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# Caring for the *pan* – The Collaborative, Multi-layered and Temporal Dynamics of Agricultural Knowledge among War-Khasi Farmers

Éva Rozália Hölzle

## Abstract

War-Khasis, who live in Bangladesh, earn their subsistence from the production of *pan* (betel leaf), which is cultivated in the forest. By exploring the betel leaf cultivation practices of War-Khasi farmers, the types of knowledge they mobilise to grow betel leaf successfully, and how they acquire these forms of knowledge, this ethnographic study draws attention to the collaborative, multi-layered and temporal dynamics of agricultural knowledge. Betel cultivation, far from being an independent human enterprise, is a collaborative and relational effort involving multiple species. The War-Khasi word *sumar*, meaning to cultivate and to take care, exemplifies the relational aspects of farming through multispecies collaboration. Although *pan* can grow naturally in the forest, cultivating betel necessitates the mastering and mobilisation of complex agricultural knowledge, as well as physical dexterity. Throughout the life of a farmer, such knowledge forms are in constant flux. The intergenerational transmission of agricultural knowledge, the adjustment of knowledge to the seasons and changing circumstances, the revision of knowledge as life experiences accumulate, and the transformation of the self during the effort to become a good farmer reveal movements of knowledge with different temporalities.

**Keywords:** Bangladesh, Northeast Indian borderlands, War-Khasi, *pan*, betel leaf, betel cultivation, care, agricultural knowledge, knowledge transmission

On a sunny morning in March 2018, Wanbor entered the kitchen, sat down on the bamboo floor, lit a cigarette, and announced: “Today, I am taking you to the forest.” I was surprised not because this would be my first time entering the forests that stretch on the borderlands between Bangladesh and northeast India but because of the way Wanbor declared his intention. His short sentence implied a desire to demonstrate how he navigated within and interacted with the forest. We started our journey shortly after Wanbor’s announcement. We did not take much with us, only a machete and a bamboo basket. Wanbor

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did not deem even water to be necessary. “There is plenty of water in the forest,” he said. We then slid behind the houses and entered the forest. Wanbor skilfully led me through the woods. He would occasionally stop to point at plants that were edible or medicinal. He missed no opportunity to collect them into the basket he had on his back. Now and then, he pointed at something in the distance, saying: “You see, this is a garden and there is another garden. There is the boundary line.” I knew that he was referring to different plots of land where he and his fellow villagers cultivated betel leaf, but my eyes did not catch what he saw; I could not discern how a special kind of tree marked the beginning and end of the betel leaf (*pan*) gardens. Wanbor read the confusion on my face, laughed, and said, “You need to stay longer. Then you will know”, pinpointing the reason for my deficient knowledge: my shorter, few months long stays in Lakhai, a small War-Khasi village in Bangladesh bordering the Indian state of Tripura, where Wanbor lived.

The people of Lakhai, like Wanbor and other War-Khasis living in Greater Sylhet, earn subsistence from pan production, a farming practice executed exclusively in the dense and wide forest patches that surround all War-Khasi villages in Bangladesh. Cultivating *pan* is a demanding and laborious task. Since the vine creeps up tall trees, farmers need to be skilful tree climbers, which calls for balance and strength obtained in early childhood. Furthermore, *pan* cultivators such as Wanbor accumulate and mobilise various types of knowledge about the forest throughout their lives to ensure ideal conditions, stimulate growth, and protect the betel from diseases. Knowing how to take good care of the betel is one way a Khasi agriculturalist qualifies as a “good farmer”. However, this care involves more than just focusing on the needs of the betel. It also calls for a holistic understanding of forests, because the successful cultivation of betel requires collaborative labour with other living species, such as trees, fungi, earthworms, insects and various other plants. All these living things contribute to an optimal habitat that allows the betel, forest trees and, indirectly, human beings to flourish. Thus, *pan* cultivation is a collaborative enterprise involving multiple species. Most farmers, including Wanbor, learned how to care for and navigate the forest when they were children. Fathers regularly take their sons to the gardens to familiarise them with the forest while gradually teaching them what must be done (and how) to cultivate betel leaves. Sons learn by observing and following the agricultural labours of their fathers. Therefore, the process of learning about the forest is neither static nor individual. Such knowledge does not remain with the person who acquires it but moves, through everyday teaching and learning, from one person to another and from one generation to the next. However, the intergenerational transmission of knowledge is not the only path through which the knowledge of *pan* cultivation moves. Seasons and environmental circumstances compel farmers to continuously update their knowledge and adjust it to the altered conditions. Although novice farmers

learn the fundamentals from their parents, knowledge of how to cultivate betel leaves never remains the same but must be constantly reshaped as circumstances change. During such rearrangements, farmers' relationships with the world, including their own selves, also transform. From novice apprenticeships, the betel farmers slowly transform into well-informed caretakers attuned to the needs of the betel and the rhythm of the forest. These dynamics of knowledge are the focus of this study.

By exploring the *pan* cultivation practices of War-Khasi farmers, the kinds of knowledge they mobilise to grow *pan* successfully, and how they acquire these forms of knowledge, the article advances three main claims. First, *pan* cultivation, in contrast to being an independent human enterprise, is a collaborative activity involving multiple species – plants, animals and humans. Such collaborations are inherently relational, as well. Thus, it is not accidental that, in War-Khasi, cultivation is expressed by the word *sumar*, which literally means “taking care”. Taking good care of the *pan* unfolds as an ethical requirement that motivates War-Khasi farmers to increase the extent and depth of their knowledge, thus assuring the flourishing of the forest, the betel and the farmers themselves. Accordingly, paying attention to agricultural practices in this context offers insights into “relations of knowing” that “require care” (Puig de la Bellacasa 2012: 198). Second, while *pan* can grow naturally in the forest, cultivating *pan* is not an uncomplicated form of subsistence. Successful *pan* cultivation requires the acquisition and mobilisation of varied and complex forms of agricultural knowledge, as well as physical dexterity. Third, the knowledge that makes *pan* cultivation possible is dynamic due to multiple temporal movements. The intergenerational transmission of how to cultivate betel, the continual adjustment of this knowledge to the rhythm of the seasons and changing environmental conditions, the slow revision of agricultural knowledge as life experiences accumulate, the transformation of the self, and the reconfiguration of how the self relates to the world, all reveal movements of knowledge with different temporalities.

In advancing these arguments, this study builds on and contributes empirically to three schools of thought in the literature. It draws on the scholarship that discusses the process of learning through intergenerational transmission (Van der Geest 2010, Lamb 2015, Reisman 2021) and everyday practice (Lauer / Aswani 2009, Hastrup 2018). It also expands on critical indigenous studies (Hunt 2013, Watts 2013, Todd 2016, Derichs 2019, Raina 2019) that point out how Western scientific traditions have historically delegitimised non-Western epistemologies by using labels such as “local”, “indigenous”, “folklore” and “folk tradition”. In advancing the argument that knowledge and place are inter-linked, this line of scholarship emphasises that “knowledge makes sense in one’s particular place” (Martínez-Reyes 2016: 125), and scholars who wish to approach and document manifold ways of knowing must invest “effort to

understand lived realities from their ontological fundamentals” (Derichs 2017: 185–186). The interconnection of place and knowledge, however, does not imply that knowledge is static. By paying attention to how knowledge moves spatially via practices of translation, appropriation or co-learning, critical indigenous studies have demonstrated the dynamic production and circulation of knowledge. The present essay complicates these insights insofar that, by discussing the generational transmission and the gradual modification of knowledge in time, it steers attention to the diverse temporalities that reshape agricultural expertise; a perspective that has received lesser attention than the spatial mobility of knowledge.

Furthermore, this article also harnesses the insights of ethnographic studies that draw attention to multispecies relations, leading to a new understanding of care and ecological knowledge (Puig de la Bellacasa 2012, 2017; Tsing 2015; Archambault 2016; Karlsson 2016, 2018; Seshia Galvin 2018; Langwick 2018, 2019; Omura et al. 2019; Münster 2021; Reisman 2021). Countering romanticised views on care, multispecies ethnography maintains that care as a practice is charged with ambivalences. As Mária Puig de la Bellacasa (2012: 198–199) asserts, “caring or being cared for is not necessarily rewarding and comforting”; rather, caring must be viewed within contexts of “exploitation and domination”. Following this argumentation, the present article arrives at the conclusion that neither care nor the transformation of knowledge can be interpreted as something exclusively positive. Taking care of the *pan* is a male domain, excluding women from the transmission of knowledge related to betel leaf cultivation. Moreover, some forms of new knowledge acquisition aimed at maximising profits from *pan* may divert farmers’ attention from the multispecies collaboration that has ensured the thriving of both forest and humans at the borderlands of Bangladesh and northeast India. Thus, besides offering insights about War-Khasi agricultural practices, the relational ways of knowing and the temporal aspects of knowledge change, the novelty of this study lies at nuancing the perspective on both care and knowledge transformation.

Empirically, the study draws on ethnographic data gathered at intervals between 2010 and 2018, telephone conversations with three farmers from Lakhai conducted between October and December 2021, and further telephone exchanges (text and voice) with female and male villagers from Lakhai in February 2022. The telephone exchanges were necessary because I required further important information about *pan* cultivation but could not travel to Bangladesh due to the global COVID-19 pandemic. These long-distance calls and messages complemented the previous ethnographic data and were possible only because of prior ethnographic engagement and long familiarity with the area and its villagers. Lakhai constituted my fieldwork “home” prior to the pandemic, and I had been cultivating a close relationship with Wanbor, his extended family, and the villagers since 2010.

The article proceeds by offering information about Lakhai, War-Khasis and the reasons they inhabit the borderlands between Bangladesh and northeast India. In this way the history of the village will be interwoven with the history of War-Khasis, also addressing War-Khasi land struggles within the region of Greater Sylhet. The subsequent sections then discuss the ways the people in Lakhai, and by extension the War-Khasis, cultivate *pan* and explains their caring and knowing practices and the means through which they have acquired their knowledge. The article's last section turns to elucidating the ambivalences of care and knowledge transformation.

### **Lakhai: A forested borderland village**

Those who wish to approach Lakhai must cross the base of the Bangladeshi Border Guards and then a privately managed tea garden. The five-kilometre-long tea garden road leads to the foot of a hill, atop which the village hides behind dense trees at an altitude of 300m. From above, Lakhai has a particular architectural shape. The line of its 52 houses runs in two half-circles that concavely face each other. The point where the houses come closest to each other serves as the centre of the village. The boundary between the forest and the houses is blurred, and it is difficult to determine whether Lakhai edges the forest or is in the midst of it. The trees are only an arm's length away from the open-air kitchens at the back of the houses.

From a geopolitical perspective, Lakhai is positioned between the Tripura and Bangladeshi border and is relatively isolated from other human settlements. This is not an unusual territorial situation for the 90 Khasi villages in Bangladesh. Most of them lie on "no man's land" comprising the international border zone stretching between Bangladesh and the Indian states of Tripura, Assam and Meghalaya, where the majority of Khasis live today. Khasis who migrated to South Asia from Vietnam's Red River Delta in ancient times speak a Mon-Khmer language (Ludden 2003: 4). The five main regional dialects – Kynriam, Lyngam, Bhoi, Pnar and War – correspond to the main sub-ethnic formations concentrated in different geographical regions. War-Khasis inhabit the Khasi and Jaintia Hills, which reach the forested slopes of Greater Sylhet, now part of Bangladesh (Nakane 1967: 96). In contemporary Bangladesh, War-Khasis occupy a politically and legally precarious position, with no official land rights and no recognition as minorities in need of state protection (Hölzle 2022). Their marginalisation is not new. It began during the British occupation of Sylhet at the end of the eighteenth century, when they were forced by the British Army to withdraw from the plains of Greater Sylhet and move towards the hills of Meghalaya

and Assam.<sup>1</sup> This process also involved the expropriation of Khasi properties in Sylhet (Ludden 2003: 46). War-Khasis nevertheless escaped colonial restrictions through mobility thanks to their shifting *pan*-leaf cultivation practices. The establishment of tea gardens in Sylhet and Assam throughout the nineteenth century did not deter them from staying in the region. In fact, tea garden owners often rented out land to War-Khasis in hilly territories where tea production was difficult (see also Hölzle 2017). This is how Wanbor's family, the Lymbas, came to Lakhai.

The Lymbas originated in the southern Jaintia Hills of Meghalaya. Lakhai was established by Frederik, one of the maternal uncles of Wanbor, during the early years of the twentieth century. In establishing Lakhai, Frederik rented approximately 500 acres of forestland surrounding the village from the Nawab of Prithimpassa, one of the most influential landholding families of Greater Sylhet during the colonial period. Following the usual practice of War-Khasis, Frederik invited other clans among the Khasis from surrounding settlements to form a village. He then divided and sub-rented the land to newcomers. As the founder of Lakhai, Frederik also became the village head, known locally as the *rangbah*. Khasis are divided into several matrilineal clans (*kurs*) that trace their lineage exclusively along the maternal line while bequeathing the property to the youngest daughter. It is the responsibility of the *rangbah* to hold the disparate group of families in a village together, secure mutual understanding and mediate in the event of disagreements. The *rangbah* is also in charge of protecting villagers from external dangers. For delivering this service, the *rangbah* receives a share from the *pan* production of each family every month. These tributes, along with land taxation, reinforce the influence of the founding clan. However, this is a fragile dominance. If the *rangbah* fails to protect the interests of the *kurs* and if the levy is too high, villagers can withdraw their loyalty by moving away from the settlement, thus leaving the founding clan alone to its fate. Fortunately, Lymbas have never encountered such a situation. The three *rangbahs* after Frederik led Lakhai without significant internal frictions. By contrast, the people of Lakhai repeatedly clashed with the state actors of various governments over land rights throughout the twentieth century. Although their land rights had been precarious since the British colonial period, their struggle over the right to land became truly acute during the separation of East Pakistan (modern Bangladesh) from India in 1947 (see also Hölzle 2023).<sup>2</sup>

The end of India's colonial period also meant the abolition of the landlord system in the subcontinent. The Nawab of Prithimpassa, who leased the land to the Lymbas, lost his influence, and the people of Lakhai lost their protection.

1 For a more elaborated discussion on the history of Khasi land rights and the challenges they face in contemporary Bangladesh, please see Hölzle 2017, 2022. For a historical overview of Bangladesh, Sylhet and its population; see Ahmed 1999, Islam / Miah 2007, and Ludden 2003, 2005.

2 The modalities of land struggles described here are characteristic to all Khasis living in Bangladesh, not just to Lakhai.

The state of East Pakistan took over all forested land in Sylhet in 1950. Subsequently, the living conditions of the people of Lakhai worsened when Bangladesh became independent in 1970. After the Liberation War, the Bangladeshi state classified forest dwellers as “encroachers” and began criminalising agroforestry, including *pan*-leaf cultivation. These state actions marked the beginning of prolonged political and legal conflicts between the Bangladeshi state and villagers over the right to live and cultivate in the forests surrounding Lakhai. Although the villagers’ case for the legalisation of their land claims has been pending in the High Court of Bangladesh since the late 1970s, a small victory in the form of the installation of electricity in Lakhai has recently given them hope. Electrical wiring put Lakhai on the map of Bangladesh as a human settlement for the first time in history. Being identified as a village is important, because it hinders state occupation efforts grounded on the claim that the forests are uninhabited. The electricity granted by the local government is a modest sign of recognition, and perhaps an opportunity for the people of Lakhai to legalise their status. Despite all the years of intense insecurity, villagers have continued cultivating *pan* to secure their livelihoods. This is remarkable, given that betel cultivation is a complicated and strenuous process, and entails risks, like any other form of farming.

### Cultivating *pan*

The population of Lakhai comprises a little over 400 individuals, who belong to 13 *kurs* and reside in 52 multigenerational households. The villagers cultivate an estimated 500 acres of forestland stretching between Bangladesh and Tripura. While such a land area may appear exceptional in the plains of Bangladesh, it is not extraordinary in the Khasi settlements along the Bangladesh–northeast India border. These are hilly regions with slippery soil and dense vegetation. Rice or tea cultivation would necessitate tree removal and the establishment of terraces, which are prohibited by the Bangladesh Forest Department, the state organ in charge of forest management. Additionally, such landscape alteration would require major investment without a guarantee of profit, as farmers would still face the need to provide proper irrigation. Rainwater flows down quickly from the hills to the plains. For this reason, colonial landlords (*zamindars*) leased large amounts of these lands to Khasis, and it is why the tea estates in the area followed this practice after 1947. Land in these hilly areas is suitable for agroforestry such as *pan* cultivation but not for other agricultural activities. Consequently, the market value of these hilly lands is lower than that of farmlands in the plains (see also Hölzle 2017, 2022). Nevertheless, *pan* cultivation offers a highly profitable livelihood. Khasi families earn two to three times the average



rural Bangladeshi household income of 13,998 *taka* per month (Bangladesh Bureau of Statistics 2016) from *pan* production. Additional income is secured from the cultivation of lemons, turmeric, ginger and areca nuts. This is also the case in Lakhai. Despite these advantages, however, many Khasi farmers claim that growing *pan* is becoming an increasingly risky business due to ecological and political changes in the area.

Khasis once practiced shifting cultivation, adjusting their movements to the lifecycle of *pan*. Accordingly, after 12 to 15 years of living in one place, the whole village moved to a neighbouring hillock while letting the “old” land rejuvenate. Today, this practice has been abandoned due to the land shortage that followed when the Bangladeshi state laid claim to large tracts of forested land along India’s north-eastern border. Since Khasi farmers usually do not use chemical fertilisers or repellents, the life span of the betel leaf has been shortened (eight to 10 years) due to their sedentary agriculture practices. Despite this change, they adopted a rotating style of farming that resembles their previous shifting practice. The land is parcelled into smaller units, and collection occurs in only half of the gardens. In the remaining gardens, either saplings are planted, or the land is left to revitalise. Letting the gardens rest is crucial for securing steady *pan* production. This process occurs in eight steps.

- 1) *Pan*, as a creeper, requires high trees, half-shade, and humid and rich soil. Tropical natural forests are the best habitat for the plants.
- 2) Farmers reproduce *pan* plants through stem cuttings.
- 3) After an ideal forest patch with tall trees is selected, the planting of the betel starts, and the saplings spring forth within three to four weeks. Despite this rapid growth, a newly established garden needs three years to mature for collection.
- 4) During maturation, the *pan* requires nursing. Farmers trim the foliage of the supporting trees to allow sunlight and air into the gardens, thus stimulating the growth of the *pan*.
- 5) The leaves of the betel are considered mature when they reach a size of approximately 12 to 16 cm; harvesting can then begin. During the harvest, farmers use a bamboo ladder to climb the trees. They employ their long thumbnails to pluck the *pan* and collect it in baskets slung on their backs.
- 6) Younger boys, who cannot yet climb trees, carry the harvested betel back to the village, where they wash it to prolong freshness.
- 7) Women select the *pan* according to size and arrange them into a bundle. One bundle contains 144 leaves, and 20 bundles make up one *kuri*.
- 8) The household manager, almost always a woman, sells the *kuris* the next day to Bengali traders who climb up to the Khasi villages. Since men are in the gardens, bargaining and selling are women’s duties. Production of three *kuri* per day is considered a good amount when the price of the *kuri* is at a minimum of 500 *taka*. When the price is below 100 *taka*, a multigenerational family needs to sell 10 to 15 *kuris* to cover their daily expenses. After the selling, Bengali porters carry the *pan* down to the plains; from there, the betel is transported to the larger cities, reaching as far as Dhaka.

In carrying out these steps, from the planting to the harvesting and selling of the betel, Khasi farmers rely not only on their expertise accumulated over many years of practice but also on something they call *sumar*, or “care”. In their farming practices, they incorporate not only certain forms of knowledge, but also the relational aspects of cultivation, which find expression in the notion of *taking care*, thus revealing an interconnection between knowing and caring.

## Caring and knowing

### “Cultivating is caring”

“A good farmer [*rangbah ki*<sup>3</sup>] must know how to take care of the betel leaf garden from the start until it finishes growing. Under the hands of a good farmer, a garden will flourish” (28 November 2021) explains Matthew, a 37-year-old villager from Lakhai, when I ask him to tell me who is considered a good farmer. Particularly notable in Matthew’s statement is the word “care”. Whenever Khasi farmers talk about cultivating betel leaves, they use the word *sumar*, which is a charged expression connoting “nurture”, “protection”, “support”, “responsibility” and “hard work”. Cultivating as taking care sounds like the affectionate, often taxing efforts that parents undertake when raising a child. Such a vision of care resonates with scholarly conceptualisations that stress its relational aspects (Puig de la Bellacasa 2012: 198) prompted by the one “in need of care” (Seo 2020: 13). This is no wonder, considering the sensitivity of the betel leaf as well as its economic, cultural, social, religious and medicinal significance among War-Khasis.

The botanical name of the *pan* is *Piper betle*, and it belongs to the family of black peppers. The term *pan* is a word used among Urdu, Hindi and Bengali speakers, while War-Khasis call the plant *pathai*. According to historians, betel originated in Malaysia (Ahuja / Ahuja 2011: 18). Some historians surmise that betel reached and spread across Assam in ancient times when Khasis migrated from south-east to south Asia, bringing the plant along (ibid.). Wherever it originated, betel is cultivated and consumed throughout central, south and south-east Asia today.

The betel plant climbs up helically around the trunks of larger trees if it is grown in the wilderness. The heart-shaped and deep green leaves along the stem line up one after another. Betel bears no fruit; it is cultivated exclusively for its leaves, which are consumed with a piece of areca nut and lime. These three chewed together give an intense sour, hot and bitter taste. War-Khasis call this

3 *Rangbah ki* in this context means “farmer”, but the word *rangbah* can also refer to an elderly person of a high status as well as a village head.

preparation *kwui*. *Kwui* is consumed after meals to enhance digestion, freshen the breath and elevate one's mood. Khasis consider *kwui* to be a gift from God (*U Blei*), who they believe created *pan*, the areca nut and the lime as food to be offered to visitors as a gesture of hospitality, friendship and respect.<sup>4</sup> Betel leaf and areca nuts are also part of religious ceremonies for War-Khasis that follow the pre-Christian religion of *niem shnong*.<sup>5</sup> During such rituals, *pan* and areca nuts are often placed on altars as offerings to the gods. Furthermore, betel is used to relieve several maladies, including headaches and various forms of inflammation (Ahuja / Ahuja 2011: 23–24).

Since betel is sensitive to sun and drought, it demands close attention throughout the year. Additionally, betel is susceptible to several diseases that can spread like epidemics from one garden to another, destroying the crops of an entire village. For this reason, no Khasi farmer enters a garden without showering first. Farmers' work clothes are very modest; they usually wear short pants, carry a basket on their backs, and use a large, curved machete to clear undergrowth plants. Through these "preventive and not curative strategies" (Lyons 2020: 116), farmers attempt to lessen the risk of spreading the two most prevalent types of disease, *uklam* and *uttram*, from sick gardens to healthy ones. *Uklam* causes a yellowing of leaves, which fall off the main plant quickly after infection, while *uttram* causes the roots of the betel plant to rot.

Despite the centrality and value of the betel, Khasi farmers are not involved in *pan* cultivation alone. To make agriculture successful, farmers stress the need for thick forests and consider cultivation of *pan* without such trees to be inconceivable. "We prefer thick forests in which the trees are already grown", says Jonas, a farmer in his late 30s who manages five large gardens belonging to the family of his wife in Lakhai. "Every tree is important for me. When a tree dies for whatever reason, it feels like a person has died. A *rangbah ki* always feels very bad if a tree dies" (4 December 2021). Such emotional equivalence between trees and people is not uncommon across the world. Maurice Bloch (2005), in his work among slash-and-burn Malagasy cultivators, points out the manifold interconnections that are drawn between trees and humans. Cultivators, who base their subsistence on forest resources, establish such interconnections because they consider trees as living beings similar to humans and because they depend on the natural environment to secure their continued existence. In a similar vein, Wanbor emphasises the importance of trees and the forest: "We who live in the forest work to take care of the trees and help them grow so that they give shade to the environment. We let bushes develop by themselves. We work in the forest, but we do not stop the course of the small streams" (2 November 2021).

4 A more elaborate discussion of the cultural and religious significance of *kwui* would exceed the purview of this article. For more information about *kwui* being a gift of God, please see *Khasi Legends*, collected by Kynpham Sing Nongkynrih (2007).

5 The majority of Khasis follow Christianity. Only a few Khasis practise *niem shnong* today. Nevertheless, even Christian Khasis engage in some of the religious rituals of *niem shnong*, where instead of one God, multiple deities, spirits and the souls of ancestors are summoned and/or remembered.

War-Khasi farmers consider the healthy tall trees with smooth trunks (*Artocarpus*) as vital, not only because they support the betel but also because they give shade and attract other life forms such as fungi and various insects that provide nutrition for the tree and the betel. Fertile soil is crucial for the trees and *pan* to thrive, according to Matthew:

A good soil is soft and there are a lot of earthworms in it. The earthworms dig through the earth. They digest the fallen leaves and branches and they create a good loose soil that is dark in colour and has a fresh bitter smell. The earthworm is the best source of fertiliser. We also need bushes and grass. They provide shade so that the sun cannot directly hit the ground. Bushes are good and important; they provide a home for insects. The earthworms and other insects together create a good soil. Fungi also. They break down the soil. They are the natural ploughers (28 November 2021).

*Pan* cultivation requires, as Matthew stresses, multispecies collaboration enabled through mutual dependencies. Trees, plants, insects, fungi and humans facilitate each other's flourishing. Growing *pan* is thus a "collaborative survival" – a gathering of multiple ways of living (Tsing 2015: 155–157). Matthew's words describe the soil not as dirt (Puig de la Bellacasa 2017: 195) but as a living organism buzzing with many life forms. Caring for the soil is about noticing and considering all these life forms, which create a "good and fertile soil". Soil care, too, is thus a "relational activity" (Münster 2021: S311) in which earthworms, plants, trees, fungi, insects and humans all participate, enhancing each other's lives. In ensuring fertile soil, farmers are called to practise withdrawal, allowing all other life forms to do their work. In this transformative process, labour involving waste and rot is fundamental. Indeed, Matthew pushes the process of decomposition to the centre of attention when he underscores the work of earthworms, insects and fungi on dead material such as fallen leaves and branches. Paying attention to decomposition enables one to see the entanglement between life and death, since decomposition is about the "cultivation of life in the midst of death" (Lyons 2020: 9), about turning life into death and death into life again. Through the process of decomposition, death emerges not as the opposite of life but a process through which new vitalities can spring up, one "that also potentiates different possibilities for and relations with death" (Lyons 2020: 114). However, taking good care of betel leaf gardens is impossible without knowing the forest, and knowing the forest calls for different types of knowledge to be mobilised in practice.

### "A good farmer understands the forest"

"A good farmer knows the forest very well. He has to understand how to complete his work on time," explains Jonas. He continues: "Timing is essential. First, he will schedule that within this time he has to do these types of work. He has to know the exact work plan that has to be done within a year" (4 December 2021).

Khasi farmers maintain strict daily, seasonal and annual schedules. Although *pan* cultivation is performed daily and throughout the year, seasonal work is regulated according to the amount of annual rainfall. During the monsoon season, from May to July, the main work in the gardens is pruning branches and trimming the tops of the supporting trees as well as thinning the undergrowth bushes and planting new betel saplings. During this time, farmers collect *pan*, but not in such large amounts as during the subsequent season, between August and the end of October, when the rainfall decreases, allowing the main harvest to take place. Betel grows in ample amounts in this season, making extensive harvest possible. Accordingly, *pan*'s market value drops during this period, since it is easily available throughout the region. For this reason, villagers must collect larger amounts to cover household expenses. Thus, men work in the gardens from dawn until dusk. The collected *pan* must be bundled for sale on the same day, and women most often work through the night, from six o'clock in the evening until four or five o'clock in the morning. From November until the end of January, the *pan* harvest, and its ensuring labour, decreases. At this time, farmers concentrate on cutting off the branches of large trees and gathering them around the roots of the *pan*, a practice known as mulching. Farmers mulch to protect the plant and the ground from strong sunlight but also to control the humidity and nutrition of the soil throughout the dry season that ensues from February to April. During the rainless period, farmers spend more time working around the house, repairing smaller items or building new houses, since the crop yield is low due to the dry climate. The high price of *pan* at this time compensates for the reduced collection. Harvesting slowly begins to resume pace as the amount of rain gradually increases towards the end of April.

A sense of timing is required not just for planting but also for the different styles of plucking the betel leaf, as I learned from Matthew, who stresses that a good farmer is “a good plucker; every season requires a different plucking style” (28 November 2021). Farmers employ four picking methods depending on whether they want to facilitate the growth or the rest of the plant. The main plucking technique during the rainy season is called *hat sumar*, whereby farmers pluck all the leaves from every branch and keep only two main stems for the next rainy season. In the second mode of picking, *hat lobar*, done from May until July, farmers remove weak leaves to foster the growth of healthy ones. In the third method, *hat kyndit*, used from the end of October until December, farmers collect the upper leaves to enable the plant to grow into a bush at the bottom. Finally, in the fourth style, *hat thkia*, performed between December and February, collectors pick every leaf to close the agricultural cycle.

These timing strategies show that cultivating *pan* in the forest requires that farmers develop a sense of “what the plants need” (Van Dyk 2021) and, most importantly, when it is needed, thus offering further insights into relational modes of knowing or “thinking with care” (Puig de la Bellacasa 2012: 202). While

attending to the betel, Khasi farmers accumulate extensive knowledge about the seasons, which informs them of what must be done at particular times. In this sense “farming [...] is inherently a dance with time” (Van Dyk 2021). It requires an attuning of “one’s activities with weather, ecological, and economic cycles from season to season and year to year” (ibid.). “To really know,” writes Kirsten Hastrup (2018: 128), “is to be able to act in the present.” However, she adds, “[a]ction is never simply a phenomenon of ‘the present’, it is also part of an anticipated flow leading into ‘the future’.” Indeed, farmers from Lakhai emphasise the importance of reading the signs of the present with the future in mind. “A good farmer has to know the work plan for the year. He must be regular in his work. He cannot take a break. He has to go around the gardens every day and see what has to be done,” explains Matthew. In this sense, a Khasi agriculturalist is a skilful interpreter of the present for the sake of the future; a future in which the survival of forests and people are ensured.

Aside from tasks requiring timing, tree climbing is another essential capability for this type of agroforestry. Matthew stresses: “Climbing the trees requires skill and knowledge. A person who never practised climbing won’t be able to do this work. Proper climbing is fast, and a person has to be able to balance even during the rainy season, when the ground and the trees are very slippery” (28 November 2021). The trees upon which the betel creeps can reach a height of 20 to 45m. Most of the farmers work at heights of 10 to 15m using one bamboo trunk through which several logs are beaten through to form steps. Balancing on only one bamboo trunk when the terrain and the tree are wet is truly an acrobatic feat that requires “muscular consciousness” (Hastrup 2018: 120). Matthew describes the physical dexterity a *pan* cultivator performs every day:

The legs have to be very strong. In one hand we hold the bamboo ladder, in the other the knife, and on the back, the basket. This is very difficult. A farmer that is not skilled enough can have a very big accident, breaking his legs or spine if he falls.” (28 November 2021)

Indeed, every Khasi farmer is athletic and agile. The hands, legs and, particularly, the feet and heels are robust. In addition to such muscular intelligence, a successful farmer mobilises further modes of knowing. A farmer must be capable of detecting and recognising various diseases before they spread. This is why farmers begin every day by visiting the gardens and inspecting the crops, trees, soil and everything that surrounds and impacts the growth of the betel. Jonas elucidates: “A farmer has to go around the garden and see which betel leaf has a problem. He has to know what kind of virus attacked the betel leaf, and he has to use his own intelligence in how to relieve the betel of the virus” (4 December 2021).

A well-informed farmer must also consider the necessary distance between the trees and how and where to plant the *pan* to ensure fast growth and a good harvest. Additionally, a knowledgeable farmer can estimate the value of a garden by assessing the variety of undergrowth below the trees. Thick and

diverse ground cover indicates not only fertile soil but also the density of streams that spread below the surface of the earth, ensuring a continuous water supply.

All these different ways of knowing demonstrate the multi-layered character of agricultural expertise that Khasi farmers have accumulated and put to good use in taking optimal care of the betel. The interconnection of care and knowing clearly illustrates “that creating knowledge is a relational practice” (Puig de la Bellacasa 2012: 199). Khasi farmers in cultivating betel do not simply “think-with”, but also “live-with” the betel and, by extension, the forest (Puig de la Bellacasa 2012). By engaging in relational ways of knowing, farmers acknowledge and foster heterogeneous modes of living in forests. The relational character of knowing emerges also during processes of learning. As the following section demonstrates, the forms of knowledge mobilised by Khasi farmers are all partly transmitted intergenerationally and partly “based in the sensitivities, orientations, and skills that have developed over [a] lifetime through actual engagement in and performance of practical activities” (Lauer / Aswani 2009: 318). The generational transfer of know-how about cultivating betel leaf goes hand in hand with the farmers’ continuous updating of their knowledge as their experience grows and their surroundings change.

“From the elders we learn the basics – the rest depends on us”

“I studied only till grade four,” says Wanbor, recounting his biography. “Then I said to my papa that I do not want to continue with school. [...] He said, ‘Okay, if you want to work then come, I will show you how to work in the garden.’ From that time onwards, my papa tried to guide me how to take care of the gardens.” Wanbor’s maternal grandfather and uncles were also important teachers about what must be done and how in the forest: “When I started working, our grandpa, from our mother’s side, came from India and guided me in how to work. [...] They [grandfather and uncles] advised me about how to deal with responsibilities” (3 March 2018).

Jonas, whose parents died while he was a small child, did not experience the beneficial effects of parental guidance. His teachers were his older brothers and other older adults from his natal village. “Most of us learn from our parents, or – as I did – from other people who know it well.” Jonas began learning early and proceeded quickly. “I started working at age eight. In the beginning, they showed me the basics, and later I had to do it by myself. At age 15, I started to work independently, but I was not seen as a *rangbah ki* until my mid-twenties” (4 December 2021). Today, Jonas is considered an exceptionally skilful farmer in managing the gardens of his wife’s family and providing for nine people.

Like Wanbor and Jonas, Matthew emphasises the importance of parents and other knowledgeable persons while explaining how farmers acquire knowledge

about cultivating betel but also discusses the joint activities through which knowledge is realised:

We learn it from a person who knows it well, usually the father. My father would take me to the forest, and I worked with him. Fathers take their sons every day. At the beginning, they take them just to get them used to the forest and the work. Gradually, what fathers do is say “do this and do that”. They are showing. Plucking they will not show at the beginning. They give just smaller tasks at the beginning. Like, taking the baskets back to the village. After a few months, they will start teaching. They instruct you to pluck this branch of the betel leaf; like this or like that, explaining how to pluck according to the season. So, they gradually show what tasks need to be done (28 November 2021).

Most male children are taken to the gardens to introduce them to farming before they reach their tenth year. They learn farming by doing it. This means that the process by which Khasi farmers learn cultivating “is also a process grounded in the context of activity” – novice farmers “develop specific dispositions and sensibilities by observing accomplished practitioners” (Lauer / Aswani 2009: 325). Farmers insist that those who miss this early teaching will not be able to catch up, since the body needs to be moulded to farming activity. The feet and hands are shaped from an early age to adapt to this heavy work. To climb and work the entire day high above the ground requires strong muscles and no fear of heights, as Matthew explains:

To become a skilled farmer takes many years. The knowledge and the skills increase gradually. To develop strong muscles, you need time. The hands and the feet must be strong. They [instructors] give tasks that increase in difficulty and observe whether you can do them properly (28 November 2021).

However, the gradual, practical ways of acquiring knowledge described above do not nullify the importance of generational transmission. The passing down of knowledge through generations matters in other geographical contexts too, as Emily Reisman (2021) shows in her ethnography of Mallorcan almond farmers, who struggle against a disease that kills the almond trees on the island. It is not only the disease that impacts the almond trees and leads to their mass extinction, but also the interrupted intergenerational knowledge of how to take care of the trees. Young Mallorcan farmers increasingly lack knowledge of how to deal with pests because previous generations have turned away from agriculture, leading to an intergenerational gap in knowledge transfer, thus leaving “trees more vulnerable” (Reisman 2021: 416). Accordingly, even the most dedicated practical performance will not suffice if there is nobody who can show how to “take care”.

All three of the farmers interviewed – Wanbor, Jonas and Matthew – emphasise, however, that the knowledge they received from older farmers does not remain unchanged. Through long and repetitive practice, skills and knowledge are continuously formed and refined, according to Matthew:



As the circumstances change, new ideas must be integrated. I learnt from my father and brother in a certain way, but now, when I work in the garden by myself, I have to do it another way. The basics remain, but some ways of doing are changing. Adjustments must be made all the time. These depend on the forest, in what condition it is, the seasons, the rain (28 November 2021).

Thus, knowledge acquired as a child is not stagnant. It is not conserved in a time vacuum but is adjusted to circumstances whose parameters are never known in advance. Cultivation is dependent on various environmental factors such as rainfall, sunlight, soil or the appearance of unanticipated and unwanted pests. This need to consider contingencies means that farming requires an elastic expertise that must be continuously adapted to the changing situation. This is where the hidden dynamics of the seemingly repetitive maintenance work that farming demands are revealed. However, it is not only the knowledge that changes through learning and updating, but also the self. Farmers talk about their profession not as something that can reach its peak at a certain age but as something that continuously evolves through uninterrupted learning. “To become a *rangbah ki* requires life-long learning,” Jonas assures me (4 December 2021). In this sense, farmers are always in a state of becoming, in a mode of “unfinishedness”, movement and change (Biehl / Locke 2017). Becoming is, in this context, linked to the transformations of the self and to the transfigurations of how one relates to the world that constantly changes (ibid.).

## The other side of care and the transformation of knowledge

At first sight, the transformation of knowledge and taking care of the gardens seem to be benevolent, yet neither can be interpreted as exclusively positive practices. Similar to its English (*care*) and German (*Fürsorge*) equivalents, *sumar* connotes more than “nurture” and “protection”; it also implies “heavy burden”. Those who care are confronted with worry and sorrow. Additionally, as the feminist thinker María Puig de la Bellacasa (2017) stresses, care is always selective; caring requires privileging certain aspects of life while disregarding others to the point of carelessness, neglect or even rejection (see also Münster 2021 for the negative aspects of care). Consequently, care cannot be equated with “a warm pleasant affection” (Puig de la Bellacasa 2017: 2); instead, care must be situated “within relations of power and privilege” (Reisman 2021: 401). The politics of care among War-Khasi cultivators comes into focus most sharply in the gendered dimension of farming. *Sumar* is exclusively a male activity, and the image of a “good caretaker” is tightly interwoven with ideas of masculinity such as physical power, bravery and toughness. Women are rarely welcomed in gardens except at times when undergrowth plants need to be cleaned. Fathers do not take female children to the forest, and parents discourage daughters

from climbing trees after a certain age. The know-how of cultivating betel is carefully kept from women. They are involved in *pan* production only as sellers and bundlers of the betel. In keeping Khasi women away from cultivation, the common justification is a reference to their physical inaptitude, as Matthew suggests when I ask him why women do not cultivate betel:

Women are responsible for taking care of family members like children or parents and other household chores like cleaning, cooking, arranging and selling betel leaves at home. Working in the betel gardens is a hard job – like climbing on trees, collecting betel leaves in the heavy baskets, trimming the branches of the big trees. Men are fit for these works. Women sometimes go to the garden to clean the bushes or bring betel leaves out by carrying baskets (19 February 2022).

Khasi women are aware of this argumentation, and during my field visits, I often discussed the gendered division of work with them. While not all of them evaluate this division negatively, most women, especially those belonging to the younger generations, openly name and criticise gender differentiation, as did Hunlang – a 32-year-old unmarried woman from Lakhai – when I called her to ask the same question I had asked Matthew:

I met a woman earlier whose husband was sick, so she was plucking betel. When there is no option, women might try. However, in normal times, the work is already divided and that's why we do not collect the leaves. The reality is that even in the family, among women, the mentality is that men work in the garden and women work at home. The older people believe that women cannot do the work in the gardens that men do. That they do not have enough strength. They differentiate us according to physical strength. We are not encouraged to climb trees. When girls want to go to the garden, they say, "no need to go". They say, "you cannot go". When I was young and climbed trees to collect mangos, they said, "this is not your work". They say, "don't be like boys!" It is not only my mom that does this, but most of the Khasi women do" (25 February 2022).

While gendered division of work among Khasis is a fact, interpreting Hunlang's words as a clear statement of gendered discrimination would be too simple. Khasi women not only inherit the land and determine the family lineage, but as sellers of betel leaves, they administer the finances in the household. Household management in turn requires the accumulation and mobilisation of specific forms of knowledge. Most Khasi women are skilful merchants and speak multiple languages that they learn while communicating with non-Khasi traders. In turn, many Khasi men, spending their days in the gardens, lack such knowledge. Accordingly, gender dynamics among Khasis are far more complicated than binary logic – men vs. women – would suggest. Matrilineal and matrilocal practices contribute to these complexities. Paying attention to such complications is fruitful because they illuminate intricate layers of social life, including the contradictions inherent in the practice of care.

Ambivalences do not stop at gender relations and care but reappear in the transformation of knowledge too, as Matthew explains below, cautioning against seeing the adaptation of agricultural expertise only in positive light.

Usually, one lets the land rest. That re-fertilises the soil. However, more and more farmers use fertilisers. Now they have started to use cow dung and, also, they are buying different chemical fertilisers from the market. Phosphorus, or something like that. This is just a very recent trend from a few years back. It is not widespread. Only a few families are doing this. Because once you have used it, you destroy the soil. [...] Earlier, people would also not go for irrigation, but now we must do this. This is because of the weather, the climate. Earlier we could get a source of water everywhere. When I was a child, I could see streams full of water surrounded by bushes. Now there are no more streams and no more bushes. The forest was cleared; the trees were cut. And the main source of water is the forest. This change is there. Irrigation is one kind of adaptation. We also use chemical fertilisers out of necessity. The forest is decreasing, and we cannot move now from one location to another. So, we must cultivate in the same place for a long time, and the soil has no more power to give. What can we do? (28 November 2021)

In the quotation above, Mathew points out the adverse sides of knowledge transformation connected to the necessity of using chemical fertilisers and irrigation. Sedentary farming in combination with climate change and the drive to increase farming for profit has depleted once-fecund soils and forest patches. The question of how many farmers irrigate and chemically fertilise their land and how exactly they turn to these methods is difficult to answer because most of them hide these practices from others. According to Matthew, only a few farmers are currently engaged in these actions. Concealing irrigation and the use of chemical fertilisers implies that those methods are considered to be unethical practices, despite the necessities that drive some farmers to adopt those techniques. They are viewed as unethical because they jeopardise the delicate multispecies relationships that emerge from proper care of the betel. Concealment, accordingly, is an expression of farmers' awareness of failing to care. Residents of Lakhai are aware that if these agricultural practices become a future trend, then the multispecies collaborative work on which Khasi farmers have based their cultivation practices for centuries will come to an end with the beginning of the twenty-first century.

## Conclusion

“To be knowledgeable does not necessarily mean being educated, but to have the sense to think about what is right and what is not,” opines Wanbor as we cross the forest together (March 2018). Clearly, what Wanbor is alluding to here is the value of skills and understanding outside formal schooling. He connects the value of this knowledge to an ethical sense, hinting at the importance of caring. Cultivating as caring is thus about appreciating multiple ways and forms of living and dying, while knowing when and how to act preventively, and when it is time to retreat and let other living beings do their work. Accordingly, growing *pan* is not about bending one's surroundings to one's will, but about adjusting oneself to the rhythms of the forest. A well-adjusted *pan* farmer is

considered a good caretaker because he can read and understand the signs of the forest. He engages in what Mária Puig de la Bellacasa (2012) terms, following Donna Harraway, “thinking-with”. This is the point at which caring and knowing become intertwined.

All the discussed forms of knowledge – knowing when and what the plant needs, when and how to pluck leaves, tree climbing, detecting and treating diseases, and being aware of and selecting optimal cultivation locations – are situational (Lauer / Aswani 2009). The modalities of knowledge that Khasi farmers must assemble to be considered “good” make sense and grow out of the context in which they live. Thus, knowledge and place are linked (Hunt 2013, Watts 2013, Derichs 2017).

Yet, the situational character of knowledge does not imply that knowledge is fixed; on the contrary. In examining the complex and various methods of *pan* farming, the aim of the article has been to describe not only the modes of cultivation, but also how agricultural knowledge is transformed as time passes and as circumstances change. The transmission of knowledge across generations represents one form of such temporal movement, within which further movements take place. Farmers need to accommodate seasonal changes, and larger ecological transformations necessitate a continuous updating of their knowledge. Within this movement, further changes occur at the subjective level. Alterations in farmers’ relations with the world, and the reshuffling of their selfhood, follow larger transformations. The self remains open, not in the sense of incompleteness but of constant anticipation, as if one were constantly searching the horizon, pondering what is coming next.

However, neither the care nor the transformation of knowledge that unfold in the practice of betel leaf cultivation are void of ambivalences. Care implies, as many feminist thinkers argue, not only hard labour, but often also gendered differentiations with women usually shouldering most of the burden of caring for family members. In the context of War-Khasi agricultural practices the burden of care lies with men. However, in denying access for women to the gardens this is not a reversal of gendered roles, but an expression of gendered inequalities: *pan* cultivation represents an exclusively male domain. Khasi women remain, despite matrilineal and matrilocal practices, excluded from acquiring agricultural expertise. The transformation of knowledge is likewise charged with ambivalences. Many Khasi farmers have surrendered to the demand of the market by adopting agricultural practices, such as irrigation and the use of chemical fertilisers, to expedite and increase the production of *pan* in places where the rainfall is decreasing every year. These cultivation methods deplete the nutrients in the soil, thereby endangering the collaborative multispecies relationships that makes betel leaf cultivation in the forest possible. The fact that many farmers hide such practices demonstrates that they understand that the new practices indicate a failure to care, revealing a point where knowing and caring part ways.

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