2006, 2017; cf. Hadron and Samabria 2017, 120-122), with medicines often offered in expensive equations of consumer health that force consumers to gamble with the illness probabilities (Dumitt 2012) and grapple with shifting disease definitions that create new stages of profitable preventative medicine (Greene 2007). Recent scholarship has even shown how the pharmaceutical industry has moved into global traditional medicine markets, creating herbal pharmaceuticals and encouraging similarly overdetermined counsel over health (Ecks 2013, Halliburton 2017, Kloos 2017)—highlighting China's international efforts (Langwick 2015, Hsu 2015).

In an age of pharmaceutical predation, barefoot medicine's call for an accessible means to health, in direct relationships with the medicinal substances of our environments—like the berberine of *Coptis* roots and the *Artemisia* weeds of roadsides across Asia—is both radical and pragmatic, irreverent and respectful. As noted in the Hunan barefoot manual (ITCMH 1974, 569), the call is not to abandon the advances of science but rather to invigorate the formation of a combined medicine that enables the working public to mobilize medicinal resources alongside the advances of science. While such an effort may propose medical heterodoxies in the pragmatic search for accessible means of health, its work is to be checked and held accountable by the empirical methodologies of science as well as the wisdom and experience of those who have the greater working knowledge of these illnesses in bodies: barefoot doctors.

Perhaps there is value in Mao's old call printed in the back of barefoot medicine manuals: "to prioritize medical and health work go out to the villages" (KMPH 1970, 776) if modified.

Instead of the village it is time to look to the new world of the rural working class—a world that extends beyond the village to the migrant labor camps and the rural supply chains that fuel our increasingly urban world. It is a call to build solidarities among those who toil and labor and to investigate with fresh curiosity the diverse species of medicine in this Capitalocene in order to retake the *means of health*: our most basic *means of production*.



Images 13a-13e. Black ginger. *Kaempferia parviflora* ZINGIBERACEAE. 13a-13b. At market in buckets (top & middle). 13c-e. Botanical photos (bottom).

CHAPTER 4:  
“PLANTATION WORK”

(T1 MYE)

I. A WORLD OF TRANSPLANTS

In 2019, the black ginger (ချင်းနက်) market reached its peak in upper Myanmar. Lines of make-shift buckets, each carrying a single black ginger plant, could be seen by the side of the road in downtown Waingmaw and in settlements on the outskirts of Myitkyina (*see* Images 13a-13e). They were selling for just 2,000 ks. (~\$1.40), sometimes more sometimes less. The price was high for a ginger by local standards, but the profits promised were higher. Merchants everywhere were spreading the same story that the plant was taking off as a high value good and that the dried roots would sell for up to 200,000 ks. per viss (\$140 per 3.6 lbs) on domestic and foreign markets. Virility drug, longevity drug, energizer—the claimed efficacies were vague, and the medicine makers I knew were scornful of its value: “it’s not a medicine it’s just a business.” As I passed the plant daily, on my commute to Waingmaw from Myitkyina, I watched people buying buckets and loading them onto the backs of their motorcycles for transplantation in gardens and fields near and far.

At the center of life and livelihoods in the resource extraction economy of upper Myanmar’s settler interior is the circulation of plants. Be it heirloom subsistence crops or CP corn incentivized-packages, timber treelets or medicine plants picked whole from the jungle—plants can be seen in regular living circulation across the frontier in seeds, seedlings, and cuttings. Carried in cut up 5-gallon gasoline jugs, worn-rice sacks, thin plastic bags, and even banana leaf wraps, living plants are in near constant circulation and are not only seen as integral to frontier life, but

like black ginger are often seen as providing future opportunities for profit. In this chapter, I investigate this practice not only as it is transforming the urban-rural matrix of the frontier, but also as a form of accumulation and retention integral to the diversified livelihood strategies of the frontier: one that stores up and invests in plants alongside other forms of currency.

Mrs. Lasang is one such black ginger grower, who participates in part-time cultivation. Her experiences with this herb offer a glimpse of how transplantation entwines with the mobile lives and livelihoods of settlers from the Gorge Country. I met Mrs. Lasang through her son, a former student from my volunteer work who had reached out to me when he learned of my research. His mother, he explained, was involved in trading medicines on the border and would be happy to meet me when she was on break from her business travels. When I came to visit Mrs. Lasang over the next several months, I found that she was not only a prolific trader but a talented gardener tending with her neighbors to a small grove of valuable medicinal plants in the village commons. Among the many plants was a large stand of black ginger.

From the beginning she was clear that the plant was not a Kachin plant, though she was not sure of its origins—she like others was more familiar with many rumors. Many of the black ginger cultivators I spoke to claimed that it was originally a Rvwàng or Lisu importation from Thailand, where the plant is marketed under the moniker “Thai Ginseng” (*cf.* Wasuntarawat et al. 2010, Prasanth et al. 2022), and is touted as a virility enhancer and long-life supplement for men. Some claim it had been sent to Kachin by missionaries from Putao who had been expelled from Myanmar. Others, like Mrs. Lasang’s neighbor, claim it was sent by the KIA who wanted to give people living in liberated territory an alternative (or additional) livelihood to opium. One story I encountered even that claimed the import of the plant was by a Myitkyina local who encountered the drug while working in a Chiang Mai KTV and had eventually sent it back for her family in

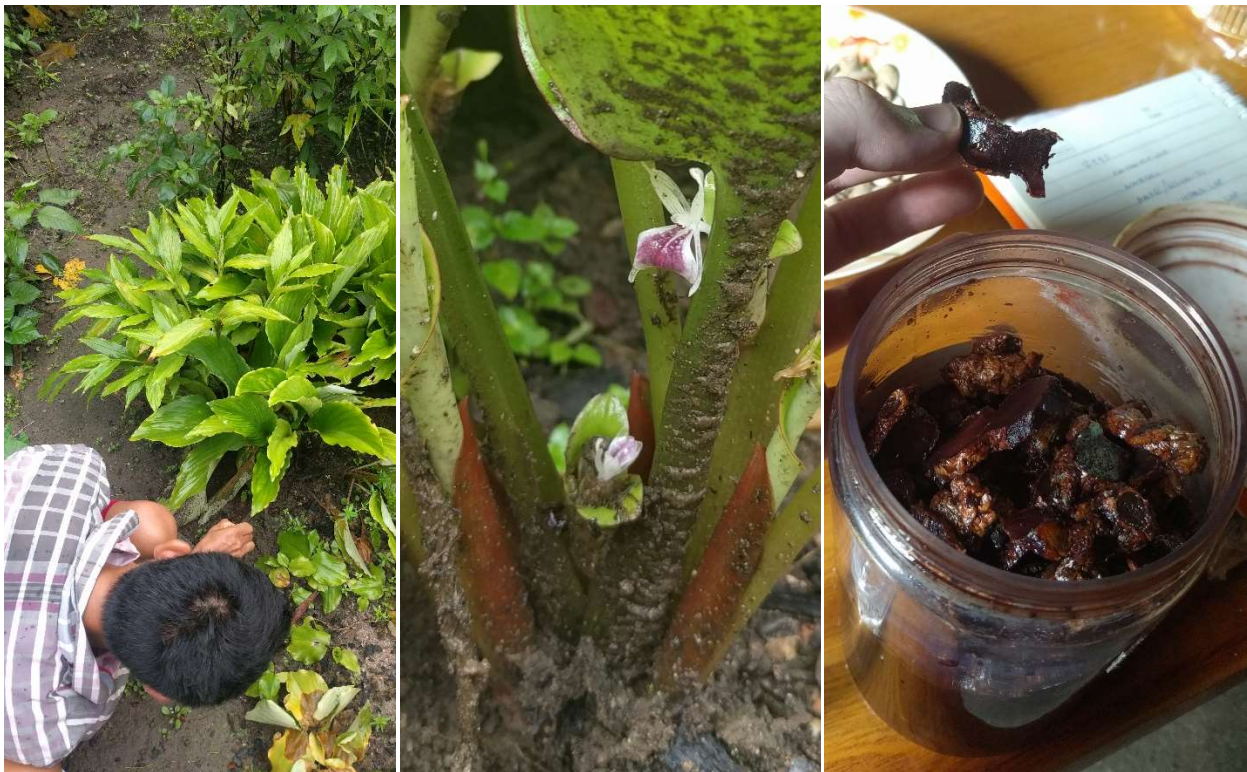
Myanmar to grow for profit. When, I eventually investigated the plant's identity, I learned that it is a well-known member of the ginger family, *Kaempferia parviflora* Wall ex. Baker ZINGIBERACEAE (Kress et al. 2003, 123), sometimes called *ga-moun-ni* (ဂမုန့်နီ). As I read through the literature identifying the plant, I found that black ginger is not a foreign plant at all, but rather, the species was first identified from a jungle riverbank along the coast of Southern Myanmar (Hooker 1894, 221; Edwards 1828, 1212).

Mrs. Lasang's own story of acquiring the plant points to these more proximate origins, but also a *mode* of transplantation that increasingly underpins the medicine trade. When her family was displaced from their home in the borderlands amidst intensifying conflict, they moved to Mohnyin where she soon became friends with a Lisu woman who had similarly fled conflict. The woman made a living producing herbal medicine packages and the two got along well. As Mrs. Lasang began a business running goods from Mohnyin to the Chinese border markets (near their old home), she began selling the herbal medicine packages alongside her normal fare of clothing and everyday items. Mrs. Lasang's son found part-time work helping the Lisu medicine maker tend to her swidden fields where she grew the medicines. Black ginger was one of the plants he regularly tended for the medicine maker—a cash crop that she had received from a former patient as a show of gratitude. As Mrs. Lasang's son recalls, the plant was transplanted from the patient's swidden field to the Lisu medicine makers' field, a task he had carried out carefully carrying the plants over the hills on the back of his motorcycle. The patient's family explained to him they had gotten the plant from a swidden field further south in Katha (the next district south), and it took well to fields in early fallow stage. When Mrs. Lasang and her son moved to Myitkyina, the Lisu medicine maker offered them several black ginger plants as a way to make a livelihood on their own.

Rather than harvest from the wild or grown on a conventional plantation, Mrs. Lasang's story points to how the production and circulation of black ginger involves the wide-spread practice of rotational or slash-and-burn farming (Li and Feng 2016)—often called swiddening in scholarly literature. Swiddening has long interested agroecologists as much for the diverse agricultural strategies that it encompasses as well as the biodiversity it enables. In broadest terms swiddening refers to non-industrial modes of agriculture where a section of forest land is cleared and some portion of the debris is left behind to provide structure. Fire is then often (but not always) used to burn out the understory debris creating a temporary rich nutrient base for cultivation while simultaneously eradicating most forms of insect life. In the subsequent year or two, the land is typically used to grow a diversity of crops in intercropping patterns. After that it is abandoned allowing the proximate jungle to take over, and in these later years—the fallow stage—these fields are seen to provide easy access to a wealth of jungle biodiversity as the process of forest succession and regeneration takes place. For scholars, these agrodiverse farming strategies combined with the regrowth of forest in fallow fields, have long presented swidden fields as a case study in the potentially harmonious relationship that can be struck with natural processes of biodiversity and succession allowing access to biodiverse non-timber forest products (Dove 1983; Brookfield 2001; Yin 2001). Indeed, scholars working with Karen and Lawa communities in the Myanmar-Thailand borderlands have documented how these communities acquire the majority of their herbal medicines from the diverse regrowth of fallow fields (Jungsongduan et al. 2013).

However, as the cultivation of black ginger in swidden fields suggests, these fields with their diverse soil, light, and ecological conditions over space and time, also serve as a uniquely receptive environment for transplanting species—one that allows black ginger, an herb common to the coastal waterways of Southern Myanmar to flourish thousands of kilometers away in the

subtropical hills of Kachin State. Indeed, some months later when I had the opportunity to visit the swidden fields of the Lisu healer who had supplied Mrs. Lasang with black ginger, I found the healer's fields contained nearly as many medicines brought in from near and distant forests as it did species of succession plants. More than sites of production, I began to see how swidden fields were uniquely capable storehouses for potentially valuable biodiversity, one which could be used to reattain and accumulate plants.



Images 14a-14c. Black ginger production at home. 14a. Mrs. Lasang's son at her back ginger grove (left). 14b. The ginger's delicate bloom (center). 14c. Nearly US \$70 worth of the finished commodity (right).

While Mrs. Lasang lacked a swidden field of her own, she took the plants—strapped to the back of her motorcycle—and installed them in a portion of the village commons by their home. She explains to me that she chose a wet, half-shaded nook in an overgrown area on the edge of a forest

grove because it roughly matched the place the plant had thrived in the swidden field. Within several years the roots had expanded into a dense rhizomatic-mass of plants. She had already harvested once from the mass, and as we set in her living room she gave me a sample of the product (see Images 14a-14c.), which she reported could fetch anywhere from 100,000 to 200,000 ks. for a 500g jar of the pickled roots—a two to threefold increase from the price of dried roots at market. The slices had turned a dark shade of burgundy and were preserved in honey that had a fermented smell. At her urging I ate a slice. While I chewed, she explained that she sells it to elite buyers in the KIA-controlled border towns of southern Kachin State where she peddles cheap clothing (especially Burmese lungyi), Burmese cosmetics and affordable provisions. Her black ginger garden, she explains, gives great supplemental income to her trade and by growing it at home she is able to tend to it along the way every time she stops through town.

More than a diversified livelihood strategy, Mrs. Lasang's practice points to the ways in which transplanting and small-scale agriculture are increasingly incorporated into the infrastructural worlds that emigrants to the interior negotiate. Mrs. Lasang's home garden now serves as an *enroute* production site in her monthly travels from Mohnyin to the China border: growing along the way. Her cultivation of the herb in her Myitkyina-area home, points at dynamic process of biodiversity circulation taking place as plants from the jungle are moved through swidden fields into ex/urban home gardens: proliferating across the expanding urban-rural matrix of the interior even as deforestation. While reportedly rare in its original habitat,<sup>51</sup> the plant survives on in the swidden fields and home gardens of many across the north, grown as an investment. Indeed for Mrs. Lasang and the Lisu healer that she acquired the plant from black

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<sup>51</sup> Two Lisu harvesters I met in Dawei who had collected medicines in the coastal jungles across Southern Myanmar, including the Attran River where the plant was first discovered by botanists (Hooker 1894) were well familiar with the plant but reported encountering it only once.

ginger started as an investment, in terms of labor time, land use, and the work of nursing the plants which has now turned profitable, though as Mrs. Lasang admits she had her doubts in the beginning. The circulation of plants for investment through transplantation has ecological consequences—as biodiversity reappears across fragmented matrices amidst increasing deforestation, agricultural land conversion, and urbanization.

Mrs. Lasang's story of relatively successful black ginger cultivation is far from unique in Upper Myanmar and it points to how medicinal plants and motorcycles. In the following sections, I explore medicine transplanting practices from village swidden fields in the jungle to new urban gardens to consider transplantation as a practice of retention. I look at it as one that not only sustains biodiversity amidst ecological degradation, but also a strategy that works through the fragmented ecosystems and infrastructures of the resource extraction frontier to offer an alternative form of accumulation for local (indigenous) communities. It considers how transplantation—a practice of relocating plants—combines with infrastructures like roads and motorcycles to create new networks of plant life that not only sustain markets but also *communities*. To do so, I begin by looking at swiddens, the framework through which many locals not only store potentially valuable plants—biotic storehouses—but also as the framework through which indigenous communities understand how to work across the fragmented ecologies of the expanding rural-urban matrix. Next, I examine how displaced settlers in suburban areas use different infrastructures from roads to motorcycles to not only maintain swiddens from afar, but also to move potentially valuable biodiversity to forest fragments in the shifting plantation landscapes that stretch between their new urban homes and the jungle. In the final section, I look at how these plants are brought into home gardens, creating networks of biodiversity for cultivation that stretch from the jungle to

their homes (connected by motorcycles)—networks that can be called upon to not only store potential valuable species, but also respond to shifting medicine markets.

## II. SWIDDENS AND ROADSIDES

As I began to investigate the cultivation of medicines for the market in the interior, I found that almost everyone I talked to spoke of cultivating in swidden fields, called *taun-ya* (တောင်ယာ) in Burmese and *han-mi* (V., MI) in Lisu. More than loci for medicine cultivation, I learned that these sites also served as a framework for harvesters to approach growing diverse plants and in new environments—like the vast swaths of cleared roadside along new highway projects. This became particularly clear during my time in the upper reaches of the Chindwin River following an expedition to Htamanthi Wildlife Reserve. New roads are being constructed to reach villages that still live off the jungle and their swidden fields. As I studied with local healers and medicine collectors in the Tai Laeng village of Nam Hkam—one of these villages—I learned that these *taun-ya* had long served their own infrastructural role in village life.

Nam Hkam is perched just south of a wide bend in the Chindwin River, and on either side of the village large tracts of interior jungle still reach to the river uninterrupted. A patchwork of swidden zones can be found on the hill slopes around the town, as they are covered in varying stages of jungle overgrowth, they remain rather invisible to the untrained eye. Further in from the river, at roughly a mile from the waterfront, is the still-incomplete Homalin-Hkamti gravel highway. The highway is the product of a gradual decade-long building process, with much of the early years focused on logging the proposed road track rather than actual roadbuilding activities. As a result, the road ecologically forms a belt of succession ecology sometimes one kilometer wide that when I arrived was reportedly 7 years into regrowth. Beyond this belt of scrub jungles are a

few outlying rice fields and swidden plots nestled in the vast jungle. As the healers of the village took me on walks to show me their medicines, we moved across this landscape, and it became clear that to locals the roadside disturbance site played as much of a role in their medicine production as did the swiddens—key to both were transplantation activities.

Late one afternoon one of the village healers, U Kyi Nyo, took me into a brushy jungle just beyond the northern end of the village. Working through dense undergrowth, he pointed out a bevy of medicines, “tiger’s whiskers” (ကျားမှတ်ဆိတ်) flowers, “turmeric vines” (နွံင်နွံင်), and the “iron pillar of medicine” (ဆေးသံတိုင်)—all powerful remedies for the digestive tract. Eventually, we stopped where several long, pale white vines with knobby knots grew. They wound expansively through the low scrub-jungle canopy formed by tall bushes and treelets (*see* Images 15a-15c.). The vine, he explained, was a rare and valued medicine for which Nam Hkam village was regarded as a trusted supplier in the Upper Chindwin Region: “cat’s tongue vine” (ကြောင်ရှားနွံင်). Its rarity, he continued, came from its resemblance to a number of other vines in the jungle which not only lacked its medicinal efficacies but were poisonous enough to bring about serious illness. Many refused to pick the medicine for fear of poisoning, and as a result, few villages were trusted to supply the plant in the region. For decades, Nam Hkam cultivated a stock for their own use and developed a reputation, supplying other healers from Hkamti to Homalin. I asked if I could see where they were cultivating the stock and he laughed. “Here! This is it.”

The low jungle he explained was actually a swidden fallow that was nearly 8 years old by his reckoning (an age dated to when it was cut rather than when it was abandoned). Some years after it was abandoned and the shrubs had started to overtake the field, he and another healer from the village had begun moving medicines into the field, including several of the “cat’s tongue” vines from another swidden fallow.



Images 15a-15c. Medicines in a 8-year old swidden fallow. 15a. A path through the fallow swidden field (top). 15b. The knobby “cat’s tongue vine” (bottom left). 15c. A specimen of “tiger whisker” *Tacca* sp. TACCACEAE (bottom right).

With a little work the vines had taken off, and now there were multiple plants in the fallow. While U Kyi Nyo explains that he can personally identify the plant in the jungle, finding it often involves

days of searching in the deep interior. He continues, that keeping it close at hand in a fallow saves time and allows other villagers access to the medicine safely. The site where the vine was first cultivated was four day's walk away in an area where a large swidden nestled alongside the banks of a stream. Boat access was possible, but at many times of the year they could walk, and before we left the swidden he showed me the trail head. "You'll cross three swidden areas before you get to it...though you may not recognize them all, some look like this," he explains, gesturing at the shrubby jungle around us.

In addition to being a site of production allowing for the cultivation of jungle species, swidden fields and fallows serve as infrastructures into the jungle. The paths that wind out their margins lead deep into the interior passing through a patchwork of fallows and recently cut fields. The infrastructural role of swiddens and the pathways between them recurred throughout my research, as I often traveled along old swiddens to access the jungle with harvesters (*see Chapter 2*). However, they also appear as pathways in historical records. One of the earliest botanical expeditions to northern Myanmar, the Pottinger and Prain expedition (1898, 217) reported that substantial portions of their journey followed such an infrastructure for "the only track ran through the zone of cultivated or fallow 'toungyah' land." With shifts to adjacent plots, swidden field complexes are often documented as forming a biodiverse successional ecosystem that exists ecologically (and spatially) between the agricultural landscapes of villages and mature forest systems (*cf.* Brookfield 2001; Schmidt-Vogt 1998; Sovu et al. 2009). While this was certainly the case in Nam Hkam, their rotating fields could also be seen as part of a network of pathways into the jungle, with scattered plots tracing lines to the northeast, east and southeast of town. As the healers explained to me during my time in the village, these swidden fields made longer journeys into the jungle more feasible, offering a greater bounty of foods and safer camping places. His

words echoed, something I had observed in the fragmented landscapes around Myitkyina where swiddens and their paths were a key infrastructure for plant hunters on motorcycles to and even cross otherwise impenetrable jungle (Chapter 2). But at the same time, as in the case of Mrs. Lasang's "black ginger" or "cat's tongue vine" and many of the other medicines U Kyi Nyo showed me, it was also a biotic infrastructure for plants and transplants.

On our way out of the swidden, we veered off one of the long-distance paths into the interior jungle and down to the new dusty "highway." As we walked along the dusty banks of the road, U Kyi Nyo eventually called me to look at another another medicine. Climbing through the sparse scrubby regrowth of a roadside slope we eventually reached a grove of trees. I had seen the distinctly camouflaged patterned bark of the tree days before in one of their swidden fields, and so I asked about it.

"We should call it Nam Hkam Ginseng" and sell it, he joked (*see* Images 1). The plant was a drug used for promoting fertility and curing reproductive disorders. I asked if this too was transplant, and he shook his head. This one was not planted but in other places nearby they had cast seeds and transplanted saplings around the time the road was cut. He continued that before the road had been cut, the area it crossed had been another tract of swiddens along the inland path between the villages on the bank of the Chindwin. With open field habitats vastly expanded by the road clearing, the trees had taken off and he reckons this one had grown feral from their earlier planting efforts. The roadside is in some ways like "the biggest swidden" (အကြီးဆုံးတောင်ယာ) he laughed, and joked that if they ever did want to produce "Nam Hkam Ginseng" commercially it would be easy to farm it on the roadsides.



Images 16a-16c. Nam Hkam Ginseng and its Habitats. 16a-16b. Paths into the jungle (above left & above right). 16c. Nam Hkam Ginseng root (bottom).

However, as we talked more he was keen to clarify that *taun-ya* contained more wet places and shaded places, and regrowth was quicker. While *taun-ya* was clearly the better transplantation space in his mind, he explained the success of these trees in the roadside in terms of the unique part of the *taun-ya* that they typically grew in, speaking of moisture, soils, shade, slope, regrowth and multitude of other factors. As much as the jungle, *taun-ya* and the diverse forms these swidden fields took were the framework through which he explained and interpreted landscapes.

In the following days, as I continued to study with the village healers, I found myself returning more and more to the roadside area, where more than a third of the healers' medicines could be found. As the U Kyi Nyo and another healer explained, before the road they could find the plants in swiddens but with the great clearing of the forest (for the highway) those medicines were now abundant in the road margins. However, in several cases, they also pointed out plants that they had moved to roadside groves for cultivation.

In the tropical frontier, swiddens and roads have long entwined histories, where travel and cultivation are entwined in practices of transplantation and forest clearance. To see swiddens not only as ecologically dynamic modes of production but also infrastructures of transportation, helps explain the ways in which paths of travel and cultivation continue to overlap in upper Myanmar. Within these overlapping infrastructures of human mobility, transplantation and regrowth, a diversity of foods and other plants are moved into useful proximity, including heirloom crops passed across hundreds of kilometers to give greater subsistence: taros, cassavas, caryota palms, Indian arrowroot to name a few that I regularly encountered. Among the diverse plants of swiddens, medicines stand out as enjoying a unique circulation, plants brought from the jungle as starches are brought from the village sphere to populate the networks of movement through a frontier that challenges the body with diverse hazards.

At the same time, U Kyi Nyo taught me how the diversity of habitats and conditions offered by swiddens over the course of their regrowth give harvesters a framework for utilizing the new landscapes that are being created with deforestation, road development and land conversion—a lesson I would find often repeated back in Myitkyina.

### Long-Distance Swiddening from Myitkyina

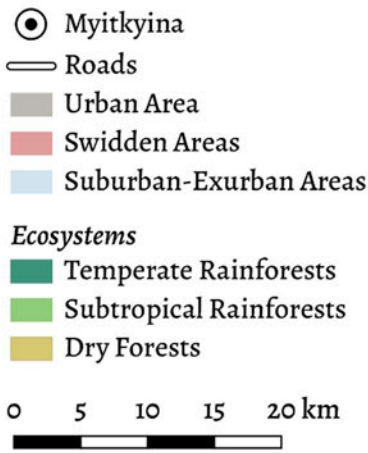


Figure 12. Long-distance swiddening zones around Myitkyina

### III. LONG DISTANCE SWIDDENING AND THE JUNCTION GARDENS

While I had already crossed many swidden fields during motorcycle harvesting trips, upon my return to Myitkyina from the Chindwin I began to study more closely these fields and fallows as I investigated the cultivation of trade medicines. To my surprise, I found that far from abandoning swiddening in the lowlands, many of the Gorge country emigrants on the outskirts of Myitkyina were regularly involved in swiddening. Yet, where their swidden fields in the Gorges might start near the village edge, their new settlements on the outskirts of town were often hemmed in by industrial plantations and urban sprawl, pushing them to look farther afield. The majority, I found now conducted swiddening by motorbike, commuting to swidden zones at the edge of the farmland-jungle transition anywhere from 30 minutes to two hours away. As I joined these emigrants on motorcycle trips to their fields, I began to see how motorcycles not only facilitated continued access to swiddens, but also were involved in transplanting activities that stretched beyond these fields into forest fragments across the rural matrix.

Palana, Hpung In Hka, Gwayhtu, and the Mogaung River areas represented only some of the more common zones where my interlocutors cut swidden fields around Myitkyina during my research, commuting anywhere from 20 to 70 km each-way to these frontiers (*see* Figure 12). From homes on the outskirts of Myitkyina—the suburban-exurban area—they travel through rural landscapes marked by absentee-owned, large-scale agricultural projects to reach their swiddening zones on the edge of the jungle. Fields of tissue-culture bananas, dragon fruit, pineapple, are interspersed with the large rubber estates and teak forests of different “bosses” (*laoban*). Yet among them fenced-off, abandoned lots with varying stages of jungle regrowth are as common as well-managed plantations, reflecting the same cycles of turn over and abandon that are fostering secondary forest growth around the world (*see* Hecht et al. 2014). Alongside these secondary forest

groves, scattered across the area is a network of forest reserves originally intended for the state conservation and production of timber, but left largely open to the public in the wake of nearly a half century of civil war. The land between the edge of the city and the swidden sites is a diverse matrix of fields, plantations, and forest fragments. However, the area is also a legal patchwork. With many jungle areas variably controlled by the KIA, and several militias holding sections of the lowlands, this area of rapid land conversion is often subject to multiple land titling regimes. From the plantation owners I managed to interview during my research (9), I heard common stories of having to seek out the appropriate parties to secure land ownership and security.

As I went to investigate transplantation at the swidden zones with medicine cultivators, I found myself frequently being led to these forest fragments as my interlocutors collected different herbs or transplanted different species from the jungle and their swidden fields *into* these forest fragments. One of these forest fragments was a section of young forest on the edge of a defunct forest reserve. Located just off the highway from Mandalay to Myitkyina and the China border, the site was positioned at a crossroads where several roads to swidden zones and the jungle intersected this major trade corridor. A small trail led from the houses at the intersection inside the forest, where I was surprised to find we had to cross a bamboo fence gate. The Lisu medicine cultivator who brought me there, Ngwa Lu, explained that this was a communal “medicine garden” (NṼ. ʘ; WO., BḂ), and when I inquired further, he elaborated that a group of Lisu herbalists including himself had banded together to buy the grove from the relevant local authorities several years prior. Stretched out over 11 acres of forest and 4 acres of fields, the site abounds with medicines brought from distant jungles and fields. They had chosen the site for its convenient location *enroute* to their swidden fields and the jungle.

Their transplantation work in the grove was quickly evident. In contrast to similar forest reserves, the forest understory was covered in a diversity of plants I had never seen before, and there was a strange abundance of vines and heavy lianas climbing the thin trunks of the young forest's trees. On my first journey into the "garden" it was the spider gingers that struck me the most. In the dappled shade of the late hot season, with the first waves of the monsoon making the forest awash with mosquitos, I found myself wandering through a grove of these gingers, with their stalks towering overhead, some more than 15 feet high. At first, I assumed they were a strange form of bamboo, but when I asked Ngwa Lu what kind of bamboo it was, he was quick to correct me.

"Mapha, it's not a bamboo it's a 'spider ginger' (၁၂: ၂၄. ၂၈.)—look at the flower over here," he explained as he pointed me to a flower on the floor. He hacked into one of the tall stalks, and immediately a sweet galangal-like smell filled the jungle air. As I examined the flower (*see* Images 17a-17e), a strange eruption of red and gold pedals quite unlike any ginger flower I had seen (but typically colorful for the genus), they explained they had brought it from a jungle far to the south. Beyond Talawgyi and the Mogaung River areas, where one of the doctors frequently went to collect medicines as well harvest bleeding vines for the Chinese market, they had found a grove of these medicines and transplanted them for easy access. But they also brought the bleeding vines as well. When I asked about the well sought-out trade species, Ngwa Lu explained there were many types in trade on the Chinese market and that their value varied. The ones they had transplanted were two types considered lower value in the trade but were useful medicines that many of them used in their formulae. When I asked if they had transplanted any of the more valuable type for trade, he grinned widely and quietly pointed to strangely twisted liana climbing a narrow tree trunk, before whispering in Burmese, "We conserved one or two [တစ်ခုနှစ်ခုသိမ်းထားပြီ]."



Images 17a-17e. “Spider ginger” *Etilingera araneosa* ZINGIBERACEAE cultivation. 17a. The plant in a forest garden photographed at head height of the author, 1.7 m (top left). 17b. Stalk and leaves (top left). 17c-17e. Flower in bloom. Kress et al. (2003, 121) report the plant only occurring in Tanintharyi Region, over 1,000 km to the south of Kachin State.

The valuable bleeding vine had mostly been transplanted from the foothill forests near Palana while another came from a doctor's swidden field in the Mogaung River area. Over the course of several years, the vines had taken well and as we negotiated them I found many were as thick as my legs if not my head. However, as we talked about the transplanting process I learned that the areas these medicines were extracted from were often forest zones that were undergoing logging or conversion into agricultural land. As we talked about logging, Ngwa Lu explained that had recently harvested a great volume of “poison antidote” (DO; G; ၇U NV.. ဒါ;) roots—the yam like root bulbs of a small creeper—from an area in Tawlawgyi ahead of a logging operation, several of which he had deposited in the junction garden. He encouraged the other doctors to get what they could out of the forest before the operation came into swing, especially because “poison antidote” was an effective herb he used to make medicines and he suspected it could become a market item soon. When I later visited the garden with Ruth and Ngwa Lu, I found out that she had joined him on this venture, and one of the medicines she had showed me at her and Elijah's compound was this very same antidote.

While several of my interlocutors were involved in that Lisu medicine garden, their efforts were hardly an anomaly. From Mohnyin to Putao, I interviewed dozens of indigenous medicine growers (34) from across different groups—Lisu, Rvwàng, Jinghpaw, Tai, Lacid, Lhaovo, and Lahu—who had all made similar use of rural forest fragments as cultivation spaces. Be it “bear kidney” (WO: WU DI: C) vines and “bone mending medicines” (WO. TO F. NV.. ဒါ;) in a forest fragment wedge between plantations on the Putao-Machanbaw road, or “tiger opium vines” (ပိန်ကျားနွယ်) and a “two husband” trees (နှစ်လင်ကျော်) in a monastic forest grove on the edge of the Mohnyin. These cultivators created a vibrant traffic of jungle floras from distant forests and swiddens to sites at infrastructural junctions across the rural urban matrix. Their transplantation efforts seemed a mix

of convenience and conservation, moving plants closer to access and transport to market, but also often out from areas undergoing deforestation. The garden sites they established were similarly under a diversity of arrangements that varied from purchasing from local authorities (like the Lisu herbalists), to borrowing church and monastic properties, or even using unclaimed (or unattended) forest fragments for a few years while they sought out a more stable garden sites and attempted to raise funds.

While it is beyond the scope of this study to assess if the transplantation of these medicines reproduced or mimicked any particular ecosystem (*cf.* Winter et al. 2020), it was clear that these forest fragments were becoming more and more saturated with a diversity of valuable plants. In doing so, these cultivators were enriching the biodiversity of a rural matrix increasingly carved up by monocropping plantations. As the herbalists estimated, they had probably transplanted over 200 species in the junction forest, and in my own time learning medicine in the garden I recorded 114 medicines they identified as transplanted—28 of which were species that I had collected from the jungle during my participation in the botanical expedition to the upper Chindwin River area.<sup>52</sup>

At the same time, the junction medicine garden, like other fragment gardens, was also serving as a site for commercial cultivation and export. On a later visit, one of the cultivators took me to the edges of the forest grove where a thorny bramble of shrubs and treelets filled a field. The herbalists had planted a small grove of *sumu* (SU MU 苏木)<sup>53</sup> or sappanwood—a well circulated tree native to the dry forests further south but cultivated in lower Kachin for the market. While some of the cultivators used the tree as a medicine, I learned that the consensus among those who planted

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<sup>52</sup> Shall I include the full list? The identification of these species involved 1) showing my interlocutors high resolution photos of the plants we collected on the expedition, 2) confirming that they recognized the names we recorded there, and 3) visual inspection of the plants in the medicine garden. As some of these species are rare and were undergoing experimental cultivation in the medicine garden, normal botanical specimen collection was not possible.

<sup>53</sup> As is often the case with trade species, they used the Lisu pronunciation of the Chinese name; one of the herbalists was able to write the name confirming the identity of the commodity.

the trees was that the bulk of the harvest would go to Tengchong where the wood could fetch reliable returns as either a high-value lumber for woodworking or as a medicinal ingredient. The leftover trimmings of the heartwood could be used in the doctors' own medicines, or even put in alcohol and sold on the medicinal alcohol markets in Myitkyina. The harvest and processing, one cultivator explained, would take place at a house near the grove, so that the doctors could quickly ship the products to Myitkyina, Mandalay or on to the Chinese border directly—wherever the market was good. Until then, the products remained safe in living rooted form in the junction garden. Positioned at the intersection, the garden's location appears to facilitate as much of a diversity of market engagements as the biodiverse forest products within.

As a source of medicines both for their local medicine making, and as a means of production for the export of medicinal commodities, these gardens in forests fragments mirror the logic of the swidden fields I encountered in the Upper Chindwin. Both provide infrastructures for the circulation of species, bringing them closer to the community, and providing a network of resources along the lines of work and trade. However, while swidden fields benefit from regrowth cycles as diverse species from the forest take over slash-burn fields, these forest fragment sites relied on the steady flow of motorcycle traffic back and forth between the city and the jungle, as well as a steady flow of transplants carried by these medicine cultivators. However, the flow of biodiversity into these forest fragments not only depended on their motorcycles and their skillful adaptation of diverse agricultural techniques—one which many including Ngwa Lu described as “the same as growing in a swidden field” (တောင်ယာမှာစိုက်တာနဲ့တူတယ်).

The persistence of diversified livelihood strategies involving forest product harvesting and swiddening after urbanization has been well documented in historical and archaeological studies throughout the region (Morrison 1996; Codding and Kramer 2016, etc.). However, recent studies

of rural harvesters and swiddeners have tended to approach these livelihoods as either being the work of proletarians who participate of in the “unscalable” extraction and depletion of rural commons (Tsing 2015, etc.); or, barely-landed rural hold-outs who try creative attempts to reorient their agricultural traditions and lands (Turner et al. 2015, Zhang and Scully 2019), by adopting “flex crops” (Turner et al. 2019, Borras et al. 2016), and other stop-gap measures enroute to rural displacement (Li 2014). The strategies employed by indigenous medicine cultivators in upper Myanmar reflect a critically different approach towards law and rural production. Like Tsing’s (2015) “unscalable” harvesters, their approach does not presume that land ownership is necessary for rural production and accumulation, instead engaging in the appropriation of wastelands and to build and mobilize their own resource networks. However, more than a willingness to work in the gray zones of licit but potentially illegal activity, this strategy reflects an approach to capital generation that is less oriented around landed industrial production, and more oriented towards the production of capital and accumulation by control over means of circulation (Sopranzetti 2018, *see* Chapter 2). Here Lisu and other indigenous groups not only use technologies like motorcycles to produce and accumulate forest products from the frontier, but they do so by appropriating the “fallow” zones of industrial production—be that overgrown failed plantations or unmanaged forest reserves. Yet rather than simply doing so to generate capital, these cultivators do so to create a network of resources that retains, leading them to the work of restoring and replenishing the rural matrix.

However, as Ngwa Lu emphasized, just as the junction gardens store useful medicines, the “conservation” work of stocking them also reflects histories of engagement with inter-Asian markets, leaving ecological legacies of this trade across the settler landscape. No species is more poignant example than the many agarwood trees (S1, PO) that can be found transplanted widely

across the matrix. Salesmen vending the tree saplings with false promises of profits had come through Kachin State in the early 2010's, and many cultivators who did not understand the infection dynamics that produce the species' fragrant resins bought the trees up and planted them. By the time I had arrived, these trees had become a well-known joke on the landscape. Alongside agarwood were other plants often placed in these fragmented forests in case they became valued on regional markets. While the expectation was often that China would be the buyer, many cultivators also emphasized the diversity of products they can sell for significant prices on regional and national Burmese markets—like sappanwood which grew. While such gardens can hardly sustain large orders they can easily fulfill small orders and serve as a guide for identifying market plants when orders do come through. As I discovered, more than a third of the plants in the garden had some market history in bulk form.<sup>54</sup> The junction garden is as much a repository of biodiversity and medicinal knowledge as it is a museum of the medicine trade.

#### IV. THE DOCTOR'S GARDEN

D Transplantation and the retention of medicinal plants is not limited to these rural infrastructural sites. As scholars working in the Amazon and other rainforest environments have observed (Perrault-Archambault 2008; Caballero-Serrano et al. 2019), with the destruction of the forest, many forest users are bringing a greater variety of plants into their home gardens. In upper Myanmar, it is not only in remote jungle settlements like Nam Hkam that this transplantation and cultivation is taking place—indeed it even takes place in the middle of a market town, on a 3 x 3 M plot downtown. Looking at the ways in which medicine cultivators

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<sup>54</sup> Shall I add a full appendix documenting this?

Doc Hoopoe's home practice and medicine garden is one such cultivation site, located directly behind a government ministry office in the township center. One of several markets is but five minutes on foot from his front door, and in his small plot a courtyard cluster of buildings makes up he and his wife's home and business. A variety of medicinal plants ring the perimeter and on approach it is hard not to notice the exotic flora (*see* Images 18a-18f).

When I first visited, at the corner of his house stood a 20ft tall tree covered by a velvety vine with heart-shaped leaves that snaked up through his fence and the trees' trunk and branches to strangle atop its crown. The vine Doc Hoopoe explained the vine is called "red star vine" (ကုဗ်းငါးပိတ်) for the star like pattern of the red resin that is visible when the vine stalk is sliced. It is a well-acclaimed medicine in Kachin herbal traditions it goes by the name *sinwawp tsi*, meaning lung medicine, and I had encountered it in markets and healers' warehouses before but never seen it growing. A few months before I visited Doc Hoopoe, I had met a well-regarded Hkahku<sup>55</sup> healer and medicine trader from the Putao region, who explained that to get the medicine one had to hike for several days from the Myitkyina area climbing the intermediate hills to search in the rocky ridge top forests. She, like others I spoke to, viewed the plant as relatively rare and hard to acquire making it a costly medicine to hunt but well worth the effort. Yet here it was ingeniously cultivated atop a fence and tree in broad daylight downtown. Doc Hoopoe only nodded when I shared what the healer had told me, before mumbling (as he ever did), "if you know how to grow it it's not that rare..." He continued that he planned to prune the tree to let the vine expand better but he was waiting for the right season.

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<sup>55</sup> The jungle country of the interior that starts north of Myitkyina and encompasses areas where Jinghpaw, Nung Lung Mi, Durieng (Kareng), and Leme peoples live.



Image 18a-18f. Plants out of place in Doc Hoopoe’s garden. 18a-18c. “Star vine” *Aspidopterys tomentosa* var. *obcordate* MALPIGHIACEAE cultivated on a tree next to his house (top). 18d-18f. “Five finger root” *Abelmoschus sagittifolius* MALVACEAE from the doctor’s small cash-cropping enclosure (bottom).

Inside, he showed me what he felt was a genuinely rare plant growing in between his half-built office and his patient housing. “Cotton leaf” (dY: S L:) he called it. Ripping off a leaf he showed me the reason for its name: when torn laterally the leaf revealed a multitude of tough cotton like fibers that made tearing the leaf challenging. He explained it was good for torn muscles and sprains, and

that he had learned the medicine from a local Shan healer. Doc Hoopoe was not originally from the lowlands, rather he had grown up high in the mountains on the Chinese border, and when he eventually moved to the lowlands he studied with Kachin and Shan healers who taught him the flora of the tropics.

The image and the story stuck with me until I later encountered “cotton leaf” in the wild—months later and hundreds of miles away with Shan healers from Nam Hkam in the interior of the Htamanthi jungle. They called it “cotton gin leaf” for how the leaves produced strings of cotton like a gin, and they used it to much the same affect. The strange plant I learned from my botanist colleagues, is a member of the family CELASTRACEAE, *Plagiopteron suaveolens* which is widely considered rare throughout its poorly documented range. I encountered the plant in a mature semi-evergreen rainforest with a canopy more than 80 ft. high and canopy cover of over 87% as per the reading of my densiometer. In mimicry of the limited light conditions, the doctor had found a shaded spot in between his buildings where he could get the plant to take. While other healers reported some success transplanting the vine to swidden fallows (and indeed I’d seen the plant in Nam Hkam’s swiddens), none had found any success getting the vine to grow in their home gardens—let alone in the middle of a market town. Doc Hoopoe seemed to have a way with plants, and bringing the jungle into the city.

After guiding me to the various medicines dotted around his property, including a “tiger’s whisker” flower (L: M M1: F1), a long-leafed orchid he called the “praying leaf” (SI, XW: X3), and even a wild cinnamon tree (SI, XU L, Z1), Doc Hoopoe finally showed me what he called “his garden.” In the far corner of his courtyard compound, was a 3 x 3 M woven bamboo enclosure. He excitedly pried up one of the small herbs growing within with daft precision to show me its roots and break off a small piece for olfactory inspection. “Five finger root” (AW LV; M1:) he called in Lisu before

explaining it was a type of “ginseng” that a friend from Tengchong had sent down for him to cultivate. Despite the 1,000 M drop in elevation and the descent into the tropics, the plant seemed to be surviving well enough in a small colony. I later contacted a medicine practitioner I knew from Tengchong and discovered that the plant was indeed called a ginseng in Chinese, “five finger mountain ginseng” *wu zhi shan shen* (五指山参), for its hand like leaves (*see Image 7*). As it came in to flower a few weeks later, I managed to confirm its identity as *Abelmoschus sagittifolius* (Kurz) Merr. MALVACEAE, a relatively common plant in highland Yunnan of moderate market value, but outside of Doc Hoopoe’s garden, unheard of in Kachin State.

Doc Hoopoe explained that growing the plant to sell back on the Chinese market was a good arrangement like several other small cash crops he periodically cultivated in his garden. These sorts of crops he claimed he could make around 100,000 to 150,000 per viss (\$70-110 per 1.6 KG.), which as he saw as good money. The red star vine was also valuable in local markets (like the one just 5 minutes from his house), though at the current market rate Doc Hoopoe felt it was a better to include the vine in his own medicine formulae than to sell it wholesale. However, as he noted, were the market to change he might sell “some” in bulk. When I asked about the cotton leaf, he admitted that this was a great medicine but not valued on the market—yet—though it did feature in a number of well-known market medicine formulae. As we talked of other forest items in his garden, it was clear that he not only valued many of them as medicines, but also potential commodities, and some that he was hanging onto had already become market items once before—others he anticipated one day would.

The jungle was abundant in Doc Hoopoe’s garden, but as I talked with him I learned that he kept a larger store of these medicines and more in a nearby medicine garden just beyond the outskirts of town. He said he periodically stocked it from the jungle, and also used it as a place to

collect herbs from friends and fellow apothecaries. All of this he carried out on an old but well-running 90cc Jialing Super Cub that I would frequently see him cruising through town on at 10 KM / hour. The changing repository of plants around his house was not only a world of medicines but of potential market commodities, one which I watched him gradually change over the years of my field work. As different species of medicine flickered in and out of profitable circulation, so to did they come and go from his yard. At his house, as in the junction garden, these plants waited in full life, ready to be converted into medicines when needed or when it is opportune for the market. Doc Hoopoe nurtured this abundance and continues collecting more. Fed by his home garden *and the common garden* from which draws and circulates species.

## V. CULTIVATION AND ACCUMULATION ACROSS THE MATRIX

When I returned to the doctor's garden after a season in Putao, nearly a half year had passed. I saw that the pruning work the doctor carried out on the trees had worked marvelously. The red star vine had taken over vigorously, with several tendrils seeking holds on his roof, and the single vine stalk that wrapped around the fence grown into a braid of new stalks that stretched for meters. In the interior courtyard I found he had already harvested more than a viss of the vine, which sat spread out over several tarps drying in the mid-morning sun. Beside the tarps in the space between his patient housing and his still-half-built office, the cotton leaf vine was thriving. Two new, thick shoots growing across from the original plant were already 6-7 feet tall. Everywhere, the plants were thriving, and from this home garden abundance the doctor was filling his sacks with ingredients for the coming year's medicine.

Yet when I turned to the small 3 x 3 m. enclosure, I found that the "five finger" ginseng was gone. When I asked where it went, he explained he sold it off and replanted something else

someone ordered from him. The enclosure was packed wall to wall with the thick leaves of black ginger. “Really?” I asked, recalling a rant he had made against the plant months before. He shyly smirked and then chuckled, mumbling: “Well you have to make a money somehow.”

Transplantation and cultivation are dynamic in this frontier, and across different human-shaped environments medicine harvesters have turned to cultivation both as a strategy to retain valuable and useful medicines, as well as a mode of natural resource production. The logic of transplantation is not new, rather it grows out of older configurations of swiddening and mobility in the frontier, that have long utilized swidden sites as zones of production and infrastructures to access the diverse riches of the forest. In their motorcycle-aided appropriation of abandoned forest groves and fields—industrial “fallows”—cultivators in Upper Myanmar not only appear to act in post-Fordist mode of production where accumulation and capital are generated in circulation, but also within a logic of rotating agriculture: one that de-emphasizes the stable management of land and instead focuses on maintaining networks of valuable, or potentially valuable, resources. Far from rooted in the land, transplantation practices work by breaking up stable geographies of plant distribution just as they literally break up soils to carefully extract intact roots and replant them in new grounds. In making plants move like people, often on the backs of motorcycles for 10, 20 even 70 KM, cultivators in Upper Myanmar erode the perquisites of land ownership to produce these natural resources and participate in a form of conservation that is not bounded by boundaries, but instead works along trade lines.

In doing so they offer but one set of answers as to how this southern trade route has long existed as both a corridor of trade and a zone of extractive production: by moving and transplanting valuable species along the pathways of trade. Where the valuable flora that finds its way onto markets from Upper Myanmar is often declared rare and difficult to seek out, in the backstreets of

market towns, the forest fragments and the fallow fields of the countryside, those who know what they are looking for can often find many of these species, not growing naturally, but carefully tended transplants—properties of someone. Even as forests shrink under the pressures of concession logging, mining, and agricultural conversion, medicine commodities do not disappear in this frontier, rather they are retained, accumulating in diverse agricultural zones. At the same time, as they become increasingly present in cultivation, these species go from products of forest ecosystems to absentee owned crops and assets.

At the same time, these practices point to a way in which indigenous communities of the Gorge country, displaced from their homelands and cut off from their resources, are engaged in an economics of reclamation. If indigenous territoriality “is a counter reaction to settler colonial territorialization” that “assumes an imperative of reclaiming space in settler colonial contexts,” as Cherokee scholar Clint Carroll (2014, 38) has argued, one can see indigenous efforts to conserve and redistribute biodiversity as not only a reaction to resource dispossession, but also as an effort to reclaim resources. The vast repository of medicines and life forms in swidden fields, forest fragments and home gardens not only represent a storehouse of biodiversity, but also assets held by farmers, forest collectors and apothecaries.

If work in peasant and agrarian studies has highlighted how the development of agricultural sites and soils may appear like investments and capital (Håkansson and Widgren 2014, etc.), one might see in the retention of diverse valuable (or potentially valuable) plants a more mobile form of investment that creates a diversified portfolio—resources. The metaphor has clear limits, though as Doc Hoopoe knows plants are not money, though at opportune times they may become so.

## CONCLUSION

This dissertation has examined two strategies of natural resource production that indigenous communities in the Myanmar Himalaya have adopted as they struggle to maintain control of the resource economy that flourishes in their homeland—a struggle that takes place amidst war and ongoing displacement. One strategy entails the formation of indigenous militias that are used to control zones of trade and production with checkpoints and cartels—a strategy that started in the Sino-Myanmar borderlands of the Gorge Country and has since expanded into the Interior of Upper Myanmar (Chapter 1). The other strategy sees indigenous resources workers utilizing motorcycles (Chapter 2) and herbal medicines (Chapter 3) to participate in resource extraction work, but also to traffic and cultivate a diversity of valuable species in new sub/urban production sites near their resettlement camps (Chapter 4).

For the overwhelming majority of the 158 medicine harvesters that I interviewed, one if not both strategies of production shape their working world if not provide their day-to-day income. When Marx (1976) wrote of *modes of production*, he sought to describe the totality of the economy. This totality was embedded in the everyday lives of workers as he recognized that successive changes in the economy were intimately connected to the *means of production* and the relationships that surround those *means*. In this dissertation, I have shown how herbal medicines, motorcycles, and checkpoints are *means of production* (albeit extractive production) that not only shape the working lives of communities across the Myanmar Himalaya, but also the productive flows of natural resource exports from this region. These *means of production* foster a plurality of economic possibilities and vocations: be that mobile resource extraction work across warzones, the cultivation of valuable wild species, or even enrollment and posting in local militia cartels.

Understanding these strategies as *modes of production* sheds light on how borderland trade continues amidst conflict and environmental destruction. At the same time, it draws attention to how indigenous lifeways are shaped not only by land tenure, political recognition, and traditions, but also by relationships with *means of production*. The tools that Lisu and other indigenous communities in Upper Myanmar use in daily life and labor are a mix of traditions and innovations that give them a unique and enduring place in the region's economy. Herbal medicines are tools that indigenous communities have long used to work in this hostile and dangerous environment, and that they continue to use to sustain their bodies in the present, earning them the repute of barefoot doctors (Chapters 1 & 3). This stands in stark contrast to the experiences of outside migrants working in the "necroeconomies" of Upper Myanmar's resource extraction industries (Prasse Freeman 2021), who often seek out Lisu hoping to find remedies for their ailing bodies. Similarly, the "Lisucycle" points to how indigenous communities are incorporating new tools to sustain and transform their livelihoods after displacement (Chapter 2). More than adaptation, their use of motorcycles to establish themselves in new environs and transform these environs into gardens of valuable and traditionally useful species, speaks to the role of these tools in shaping indigenous futures (Chapter 2 & 4). Even checkpoints, echoing elements of indigenous feudal pasts, are deployed anew through militia cartels to control resource commons in old homes and new as indigenous communities (re)establish themselves across Upper Myanmar (Chapter 1). By approaching indigeneity through the tools and tactics these communities carry with them, and the ways in which these tools shape new livelihoods and settlements, this dissertation looks towards indigenous futures where these communities might not only reclaim lost lands but expand into new frontiers.

Doing so challenges us to see how indigenous sovereignty is not only based on territoriality, or recognition in a liberal political system (Povinelli 2002; Tuck and Yang 2012; Coulthard 2014; Simpson 2014), but also on concrete relationships of life and labor with other species that continue beyond displacement and colonization. These are relationships that offer sovereignty over bodies and the health of communities. In his work with Cherokee healers establishing indigenous parks for medicine harvesting, Cherokee scholar Clint Carroll (2014, 2015) has pointed towards thinking in terms of resource-based sovereignty even amidst displacement. Rather than an indigeneity locked to any particular piece of land, this dissertation has sought to show how relationships with plants and other forms of life can and do travel. It focuses on the ways in which indigenous communities are building, expanding and even coming into new solidarities as they create new homes and ecosystems. This ranges from bold offroad motorcycle exploration that brings in a wealth of biodiversity to urban areas, to the vibrant exchange of herbal knowledge that take place among displaced indigenous communities in apothecary meetings. Along the way this dissertation has sought to foster a greater and inclusive dialogue around indigenous communities who have long practiced mobile livelihoods—like the many peoples who have come to call themselves Lisu in Myanmar.

Neville and Coulthard (2019) speak of indigenous political economies to draw attention to the plural ways these communities can and do challenge the devastation of capitalism and colonialism—a devastation that extends not only to indigenous people, but more broadly to rural communities who are increasingly pushed off their lands around the world and face the harshest effects of environmental degradation and climate change. Following Potawatami scholar Kyle Whyte (2017), this study has attempted to learn from the uniquely qualified perspective that displaced and colonized communities have on these processes. Rather than blaming migrant

resource extraction workers as the cause of environment destruction, this study has turned to the displaced peoples who do the intimate work of the transforming the environments of Upper Myanmar to learn from their experiences and insights, as well as to foster a broader solidarity with the causes and issues that they find to be important. Though I anticipated that I would encounter nationalist aspirations and political mobilization, I also found gardeners and foresters; where I came to study the medicine trade, I ended up learning about the healing of bodies and the making of new homes. These were the lessons that the many teachers I had in Upper Myanmar felt were more pressing, more important, and worthy of study.

In the face of rapid deforestation in Upper Myanmar, this dissertation argues for a vision of biodiversity grounded in these lessons: one that moves away from conservation and looks towards the possibilities of cultivation. Where the conservation of biodiversity is often framed in terms of endemism and shrinking ecological patches (Murray et al 2020), the practices of transplantation documented in this dissertation, as well as the ways in which communities in Upper Myanmar utilize the diverse “damaged” ecologies of this space, challenge such pessimism with the possibilities of radical new forms of agriculture. Beyond the role that this biodiversity plays in the economy and the lifeways of communities, this study has drawn attention to the role that vehicles are playing in redistributing species to reshape and build new ecologies for the future—ecologies of medicine.

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