

Changing Land Use ^{and}
Children's Health ⁱⁿ
Mae Chaem, Northern Thailand

by

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ABSTRACT

Parents and farmers in the Mae Chaem valley of Chiang Mai province, Northern Thailand, live at the intersection of multiple local and global streams of land use and child health technology. Based on systematically collected autobiographical oral histories from parents and farmers, as well as interviews and participant observation with land use and child health experts the study considers the relationships between child health and land use change, and particularly the rise of pesticide intensive cash cropping, since the late 1950's. Introductory chapters on theory and methods precede a description of the ethnographic context. Case studies illustrating parent and farmer histories of child health and land use change spanning fifty years are provided. Seven streams of biotechnical expertise are identified, and mini-ethnographies are provided for each including domestic, Buddhist, Muang, spirit, market, national, and Christian.

Results demonstrate the ongoing importance of parents and farmers as decision making agents at the intersection of multiple and competing cultural and biotechnical streams, even where they face efforts by large multinational corporations or other agencies to constrain and monopolize local biotechnical choice. Within the fifty year time period under consideration, the oral histories describe particular child health and land use trends. These locally perceived trends provide challenging perspectives on the relationship between 'development' and child health in Thailand. While children die far less often now than in the past, oral histories suggest that both children and fields now suffer from more kinds of illness, and more often, than before. Analysis also suggests differences in the experience of child health among pesticide and non-pesticide using households.

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...And what is offered? New plants to replace rice.

Cash crops are promoted with the advice that they replace crops grown for food. So all those plants on the list, cabbages, potatoes, rosemary, strawberries, etc. march in. They all come in the role of saviours, palliatives against poverty...

Yes, news of new crops spreads quickly like fire through straw.

Farmers want to be better off and are prepared to adopt the use of chemical fertilizers, herbicides, new agricultural tools and machines which seem to jump up and say, "Hello!" to Karen and every passing Farmer...

Marketing is upbeat. Such really nice companies.

Skilled advertisers can create the illusion of divinity and magic: violet or red banknotes can secure wishes and buy happiness. A new divinity: the money god...

New rice varieties such as those recommended for Karen fields (*hom mali*, I.R. 7, *muei nong*, and other numerous experimental varieties) have marched past the eyes of the Karen long enough for them to come to their own opinions...

New rice varieties are not quite as resistant to pests and give new life to old diseases. So on comes the technology of better management, fertilizers and insecticides with their shiny new, unblemished qualifications.

So impressive. Who would be so presumptuous as to ask for proof and explanations? If someone objects or asks questions they might be accused of being stupid or underdeveloped or the like. All opposition is abandoned.

The road to hell is paved with chemicals and fertilizers...

If development efforts eventually lead to real happiness, then roll on that day and congratulations to those who toil in the name of development.

But if the changes lead to counterfeit happiness which the new divinity, the money god, has dreamed up to lead us all astray, then having forgotten a more basic reality, we are lost.

We, the development workers, are we part of a great merit making exercise? Or are we lost, and will the winds of change soon blow cold?

from *Karen: When the Wind Blows*,
(Pravit Phothiart 1989: p. 375-392)

1.0 Introduction

While many of the interconnected paths between ecology and health are well trodden by medical anthropologists, others are less so. This thesis is an attempt to trace and understand the complexity of historical relationships between local agricultural and child health choices through the accounts of local parents and farmers in Mae Chaem, a rural northern Thai valley (see figure 1.1). These historical relationships include, but go far beyond, the physical consequence of particular ecological or medical practices upon the health of children. Agricultural and child health choices in Mae Chaem involve navigating and choosing among a complex set of ecological and medical experts and expertise. Pravit Phothiart's poem, presented as the pre-text, is relevant in this regard, but particularly so because the question that he poses in his final passage is much the same question that many parents and farmers, along with this thesis, ask of past fifty years of rural Thai experience.

Within the domain of local Thai knowledge, the links between health and land use, medicine and ecology, occur at many levels. Within the narratives of local parents and farmers, and land use and child health experts from the valley, the Thai term *yaa* (ยา) is often used to describe practices and technologies used to affect or remedy the health of both fields and people. The term refers to both the practices and active compounds or

Figure 1.1: Map of Thailand and the North



rituals (medicines) used to treat illness in the body, as in the terms *yaa boran* (old or traditional medicine) or *yaa praachabaan* (pharmaceutical medicine). It is also used to describe more dangerously bio-active compounds such as *yaa septic* (illegal drugs) and the various compounds and practices used to treat agricultural problems as in the terms *yaa kaa maleng* (pesticide, or *yaa* for killing insects) and *yaa kaa yaa* (herbicide, or *yaa* for killing small plants and herbs). Beyond material substances, *yaa* is also a term used, though with less frequency, to describe efficacious ritual practices, such as the making of offerings in rice fields to resolve human illnesses or crop problems¹. As such, the Thai term *yaa* is similar to, but much broader than the English term ‘medicine’, or ‘drug’, as these do not connote the range of substances and practices designed to affect the health and productivity of human and non-human lives.

In this thesis, I use the term biotechnology as a semantic equivalent of the Thai term *yaa*, and use the term biotechnical to refer to those practices or forms of knowledge designed to affect the health or productivity of human and non-human lives.

Biotechnology, as I use the term here, refers to substances or practices that are designed to effect life. Like *yaa*, biotechnologies may include practices that affect the life and health of children (medical biotechnology), or to the life and health of fields (agricultural biotechnology). In using the term, I mean to describe a general category of knowledge and practice that encompasses the usual ‘hi-tech’ connotations, but also includes more locally derived tools and practices (technologies, broadly defined) that are designed to be efficacious in altering or remedying the health of children or fields. While some forms of *yaa*, or biotechnology, are material and rely on the efficacy of modern or traditional Thai chemistry accessed through the medium of pills or ointments, other forms of *yaa* may

rely on the efficacy of particular ritual practices such as the making of offerings, or the efficacy of the Buddha's power accessed through the chanting of scriptural text by monks or other ritual specialists.

Beyond the semantic links between medical and ecological domains provided by local terminology, in Mae Chaem, both medical and ecological experts affiliate themselves with particular traditions of knowledge that I refer to as streams (Barth 1993). The various streams of medicine and ecology available to parents and farmers in Mae Chaem and represented by various valley 'experts' articulate biotechnical practices for affecting the health of children and lands at the same time as they offer diverse ontologies of life, illness and causality. The biotechnical streams of Mae Chaem are detailed in chapters six through thirteen and frequently span the ecological and the medical and draw on influences ranging from the local to the global. While some streams are indigenous and have long histories in the valley, others are relatively recent arrivals. These streams involve networks of practice and affiliation that have changed over time, and particularly since the 1950's with the onset of 'development' in Northern Thailand. Each links parents and farmers, through biotechnical practices and choices, to larger and more global notions of tradition, development and change.

It is also important to note that the systems of biotechnology available to parents and farmers in the valley over the past five decades have advocated particular practices but also particular ways of conceptualizing how life works and what goes wrong when illnesses (in crops or children) occur. Changes in local practices and strategies for affecting the life and health of children and of rice fields put new ontologies into practice

and imply new networks for understanding and responding to the problems of young children and fields.

For reasons explored in chapter three, archival documents regarding northern Thai shifts in health and land use practice are difficult to access and provide only a very partial history of change in the north. In their absence, I trace the history of change through documentation and analysis of first person narratives of land use and child health histories recalled by experts as well as by parents and farmers in the valley. Tracing the health and land use choices remembered by parents and farmers provides a perspective for understanding these larger currents of cultural and developmental change in the valley. As outlined in chapter three, all of my interviews were with either biotechnical experts and practitioners recognized by local parents and farmers, or with men and women who were both parents and farmers themselves. These interviews demonstrate the available cultural streams and provide a historical perspective on the prevalence of particular agricultural and child health choices in Mae Chaem. These local perspectives draw links between parenting and farming and among the various biotechnical streams. They also highlight the role of local agents (especially parents and farmers) in manoeuvring between globally and locally derived medical and ecological recourse. My work is an attempt to understand the diversity of approaches to health, land and technological development in Mae Chaem, and to understand the role of local parents and farmers in moving between them.

Through analysis of the parent-farmer² histories, and the linkages that they reflect, this ethnographic study provides a locally based perspective on relations between, and consequences of, the rise of national and market based child health care and the

concurrent rise of chemically intensive cash crop agriculture in rural northern Thailand since the late 1950's. It also illustrates the persistent and ongoing importance of locally based approaches to child health and land use, particularly as influenced by domestic and kin relationships and the significant decisions that are made away from the official structures of national health care and the commercial market. These results demonstrate the ongoing importance of parents and farmers as decision making agents at the intersection of multiple and competing cultural and biotechnical streams, even where they face efforts by large multinational corporations or other agencies to constrain and monopolize local biotechnical choice.

1.1 The Biotechnical Parade

Upon arrival, my wife Carolyn, our seven year old daughter Nancy and I rented a small teak house in Baan Sanong, part of the district centre of Mae Chaem (see figure 1.2). Our house sat in the middle of a small family compound and down a side street a few minutes walk from the centre of town and within hearing distance of the Chang Khung primary school that my daughter attended. Like the other houses in the compound, and elsewhere in the district centre, ours was built mostly of teak logs and planks with a ground level living area, kitchen, and washroom enclosed with brick and a wooden upper floor sparsely furnished with sleeping mats and mosquito nets. Behind our house was a small family garden, and then the rice fields of the village.

The family whose compound we resided in was composed almost entirely of women. Pii Paa³, a woman in her early forties who soon became a close friend, lived in the house closest to the road with Yai Not, her elderly mother. Pii Paa, her hair cropped short, and face darkened from work in the fields, owned only a few rai⁴ of poor quality land that was far from the village. She spent most of her days working for friends and neighbours as a field labourer, while Yai Not supplemented the family's income by making cigars from local tobacco and pressed banana leaves for sale at market. Pii Fai and Yai Not also took care of Fai, an energetic nine year old niece whose own mother and father were living and working in the provincial capital of Chiang Mai and who lived with her grandmother and aunt so that she could go to school at the nearby primary school. Yai Dang, another elderly woman and friend of Yai Not, lived in her own house on the other side of us, nearest the fields where our neighbours grew rice in the wet season followed by cash crops like tobacco, corn, and shallots. Between our houses and the fields ran a muddy irrigation canal, and a row of small household garden plots where our family, and the other's on our block, grew vegetables for family consumption. Our house had been built for Pii Paa's brother but when we arrived it was no longer in use as he had remarried and moved to his new wife's village further up the valley.

As late as the 1950's, Baan Sanong was a village extending north along the east side of the Mae Chaem river, but since the 1960's, had been enveloped by the growth of the district centre. Within the first month of arriving we were embraced as a novel addition to village life. Our compound was in a lively part of town, surrounded on three sides by other family compounds, including the house of the village head (*kamnaan*). The main road of the district centre ran past a block from our house and was lined with noodle

shops, several small stores selling food, cold beer, and other small goods, a small karaoke bar, and an internet games and email shop run by some local teens. Further down, away from the centre of town, was a dealership selling shiny new pick-up trucks, refrigerators, and other more costly items. From the dealership, one can see the treed compound and golden spires of a large Buddhist monastery and temple school where Carolyn was later recruited to teach English to the village monks.

The November full moon festival of *Loy Kratong*⁵ took place shortly after our arrival in the valley. Almost every occasion in Mae Chaem warrants a parade or procession to accompany it. Funerals, national holidays, annual festivals, the start of school and major rituals to call the rains and present offerings to Buddhist monks all involve a procession of participants through the fields or streets, usually accompanied by loud drums and small cymbals or blaring speakers. At major events like Loy Kratong the various baan compete for the honour of the most impressive float. My family and I, the strange bunch of farang who had moved into Baan Sanong were approached by several of our neighbours and asked to join in the neighborhood Loy Kratong procession. Through the previous week we had watched a massive wood and paper water buffalo, complete with swivelling head and glowing red Christmas light eyes, take shape at the hands of several of the local men in an open area near the rice fields. The construction of the huge water buffalo float involved many of our neighbours eating, laughing, and drinking a great deal of whiskey each afternoon. The daily work party had served as a key venue for the early introduction, explanation and discussion of my work and our presence in the village and I was thrilled to be asked to be part of Baan Sanong efforts to win first prize

in the Loy Kratong parade. In my still halting Thai I happily agreed to take part in the event.

On the appointed night, the full moon of the eleventh lunar month, we were dressed, as best our neighbours could manage, in traditional northern Thai garb and my wife and I were plied with a pre-parade sampling of the best neighbourhood rice whiskies. As darkness fell, we joined the rest of our baan at the edge of town behind our giant water buffalo, now pulled on a wheeled trailer by a large truck. It was festively clothed in sparkling lights and a very loud and crackling set of speakers blasting Thai folk music. Several of the most beautiful young women from the village waved delicately from the back of the float. The younger children followed the buffalo in the back of several more pick-up trucks, and the children were followed in turn by the women of the village walking behind the trucks, and then all of the men.

Our daughter, smiling and giggling, was led away from us, and I was ushered away from my wife to join the rest of the men. The structure of the parade required us to separate and take on roles that would not otherwise be ours. Now separated, we were each taken under the wings of new found friends and neighbours, and subsumed for demonstration as part of a new social animal, that of Baan Sanong. The whole Baan Sanong procession waited on the dark road as other baan took their turns marching through the centre of town. The night was full of the flash and bang of small fireworks. In the night sky, occasional candles, attached to plastic bags to form tiny hot air balloons, floated up into the starry heavens as tiny offerings of light. Other small plastic bags, these filled with clear rice whisky were passed amongst the crowd, with me sharing a drink

through a small straw, then passing it on along with various sweets and fried delicacies offered by my laughing and joking neighbours.

I did my best to be part of the crowd, struggling to understand and reply to questions that were launched at me in rapid fire northern Thai dialect. I was quickly bewildered, leaving my neighbours smiling and encouraging me with overly-generous comments on how well I spoke Thai. When the time for movement finally came, I followed the order of our procession: buffalo, children, women, men. I walked along side the other men of the village, smiling and waving. We entered the centre of town as spectators lined the sidewalks, many of them waving and smiling back at the sight of farang in the midst of the Baan Sanong parade. The crowd moved to the crackling music of our giant electric water buffalo, the volume and energy increasing as we passed the table of judges who would decide on the winner of the competition. Later, after our procession reached the river, we lit the candles and incense on our floating *kratong* offerings and pushed them out into the river to join a sea of other tiny offerings of light: a sparkling homage to an ancient Thai queen⁶ and the waters that a rice based society depend upon. My family and I found each other again and we became part of the crowd of spectators on the sidewalks of Mae Chaem's main street watching other baan follow floats of their own design and dance to their own music. Some of the baan demonstrated their unique ethnic identity as upland minorities through wearing the distinct Karen or Hmong costumes. When we were tired of watching, we turned and explored the brightly lit market stalls that had sprung up to sell everything from children's toys to beauty products and patent medicines, then viewed the entries in the *kratong* competition where villagers had provided their most beautiful constructions of candles, incense, banana

leaves, and flowers for others to appreciate and judge. The noise and light of the festival continued late into the night. My family and I, the three strange farang of Baan Sanong, retreated to our little teak house long before it ended. We could hear the festivities continue as we went to sleep underneath our mosquito nets. The next morning we found out that Baan Sanong's procession had been awarded the winning place by the parade judges. On the banks of the Mae Chaem, like some kind of morning-after hangover, we also found a litter of spent offerings: a tangled mess of burnt candles, wilted flowers, and banana leaves that was complicated by masses of white Styrofoam that had been chosen by many local villagers as a modern substitute for sections of banana tree trunk that more traditionally provide floatation for kratong offerings. The popularity of the modern material had ecological consequences that lay strewn on the river bank like white plastic bits of bone, chewed up and spat out by the night before, a foreshadowing of the global and local complexities that I would find manifest in this small town.

The idea of a parade of modern agricultural and biotechnical options, playing out through the recent history of rural northern Thailand, and the ambiguous nature of resulting consequences, forms the core metaphor of Pravit Phontiarat's poetic narrative, presented as the pre-text to this chapter. Pravit's poem conjures up a parade of modernity and 'development' in northern Thailand that has moved through the lives and landscapes of northern Thai parents and farmers for almost fifty years. His parade depicts the kinds of interconnected knowledges and practices of culture, technology, health and land that are common in the Mae Chaem valley. His ambiguous characters are familiar tropes of rural northern Thailand: the smiling pesticide salesmen, the enthusiastic development agent, the slick but dangerous technologies of scientific management, cash crops,

fertilizers and insecticides, all with their ‘shiny new, unblemished qualifications’, and rural farmers, Karen and Thai, who, over time, watch the carnival of biotechnical strategies parade past, sometimes joining in, sometimes cheering, sometimes staying at the sidelines. The narratives of post-development paraded by Thai academics and activists like Pravit Phontiant themselves compete with narratives of development, particularly developmentalist narratives of an un-romantic and backwards rural Thai past subject to improvement by modern technology and globally oriented development and commerce.

What seems to be missing from Pravit’s account of the parade, and the accounts of change offered by the developmentalists, is what I have tried to introduce through this thesis. While many rural parents and farmers are judging, and often choosing, the offerings of modern state and market oriented technologies of land use and child health, they are also often choosing the alternate biotechnical offerings of other cultural streams: Buddhist monks, village elders, local spirits, and traditional doctors. In this interplay of parade and agency, advertisement and selection, the ability and propensity of local parents and farmers to make alternate choices, as well as the choices that they often make, are at least as significant as the efforts of various biotechnical streams to attract and sometime constrain the attentions and allegiance of local actors.

Much as the various baan of Mae Chaem competed in the loy kratong parade, using a huge water buffalo and exotic farang to impress the crowd and judges, Pravit’s narrative points towards the parade of commercial development and biotechnology displayed before rural farmers by government development agents and pesticide salesmen. But in the loy kratong parade, there was not just one baan displaying its

innovation and beauty, there were many. Put simply, it was a competition to win the approval of those who witnessed it. Likewise, while Pravit focuses on one important entry in the parade of biotechnology, it is not the only entry that vies for the attention and approval of the assembled bystanders. In both cases, local parents and farmers (as well as their strange and temporary farang neighbours) are involved as both participants and bystanders in the parade of biotechnology. Within the contexts of multiple and competing notions of life, illness, and cure, they make choices regarding which to take part in, which to cheer for, and which to let pass by. Also like the *loy kratong* parade, and the morning-after mess on the riversides, the parades of biotechnology, and the biotechnical choices of local actors, have environmental consequences for Mae Chaem and its inhabitants.

1.2 Judging the Parade

Pravit's poem, originally presented in an academic conference setting, ends with a complex and unanswered ethical question which he posed to an audience of fellow Thai development workers:

We, the development workers, are we part of a great merit making exercise? Or are we lost, and will the winds of change soon blow cold?

Pravit asks his questions from within a Thai Buddhist moral cosmology where 'making merit' (*tam bun*) is a central concept synonymous with doing good and benefiting others rather than oneself. Within this moral cosmology, the intention of an action, the action itself, and the consequence of the action, are all considered in determining if merit has been made. In essence, Pravit asks if the developmental change that has been advocated and practiced in Thailand's north over the past fifty years, however well intentioned, has

done 'good'. Has it been a benefit to those receiving it, and conversely, a source of merit for those advocating it? His questioning of development parallels the questions of many other critical late 20th century Thai writers and academics (Sulak 1990, Bowie/ Samruam Singh 1991, Sanitsuda 1995, Arce and Long 2000, Rigg 2001, Delcore 2004 and others) and is part of a deep, subaltern questioning of the benefits of development that extends far beyond Southeast Asia (Escobar 1995). Since the 1997 economic crisis, and especially since the ouster of the Thaksin government in 2006, this questioning of Thailand's development history (and future) has become central to Thai national policy through the notion of a 'sufficiency economy' advanced by the Thai monarchy and the post-Thaksin government, and questioned by many others.

The ideas behind the 'sufficiency economy' are laid out in the government sponsored Thailand Human Development Report 2007 (UNDP 2007). The report positions the 'sufficiency economy' as a national level correction on a path towards development that has led to economic success, but also deep inequality, and high social and environmental costs. The report provides a brief history of Thai development since the 1950's:

Half a century ago, Thailand was still predominantly rural and undeveloped... Development began in the Cold War era with help and encouragement from the United States. In the first stage, which began in the late 1950s and lasted until the 1980s, growth was powered by exports of agricultural products. Investments in infrastructure of ports and roads connected formerly remote area of the country to the world market. Development planners and entrepreneurs combined to bring in new crops, new techniques and new technologies. The second stage, which began in the 1970's inserted Thailand into global chains of industrial production... Foreign investment from the United States swelled in the 1970s, and then was surpassed by much larger flows from East Asia from the mid 1980s onwards...The development plans that helped spark this process prioritized growth, and in their own terms they were spectacularly successful...(p. 21).

As noted by Glassman (2004), and others, the involvement of the United States in Thai development from the 1950's through the 1970's through NGOs and agencies such as USAID was an integral component of American foreign economic and military policy in the region. US-Thai development efforts coincided with a florescence of American ethnographic attention on the Thai village (Sharp and Hanks 1972) and the challenges of changing agricultural practices and increasing rice yields in support of rural development (Moerman 1968, Hanks 1972). However, while the dominant political, economic and military elites of Thailand were firmly in favour of US, and later Japanese, supported 'development' strategies, questions were being asked of the development paradigm, particularly in rural areas

Rising concern over the destructive, divisive, unsustainable and disempowering by-products of growth fuelled debate from the late 1960s onwards. In parts of the country⁷, this discontent prompted support for a communist insurgency for almost 20 years. Other reactions sought solutions that were more peaceful and more local... Growing numbers of NGOs helped to articulate and transmit these new ideas across new national networks... (UNDP 2007:25)

In the 1970's the conflict between capitalist and socialist visions of development led to a polarizing of both the right and left in rural areas (Bowie 1996) as well as more urban areas. Scholarship on Thai development in the late 1970's and early 1980's also saw increasing attention on the relationships between the environment and developmental change in northern Thailand (Geddes 1976, Kundstadter 1978). In the 1980's and 90's environmental concerns, largely related to deforestation, became a critical component of local and national development debates (Hirsch 1997). The Thai economic crisis of 1997 saw the collapse of many of the economic gains realized through the 1980s and 90s and highlighted the environmental and social costs already paid.

While this history of Thai development has occurred nationally, it is felt keenly in places like rural Mae Chaem. Pravit's writing, and the writings of post-development, parallel the kinds of questions that are often asked (and sometimes answered) by the parents and farmers of Mae Chaem in making decisions regarding the diversity of child health and land use practices available to them. Is a particular change good? Does a particular path or stream lead to a better life, or better health? After attempting an understanding of how local parents and farmers have moved between the various biotechnical streams available in Mae Chaem, I seek to inform a similar question, basing my response on historical understandings and judgements articulated by parents and farmers in Mae Chaem, as well as the historical picture provided through analysis of the biotechnical choices recalled through seventy-eight individual parent and farmer interviews⁸ that together reflect fifty years of development and change.

My fieldnotes from March 31, 2004 record an encounter that illustrates the critical remembrance of biotechnical change by parent-farmers in Mae Chaem. The encounter also provides an illustration of the difference it makes to be able to see developmental change from a critical, historical, and locally based perspective. My research assistants and I had made the hot and dusty motorcycle trip to an upland *Pgha'knyaw* (Karen)⁹ village on the slopes of Doi Inthanon at the headwaters of a major stream draining into the Mae Chaem river. On that particular day, many of the men and some of the women of the village were away at the district centre at a set of angry protests being held at the government buildings. The protests were attended by farmers from across the valley who were angry over the low price of shallots or red onions (*hom daeng*), a common Thai staple and cash crop that earned high prices the year before (2003) but whose price had

crashed as a result of a market glut. Many local farmers thought the glut to be the fault of government extension agents who encouraged the farming of shallots too widely¹⁰.

Upon arrival in the little village we made our way to the home of a respected elderly woman, *Mae Ui Muu Weh*, we had come to interview. Like most Karen and Thai homes, hers was raised high on stilts. One of her young granddaughters sat in the shade beneath the house weaving on a small loom a kind of white dress traditionally worn by Pgha'knyaw girls before they are married. Muu Weh joined us under the house and offered us water while we spoke. While Pgha'knyaw was her birth language, her command of the northern Thai dialect (*kham muang*) was strong and, responding to our questions, she compared life now to what she experienced as a mother and farmer fifty years earlier. Muu Weh began making a long list of comparisons between the 1950's when she had raised her first children, and now:

Back then many of our children died. We had no pharmaceutical medicines, only offerings to spirits and *mat muu*¹¹ (tying of wrists). With two pair¹² of chickens and some whiskey we would *suu pii naam* (make offerings to spirits of water) at the place where the water comes out of the mountain. This is still done to strengthen the health of children and for adults. *bun dii, yaa dii* (If the person has merit, the medicine works).

Now the children don't die. They all live and they can go to school, but they are not strong. They get sick easily because they are lazy and the food is not clean. It has too many chemicals in it. We have to soak and wash everything if it comes from the market. In the past we had only a little meat, but the food was clean. Now we have to worry about the food we eat because of chemicals. At the end of the wet season, when everyone sprays the fields, the wind carries the chemicals and the stink is everywhere.

In the past, after planting the rice in the fields we would just weed by hand. It was hard work, but there were not so many weeds then. If birds or rats came, we would just let them eat. It was not a problem. We never had insects that ate our rice. Now we grow rice, but we need money too so we grow red onions or cabbages to sell. There are more insects now than before and we need to use *yaa kaa maleng* (pesticides) and *pui chemi* (chemical

fertilizers) to grow our crops. And now there are far more weeds because of chemical fertilizers so we have to use *yaa kaa yaa* (herbicides) as well.

In the past we would have problems with rats and birds, or our neighbour's pigs, eating the rice, but there were big trees so we knew that the soil would be good. Now there are no big trees left. In the past, some years we didn't have enough to eat. But now outsiders have bought our best *naa* (irrigated wet rice paddy) and our rice isn't enough to eat so we need to have more money to buy rice, so we need to grow more cash crops to sell. Me, I have nothing to sell. We used to have cows, but these have also been sold, a long time ago. Opium was grown up on the mountainside by *khon Muang* (local Thai) and they paid us for weeding and harvesting the poppies. Sometimes our wages would be in opium. Some would smoke it, some would trade it. But now that is all gone.

If there were problems in the rice fields we would *liang pii* (give to the spirits) by ourselves. Sometimes it would work, sometimes not. Even now we do this. Bun dii, yaa dii

Some people make offerings when they plant red onions or cabbage, but some only for rice. In the past there was plenty of food in the forest, fish in the streams, now there isn't. If you go into the forest the police will arrest you [Muu Weh's village is near the boundary of Doi Inthanon National Park]. Not in the past... Now the forest department says they own everything. CARE [an international development NGO] came to help us and planted fruit trees to show this is not the park. Now we worry about not having enough to eat. Now we worry about floods (*naam tuam*) like last year. Now we have lost both our land and our irrigation systems because of the water [the floods, often blamed on deforestation]. Now the women have to stay and grow onions when the men go get jobs in town...

As Muu Weh sat comparing the present to the past, five other villagers, including one man, likely in his 30's, and several young women, two in shirts with the insignia of the local high school, came to see why a farang had come to visit such a small village. When Muu Weh was finished making her comparisons, I asked if she thought one was better than the other. She responded strongly that the past was better (*dii kwa*) than today. The man nodded his head and agreed with her saying that the past was better because the culture and respect of the people was stronger, and because the forest was still in good condition. We then asked Muu Weh's granddaughter, still weaving beside her

grandmother, now with a young child nearby, what she thought was better and her response, equally as strong, though with an added giggle, was, “*daew nii*” : the present. I asked why she thought the present was better, the young woman shrugged her shoulders and responded, “*bo ruu samaigon kha*”, because I don’t know the past.

This encounter crystallizes several of the key issues at stake in establishing a critical and locally informed historical perspective on the ‘development’ of lives and lands in rural Mae Chaem. Complex histories of biotechnical resort and ambiguous past experiences implicate local traditions, the Thai state, NGOs, the allure of the cash economy and modern technological products within local lives. The crux of this encounter seems to be the contrast between the complex of experience based rationale provided by the elderly woman for her judgement of the valley’s biotechnical past, and its contrast with the younger woman’s very different judgement based on an absence of experiential knowledge regarding the past. After considering the diverse array of biotechnical options available in the valley, and the ambiguities of remembered biotechnical experience, the retrospective judgements of valley parents and farmers regarding the success of biotechnical changes in ‘improving life’ provide a fascinating, and challenging lens through which to understand the past, present, and prospective future biotechnical choices of parents and farmers in Mae Chaem.

1.3 Problem Statement

My work in Mae Chaem begins with a set of basic ethnographic questions. What are the various forms of medical and agricultural knowledge and practice current in Mae Chaem? How have the parents and farmers moved between them over time? Are they

linked? If so, then how, by whom, and to what ends? Mae Chaem provides a remarkably diverse case study for understanding the links between biotechnical streams. Through the process of fieldwork in Mae Chaem has become obvious that parents and farmers in Mae Chaem exist at the intersection of a variety of alternately competing and complementary biotechnical experts, treatments, and ideologies as well as an equally wide range of illnesses, land use challenges, and potential sources of personal and social suffering.

The diversity of these biotechnical systems, and their attendant challenges¹³, are rooted in a complexity of local histories, cultures, and ecologies, and within a global exchange of commodities and ideas that, in Southeast Asia, is thousands of years old. Streams of biotechnical knowledge and practice are offered by Buddhist monks, family members, government and NGO extension workers, spirit mediums, pesticide and fertilizer advertisements, hospital physicians, farmer's cooperatives, and multinational agribusiness representatives, to name only a few. The popularity of the child health and land use meanings and practices offered by these medical and ecological streams ebb and flow, overlap and compete for attention within the social, ecological, political-economic, and aesthetic realities of families and individuals. Through fieldwork in the Mae Chaem valley, and through the writing of this thesis, I have struggled to understand and articulate the diversity of biotechnical streams in the valley, how child health and land use are connected differently within them, and how parents and farmers have experienced, responded to and manoeuvred between old and new approaches to medicine and ecology within complex contexts of historical change.

In more theoretical terms, my work is an attempt to understand how local biotechnical worlds¹⁴, as represented through local histories of everyday practice, are

built and adjusted within the contested extension of locally and globally derived biotechnical streams and within changing ecologies of human and agricultural health. I contend that local biotechnical choices (regarding both land use and child health) illustrate the prominent role of local agency in regulating the flow of modernity and tradition within the Mae Chaem valley and in defining local experiences of global biotechnical change. Furthermore, local memories of child health and land use weave together ecology and medicine within complex local histories of biotechnical change. In the final chapters I suggest that oral history can be used to trace and illustrate complex linkages between changing land use practices and changing child health experiences.

Tracing land use and child health choices through the memories and narratives of parents and farmers enables the tracing of patterns over long periods of time. This process of outlining patterns over time leads, in the end, to my reconsideration of Pravit's question and the diversity of responses that Mae Chaem parents and farmers provide to the question of whether or not land use and child health changes in the Mae Chaem valley over the past fifty years, accomplished in the name of 'development', have been for the better. The answers provided by Mae Chaem parents and farmers, and by my own analysis, are ambiguous. Nonetheless, they constitute a grounded and community-based understanding of developmental change in Northern Thailand that reflects the diversity of Mae Chaem's history and highlights the importance of the push and pull between local choices and the forms of biotechnical advocacy current within local contexts.

1.4 Summary of Objectives, Argument and Conclusions

As elaborated in chapter three, and summarized in the concluding chapter, my thesis is based around three primary objectives:

- 1) Understanding the ‘Biotechnical Streams’ that have been available in the Mae Chaem valley over the past fifty years.
- 2) Documenting what parents and farmers say about changes in their own approach to child health and agricultural land use over time.
- 3) Analysing the relationships between changing child health and land use practices over the past fifty years.

In the process of addressing these objectives, I defend and rely upon several premises:

- 1) That there are multiple biotechnical options in Mae Chaem, and that while the parade of biotechnologies has different entries in it today, there were multiple biotechnical options in the past as well. In other words, parents and farmers in Mae Chaem have always been engaged in making choices between biotechnical traditions. This condition is not a recent phenomenon.
- 2) The parade of agricultural technology in Mae Chaem is entwined with the parade of child health technology. These two ‘parades’ are connected to greater or

lesser degrees in all of the biotechnical streams through language, causality, common practitioners, and shared ontologies of practice and effect. In general, each stream or tradition applies its unique technologies, ontologies, and expertise to both child health and agricultural land use. As such, both child health and land use technologies can usefully be discussed as components of larger biotechnical streams.

3) Because of the diversity of biotechnical streams available in Mae Chaem, the continued existence of each stream is dependent on the biotechnical choices made by local parents and farmers. Through advertising and other devices, biotechnical streams and their experts encourage parents and farmers to form particular biotechnical allegiances and avoid others.

4) A defining component of local biotechnical choice is retrospective judgement regarding the efficacy and consequence of past biotechnical choices and changes. These retrospective judgements are influenced by many factors, but are informed by both past experience and embodied values regarding what constitutes good health in children and fields.

Based on these premises, and on data collected through nearly two years of fieldwork and interviews with biotechnical experts and parent-farmers throughout the central Mae Chaem valley, I come to several conclusions:

1) that changes experienced, and choices made in the domain of child health are closely connected to changes experienced and choices made within the domain of land use;

2) that local parents and farmers have been, and continue to be, central and critical agents in manoeuvring between the various biotechnical streams available to them;

3) that, particularly in the domain of agricultural land use, parents and farmers perceive local agency to be increasingly constrained by the results of chemically intensive cash cropping. Both children and fields are seen as enmeshed in a cycle of 'addiction' that is seen locally as a key consequence of modernity that is being reinforced by the practices of multinational corporations advocating particular forms of agriculture and agricultural biotechnology in the valley, and;

4) retrospective judgements of past biotechnical experience in the valley are complex and ambiguous, particularly amongst older generations of parents and farmers. Such retrospective judgements give consideration to material environments of disease, ecology, and economy, but also to mental environments of media, advertisement, and social meaning. Such judgments play a critical role in affecting biotechnical choices and are likely to continue to provide a framework for biotechnical diversity and heterogeneity in Mae Chaem.

1.5 Defining *Biotechnology*

Throughout my work I have insisted on combining notions of child health and land use practices within the notion of biotechnology. As alluded to earlier in this chapter, in using the term biotechnology I mean that child health and land use both refer fundamentally to ways of affecting life, whether the life of human bodies, or the life of rice fields and local ecologies. In this sense, I am not attempting a double-barrelled argument fought on the twin fronts of medicine and ecology. It would be hard to find two more time worn or treacherous battlefields within the domain of anthropology. Instead, I am looking for an easier and less well travelled line of argument, and one that is more in keeping with the northern Thai roots of the ethnographic material. I attempt to shift the debate, and perhaps decentre it, through walking the connections between medical and ecological practice and knowledge.

Dividing health practice and land use into separate domains often seems to actually obscure our ability to see essential relationships between the two. Such artificial separation involves the kind of classificatory and scientific ‘purification’ argued against in Latour’s *We Have Never Been Modern* (1993). Rather than accepting the separation of these biotechnologies into purified domains of medicine and environmental science, I have tried to explicitly recognize the relationships that lurk behind their disciplinary divisions, the sinews of interest and ontology that bind medicine and ecology, and the dynamics that link the health of human bodies and the health of human environments.

I do this, in part, by entangling the relationships between medicine and ecology with the hybridized notion of biotechnology as a primary subject of investigation. To be clear, I do not mean biotechnology in the usual sense of a restricted and mystified techno-

scientific domain, but as a general category that means, literally, *ways of affecting life*. I take it to be a category that can be applied broadly to a variety of cultural streams, and to the life-affecting practices of Buddhist merit making, new concrete latrines, and multinational pesticide campaigns, equally. This recognition of relationships between human health and human ecologies is also at the core of an ecosystem approach to human health (Lebel 2003), an applied perspective that has greatly influenced my own work¹⁵.

I realize that in trying to address both land use and child health, medicine and ecology, I am dealing with two very large domains of anthropology and human experience. This is an ambitious task, but not insurmountable. The interconnected paths between ecology and health are well trodden by medical anthropologists, and I travel the connections between the two in order to approach a single hypothesis: that local biotechnical choices (regarding both land use and child health) are both diverse and connected, and that they illustrate the push and pull between local agency and the enrollment efforts of larger biotechnical actor-networks¹⁶. It is this push and pull that regulates the flow of modernity and tradition and determines the ontological politics and social dynamics of rural ‘development’ in northern Thailand.

1.6 Agency and Constraint

The framework that I use to understand child health and land use change in northern Thailand emphasizes both a diversity of active cultural ‘streams’ (derived from both local and global sources), and the empowered agency of local farmers and parents who make choices within that diversity. Over the past several hundred years, and particularly over the past fifty, northern Thai lives have been lived at the margins of

sweeping global changes. But life at these margins has hardly involved provincial isolation. Northern Thai valleys and villages are not closed entities. Quite the opposite, the highlands of northern Thailand have seen the communication of a remarkable diversity of biotechnical realities, co-existing and overlapping, and these have resulted in a fecundity of systems, ideas and images to fertilize local biotechnical imaginations. Hybrid ontologies and cyborg¹⁷ technologies have cropped up wherever local communities and ecologies have touched the tides of multinational corporate interest and international development. New and culturally syncretic ways of seeing and acting in the world blend Buddhist laws with transgenic crop engineering, village spirits with pharmaceutical companies, pesticide advertisements with infectious diseases and methamphetamine addictions.

Mae Chaem is not some simple rural locale, but is a complex ‘glocality’ where parents and farmers live and make decisions within a cultural space that offers numerous systems of land use and child health, each with its own resident experts and representatives, and each offering its own strategies and technologies for affecting life. Global and local forms of knowledge and connection combine and interpenetrate within the cultural space of Mae Chaem. This diversity of globally and locally derived systems gives rise to a complex biotechnical and ideological ‘marketplace’ where the enrolment, advertising, and extension efforts of various biotechnical systems come face to face with the empowered local agency of parents and farmers trying to decide how best to ensure the health of their children and the success of their fields within the complexity of modern life in northern Thailand.

The various systems of biotechnology available and advocated in the valley over the past five decades include particular bio-technologies but also particular bio-ontologies. Changes within this larger field seem to imply shifts, not only in local strategies for affecting life, but also in local understandings of what life is. In the absence of documented historical sources, I turned to interviews with local biotechnical experts, and systematic recording of accounts of child health and land use practice narrated in interviews with parents and farmers to trace shifts in land use and child health practice. The field of broader biotechnical change influences not only the everyday living of lives, but also much grander notions of what life is and how it works in Mae Chaem.

Despite this emphasis on agency and change, and no matter the options presented by modern experience, parents and farmers still face age old existential constants. For all its joy and happiness, growth and vibrancy, life is also illness, suffering, adversity, loss, and, inevitably, death. Life poses existential challenges that parents and farmers of Mae Chaem face in both maintaining the health of their fields, and their children. Regardless of changes wrought by the opium trade, the arrival of international NGO's and Christian missionaries, the building of nations, schools, hospitals, and research stations, or even the pressures and promises of multinational flows of commodity and capital, children still get sick and sometimes die, crops still fail, and farmers and parents still try to make a good life for themselves and their families. My work is an attempt to shed light on the dynamics of local agency within a frame of bio-technical change subject to a constant flux and flow of indigenous and introduced biotechnical knowledge and practice. Both knowledges regarding life (along with the technologies to affect it), and the experiences

of life itself, change together within this frame, but the fact that life is unpredictable and sometimes difficult does not.

1.7 Children, Fields, Illness and Health in Mae Chaem

In every stream of biotechnical practice available in Mae Chaem, small children are seen to occupy a special position in the world that requires special treatment¹⁸. They are not simply small adults, but are a unique kind of human at a special stage of development attendant with unique ontological relationships and unique physiologies (Mulholland 1987). The United Nations Environment Program (UNEP 2004), consistent with biomedical understandings, recognizes children as more vulnerable than adults to environmental health concerns such as nutritional issues and pesticide exposure because of small body size (small doses of chemicals may have greater proportional effect), unique pathways of exposure (breast milk, play) and because of the special nutritional requirements for a child's growth and development.¹⁹ For Buddhist monks, small children may be understood to enter the world clean and fresh (*lai duang sa'aat*) and so their health and bodily states are less likely to be conditioned by the accrual of merit and demerit (*bun/bap*)²⁰. For Maw Muang, young children are still closely tied to the spirit worlds from which they come and are subject to the obligations owing to *puu taen yai taen*, the spirit ancestors who take care of children before their birth. For the pharmacist or medicine seller, small children are special customers targeted with a range of products specially designed for young palettes and ranging from infant formulas and vitamin charged milk products to especially sweet syrups and chewable tablets for common childhood ills. Within the domestic domain, children's khwan is seen as particularly

fragile. Within the Christian stream, children's innocence puts them closer to the spirit world of God and heaven²¹, and for the spirit medium, children are especially likely to be bothered by spirits, or themselves be the spirits of past ancestors, and require particular offerings and treatment.

The children of Mae Chaem occupy a particular position within local cosmologies of life. As such, they are seen to be subject to particular kinds of illness, and particular kinds of biotechnical practice. In the same way that parents find themselves responsible for coaxing the unpredictable agency of children's health towards wellness, farmers also find themselves responsible for coaxing the unpredictability of fields towards the production of rice and other crops. Over the past fifty years, the kinds of child illnesses that parents report, the rates at which they report children getting sick, and the kinds of expertise engaged by parents when child illness occurs, have all changed. Likewise, there have been concurrent changes in the kinds of problems encountered in the fields, the frequency of their occurrence, and the kinds of products and practices used to resolve agricultural problems. These changes are made visible through the parent-farmer narratives. The memories of parents and farmers reflect a changing material ecology in the valley: changing nutrition, changing exposure to pollutants, changing access to clean food or water. They also reflect a changing mental ecology in the valley: changing access to biomedical doctors, changing access to commercial products, changing exposure to media and advertising.

1.8 Chapter Outline

I have organized the chapters of this thesis into three sections following the progression of my argument: an introduction to the context of the work and the methods (chapters 1,2,3,4); case studies from parents and farmers and brief ethnographies of the different biotechnological streams in Mae Chaem (chapters 5 through 13); and an analysis, discussion and conclusion (chapters 14 and 15). The first section consists of four chapters including the current introduction, chapters on theory and methods, and a chapter on the ethnographic contexts of my work. I use Chapter Two to highlight some of the key literature, as well as theoretical connections. Chapter four provides a lengthy ethnographic context and historical background for understanding the later chapters. It introduces with broad strokes the valley of Mae Chaem and its place within Thailand through reference to history and ethnography, as well as material drawn from other disciplines.

The second section consists of nine related chapters beginning with a series of case studies based on the child health and land use histories provided by parents and farmers in Mae Chaem. Following these case studies, I explore the variety of child health and land use options available in Mae Chaem over the past fifty years. I discuss these as biotechnical streams that engage particular networks of social and technological relationship in bringing child health and land use solutions to Mae Chaem. Each of the chapters included in this section provides a brief ethnography of a particular stream of biotechnology as practiced in the valley and based on interviews with local experts and participant observation in the field. It is an attempt to portray, through narratives,

diagrams, accounts, and analysis, both the diversity of the biotechnical stream, and the linking of child health and land use concerns and expertise within them. In these chapters I elaborate on what the locally available biotechnical streams are, how they differently represent illness and suffering, its causation, and treatment, and how these streams, and the actors associated with them, have changed over time. The seven streams that I present are based on thematic analysis of parent and farmer reports regarding their own practices. They are represented by various biotechnical authorities: Buddhist monks, local spirit mediums, Thai and NGO development and health extension agents, traditional ritual and herbal doctors, Christian missionaries and the commercial presence of multinational corporations.

The final section moves the discussion from an ethnography of biotechnical systems in the valley towards an analysis of how and why parents and farmers have moved between them over the past fifty years, and what consequence this has had for local experiences of child health and land use. The chapters of this section use both quantitative and qualitative approaches to understanding the oral histories of land use and child health provided through the parent and farmer interviews in order to outline changes over time. This involves understanding past child health and land use practices and concerns based on the reports of parents and farmers, as well as an exploration of some of the common motivations for selecting between, or combining, particular biotechnical streams in order to deal with particular child health and land use challenges at particular times, as reported by parents and farmers. The reconstruction of child health and land use choices runs from 1952 to 2002 and is an attempt to systematically combine individual narratives into a larger and more collective oral historical picture of

biotechnical change in the valley; a picture through which particular trends can be mapped over time.

The final chapter, Chapter 14, ties together and summarizes the arguments already made and suggests conclusions and recommendations that may be drawn from them. These are informed by my own analysis as well as the critiques and comments received from older farmers and parents who participated in the research and who reviewed and commented on a preliminary summary of the research findings. Throughout, I have tried to juxtapose academic voice with more reflexive, personal and experience-near narratives stemming from field documents so as to articulate both a convincing and defensible argument, and an ethnographic sensitivity to the lived worlds in which child health and land use decision are situated.

‘Thinking’ Anthropology: Theoretical Background

2.0 ‘Thinking’ Anthropology: Theoretical Background

Issues of cultural complexity and diversity have long held a central place in the anthropology of Southeast Asia. Charles Keyes notes that while even the earliest centres of Southeast Asian power were ‘Indianized’ states, they still involved a “welding together of indigenous and Indian conceptions of potency” (Keyes 1979: 66). This age old ‘welding together’ of successive traditions within local Southeast Asian lives has proven to be fertile ground for the anthropological imagination. Theories of culture that allow us to comprehend the multiple systems of meaning at work in Southeast Asia, and that incorporate the richness of both hybrid complexity and individual diversity has been a central, if elusive, goal for decades (Leach 1954, Spiro 1967, Tambiah 1970, Golomb 1985, Scott 1985, Barth 1993, Tsing 2005) and it is a goal that has only increased in value as changes in technology, politics, and commerce all lead towards an increasingly connected future. The highlands of Southeast Asia, northern Thailand included, are at the crossroads of an age-old transnational discourse regarding political, religious, and medical worlds and are probably a better place than most to approach issues of globalization, cultural complexity and hybridity.

The challenge of understanding complexity within today’s creolised, hybrid cultural flows is compounded (and confounded) by the same networks of technology, media and science that make them so important. Tracking the flow of culture through

technologically mediated networks is one of the chief theoretical and methodological challenges for contemporary anthropology (Appadurai 1996, Giddens 1990, Hannerz 1992). At the centre of many of these debates is the role of local agency and the ability of individuals to select from and localize various aspects of global and technological knowledge, accessed through advertising, education, travel, the internet, or other means, within their own lives and experiences. The vast majority of these efforts have focussed on urban and high tech 'centres', but understanding the complexity of competing cultural flows is as important (and as interesting) at the rural and agricultural 'margins'.

It is, however, misleading to think that this focus on cultural complexity and the role of local agency in manoeuvring within it is something new to the anthropology of upland Southeast Asia. The lineage of such issues reaches at least as far back as Leach's (1954) *Political Systems of Highland Burma*. At that very different time, and in with very different tone, Leach still captures the same essence:

...the overall process of structural change comes about through the manipulation of...alternatives as a means of social advancement. Every individual of a society, each in his own interest, endeavours to exploit the situation as he perceives it and in so doing the collective of individuals alters the society itself. (Leach 1954: 8)

Leach's famous work is a conceptual touchstone for understanding the complexity of identity and culture in upland SE Asia. But, While Leach argues that Kachin societies oscillated between two possible political models gumlao and Shan, even in late colonial Burma there were more models to choose from than that. Leach himself represented a British colonial model of identity and culture that existed within Kachin lives at the time of his writing.

Since Leach's work in upper Burma, the past fifty years have brought ever increasing diversity to the hills of northern Thailand. In Mae Chaem, life is rife with multiple systems of meaning and complex ecological and cultural histories. Within this context, the aspirations of local actors play out within the dynamics of multiple, ambiguous, and intersecting cultural systems. Through ongoing trade, communication and migration, northern Thai communities have been and continue to be in constant contact with new and more global flows of cultural discourse. Local agents combine these multiple streams of influence, and in the process build syncretic worlds of interpenetrating, enmeshed, and often conflicting cultural meanings. These local cultural worlds enable individuals to bring the dynamic flexibility of diverse (and ambiguous) meanings and responses into play in order to respond to challenging lives, ecologies and histories and in order to achieve desired ends of health, wealth, and happiness. These local worlds fill larger, more impersonal systems of illness, ecology, and technological change with individual voices and both the pragmatics and aesthetics of local choice.

In my attempts to understand the flow of culture and change in northern Thailand I have drawn on two central theoretical approaches. In emphasizing the role of local agencies and criteria of choice, I am inspired, in particular, by Fredrick Barth's articulation of ethnographic complexity in *Balinese Worlds* (1993), in which he proposes an 'anthropology of knowledge' that traces the influence of multiple cultural streams upon the creation of individual cultural worlds in order to understand the complexity and diversity of cultural practice in modern Bali. I owe another large debt to writers on actor-network theory (ANT) including Bruno Latour, Michelle Callon and John Law. Actor-network theorists like these have provided a framework for understanding what actor-

networks (a roughly analogous concept to Barth's cultural streams) might consist of, and how ideas, technologies and cultures both move through and constitute them. They argue for an understanding of cultural complexity where humans and non-humans (chemicals, advertisements, technologies) both participate as 'actants' that co-determine the shape and extent of cultural flow.

The combination of ANT and Barthian 'streams' accommodates a diversity of strong, selective local agents and a complexity of cooperating and competing actor-networks and cultural streams. By bringing actor-network theory into contact with Barth's anthropology of knowledge, I have tried to combine the strong (but often mechanical) sense of local-global and human-nonhuman connection and interaction within ANT with the strong sense of flexibility with the sense of creative local agency that exists in Barth's approach. For me, this theoretical perspective provides a more useful and flexible lens for understanding the biotechnical complexity of Mae Chaem than other lenses that might focus more on the semiotics or political-economics of the valley. Where I have needed them, I have also drawn on other theoretical threads current in the anthropological literature: ideas of biopower (Foucault 1972 and 1973), issues of local resistance and the making of authoritative medical knowledge (Lock and Kaufert 1998), as well as ideas of knowledge and practice drawn from Bourdieu's practice theory (1977) and of globalization, modernity and structuration drawn from Giddens' (1990, 1991). My approach highlights local actors (both human and non-human) as the primary selective agents involved in building local biotechnical worlds, both medical and ecological, according to pragmatic and aesthetic factors²². From this perspective, people build and dwell²³ within their cultural worlds while constantly interacting with local

environments (non-human actors) and globally influenced socio-cultural, political-economic, and ecological transformations, including the frequently competing (and sometimes cooperating) ‘enrolment’ efforts of both old and new systems of health and land-related practice.

In considering old and new systems together, and maintaining my focus firmly on child health and land use change, contemporary northern Thai medical and ecological actants can be understood to include local doctors of biotechnical medicine, village spirit doctors, the various local spirits themselves, Buddhist monks, powerful scriptures and charms (*phrá*), pharmaceutical advertisements, international rice markets, the symbolic and chemical power of heroin, herbal medicines, and crystal meth²⁴, agroforestry research scientists, anti-retroviral drugs, bottles of tiger balm, crying children, herbicide and pesticide vendors, health, ecology and ‘drug’ related NGO programs, seasonal droughts, climate change, soil erosion, malaria carrying mosquitos, bank officials, water access, the King of Thailand, community development officials, and Christian missionaries. This is a complex and diverse list of players (and an intentionally long sentence), but the linked medical and ecological worlds of Thai villagers in Mae Chàem and Mae Hài Tây include all of these, and many more. Most of these are dealt with, to greater or lesser extent, in later chapters, and in terms of how they relate to streams of child health and land use practice. Sorting out the most significant of these actors, and understanding how they are linked, and alternately listened to, ignored, and rejected within northern Thai lives has made up the bulk of my research.

2.1 Non-Hegemonic Glocality and the Consequences of Modernity

With the increased speed and efficiency of global transport and technological communication, what Giddens' (1990) calls decreased time-space distantiation, the actors that make up local Thai communities continue to build culturally meaningful knowledge and effective systems of practice from dynamic experiences and ecologies. While Giddens argues that the speed and rapidity of current communication and transport has created a globalized world with radically different systems of social relations than existed previously, I side with Bruno Latour (1993) and others who hold that broad processes of globalization and modernization are things that humanity in general, and the social sciences in particular, have been dealing with for hundreds (and thousands) of years.

While the issue of 'radical disjuncture' between the modern and the traditional is not a major theme in my own work, it is a critical subtext²⁵. I would argue that, at least in northern Thailand, there has been no essential or radical disjuncture between the modern and global, and the pre-modern and local. The fundamental processes that shaped northern Thai societies, actor-networks, and power relations in the past were fundamentally conditioned by cultural complexity and antique forms of globalization. These same fundamental processes are still at the core of social, cultural, technological and ecological dynamics today. Northern Thai and Pgha'knyaw continue to build cultural worlds and make decisions based on an increasing range of indigenous, Thai and foreign-derived systems of meaning. Lived experience is, as it likely always has been, a process of co-synthesis: turning the chaotic dynamism of embodied reality (and disembodied spirits), together with often contradictory and ambiguous ideas of nature and self, into culturally understandable worlds of knowledge, identity, and practice.

This perspective challenges the unique and privileged position of ‘modern’ technology and, with it, notions of modernity and development more generally. Mae Chaem has been at the margins of ‘modern’ systems since the 1950’s, but as such, it is a place where a particularly diverse set of global and local systems of knowledge and practice overlap and compete, but where none holds a particularly dominant position. At least seven distinct, but related medical and land use traditions exist side by side in the valley stemming from traditions of Buddhism, spirit belief, biomedical science, Christian missionization, national development policy, the marketing of multinational corporations and the interventions of NGOs.

Within this diversity, the relative power and influence of the various biotechnical streams ebb and flow within local lives. As such, I consider Mae Chaem to be what might be called a non-hegemonic glocality. Its position at the margins of global flows maximizes the diversity of cultural streams while minimizing the hegemonic tendencies often exhibited closer to the centers of ‘modern’ power. This position allows local parent-farmer decisions and agency to play a pronounced role within the diverse fields of knowledge created by the competition of so many systems of health and ecology. Within this multiplicity of forms, ecology and medicine, land use and child health, are fundamentally and experientially connected domains, not only at the level of parents and farmers, but also at larger and smaller scales.

In order to understand how this diversity may be structured, we need to listen to how local actors move within and narrate their relationships to various cultural streams, in other words, how these relationships are received and understood within the practice of living and coping with issues of child health and land use. In Barth’s (1993) terms:

The context in which any act belongs is contingent and depends on the (probably various) constructions that actors and participants place on it. A major task of ethnography must be to discover and give an account of how acts are placed in these *particular* contexts, frameworks, or worlds in which people themselves embed those acts through their interpretations of them. Only by modeling our descriptions in a way that captures these connections can we secure the meanings of acts, and understand the processes whereby both lives are shaped and ideas and knowledge are reproduced and changed...(Barth 1993:171-72).

Issues of perceived efficacy, access, and cost are wrapped up with issues of loyalty to kin, land, religion, and nation, as well as with the moral and aesthetic values of each choice. It is these kinds of issues that colour the experience of history at the same time as the experience of history in turn shapes them. These local and everyday biotechnical choices constitute the building of cultural worlds from the complex historical, social and ecological realities within which we all, as humans, manoeuvre.²⁶

2.2 Biotechnical Streams: Linking Health and Ecology

As highlighted in the first chapter, I use the idea of biotechnical streams to talk about health practices and land use practices that are linked within particular cultural streams, or actor-networks. I argue that within the complex and dynamic contexts of northern Thailand, shifting between local medical and ecological streams is as much about choosing cultural worlds as it is about choosing medical or land use technologies²⁷. Various kinds of knowledge and practice regarding child health and land use come bundled together in particular ways. As such, choices regarding child health knowledge and practice are tied, at least loosely, to choices regarding local ecological knowledge and ecological practice. Combining, for analytic purposes, particular kinds of health and land use practices within the notion of biotechnical streams, allows us to see patterns and

relationships that are otherwise obscured when health and land use are divided into separate domains.

Understanding the streams of expert biotechnology that feed into the various local worlds of child health and land use in Mae Chaem, and how they interact, ally, and compete with each other, is a necessary first step into the strange and hybrid waters of local biotechnical choice²⁸. Taking this step allows us to trace the flow of particular streams through local understandings and networks of expertise towards the roots of perceived biotechnical authority and efficacy. This process of tracing requires movement from the identification of local biotechnical strategies towards understanding the expert networks that represent biotechnical authority and then back towards understanding how and why local actors (parents and farmers) manoeuvre between the various representatives of biotechnical authority over time. This same process can be used whether the biotechnical authority is linked to the workings of global capital and technoscience, in the ultimate realities of religious experience, or within the indigenous authorities of social relation and bodily experience.

The biotechnical choices of Mae Chaem are not simply about responding to suffering and illness by choosing between various biotechnical resorts and practices which may or may not prove effective. Parents and farmers are not simply dealing with issues of rationality and pragmatic efficiency, but also with issues of aesthetics, cultural affiliation, and identity making. Biotechnical choices involve navigating between paradigms, between systems of knowledge, expertise and authority that embody competing biopowers (Foucault 1978). That is, biotechnical streams actually condition and define the experience of suffering and illness itself while simultaneously providing

strategies and resorts for dealing with the problems thereby identified. However, within a biotechnical context as diverse as exists in Mae Chaem, the biopowers of most of the biotechnical streams are anything but complete. Instead of providing an ultimate definition of suffering and illness, each provides only a possible definition. In making choices between biotechnical streams, the pragmatics of economy and result do matter, but so do the aesthetics of identity and experience. And the choices themselves then condition future choices and possibilities. They incrementally change biotechnical worlds and open them up, or close them off, to new possibilities. As Barth (1993) outlines, cultural knowledge is ultimately affected by individual experience, but so does it help shape that experience:

The accretions of experience- molded by premises, tacit assumptions, and cultural imagery variably shared in a group- also play an essential role in reproducing and marginally changing the cultural stock of knowledge, and thereby in turn affect the purposes, plans, and intentions that actors embrace and employ to shape their behaviour...But this is a very complex connection; and the exploration and modeling of the whole circuit I envisage as an “anthropology of knowledge”, which still largely remains to be developed. (Barth 1993: 160)

2.3 Streams and ANTs

Throughout my writing, I argue that the ecological, social, and biotechnical contexts of land use and child health, including perceived problems and the practices available to address them, have multiplied and changed over the past fifty years. Parent-farmer interactions with diverse streams, or expert traditions of biotechnology that produce a plethora of localized and hybrid cultural forms and practices, all claiming to be geared to address the existential challenges of life in rural Thailand. I approach each of the various streams as a network of local and global actors, each representing and encoding a particular ontology of the world. Many of the streams are connected through

shared knowledge, experts, and technologies, sometimes combining and working together, at other times competing and opposing. All exist in the Mae Chaem valley through varying degrees of external (global) and internal (local) support.

Sperber states that, “culture is made up, first and foremost, of...contagious ideas” (1996:1). The same might be said of cultural streams and actor-networks. Each stream is, fundamentally, composed of linked technologies and ontologies, humans and things. This is an actor-network. Central to the workings of actor-network theory (ANT) is the idea that actor-networks have key representatives, referred to as obligatory passage points (OPPs), through which other actors (or actants, if non-human) are enrolled into actor-networks through devices of *interessement* (Callon 1986). These are the lures that make an actor-network appealing, or in Sperber’s terms, contagious. Within the heterogeneous biotechnical environment of northern Thailand there are multiple biotechnical authorities, each with their own OPPs and their own devices of *interessement*. These biotechnical OPPs and their devices are doorways to biotechnical power and local parents/farmers manoeuvre between these according to personal goals, desires, and abilities.

Each stream or actor-network is fundamentally a corporate group of actants that depends upon attracting new generations of adherents in order to maintain its representatives and strengthen its existence in the valley over time. Alternately competing and complementary cultural streams project themselves via their actor-networks within the existential dramas of rural life. These actor-networks are made up of interconnected institutions, people, ideas and technologies that are active within Mae Chaem through various human and non-human representatives. These range from field spirits to pesticides and from Mae Chaem hospital staff to local monks, herbalists, and spirit

mediums. I identify seven actor-networks, each effectively comprising a distinct medical or ecological tradition predicated on (at least partially) shared ontologies, that is, distinct sets of ideas regarding what things exist in the world and how these things are related to each other. From an ANT perspective, it is not only humans that act as agents within streams of health and ecology. Non-human actors exist at all levels of all networks from the supra-human (crop markets, weather patterns), through the sub-human (pharmaceutical drug interactions, bodily processes, ritual effects). This is analogous with indigenous Thai views of health, and the recognition that larger forces from powerful spirits to the wheel of karma, and small forces such as bodily imbalances, are all implicated in health, wealth, and life.

The persistence and spread of an actor-network's particular ontology allows it to define 'land' and 'body', the maladies that affect these, and the cures that may discipline those maladies. In short, the spread of ideas and practices in Mae Chaem allows for the historical creation and exercise of what Foucault (and many others since him) would call *biopower*, within the twin spheres of medicine and ecology. However, because of the diversity of medical and ecological actor-networks, and the relative lack of hegemony, they effectively comprise competing forms of biopower that parent-farmers then maneuver between. Each tradition is, at some level, in a battle, trying to win the hearts and minds of the average Mae Chaem citizen, while the parent-farmers of Mae Chaem live at the intersection of their competing biopowers and respond to them according to local goals of health, wealth and happiness. Over the past fifty years people in Mae Chaem have entertained the actants of intersecting streams and actor-networks. In turn, they have built their own worlds of child health and land use from the most promising

possibilities offered to them: powerful pharmaceuticals, malevolent field spirits, Buddhist merit and demerit, multinational press campaigns, deadly pesticides, magic words, rain making, drought predictions, genetically modified rice, and many others.

The attention paid to these by local agents is fundamental to determining local histories of biotechnical knowledge and practice as well as the success or failure of various streams within in the valley. Parents and farmers either choose from the options around them or else attempt to manoeuvre between them. Each actor-network offers up a vision of health, wealth, and happiness, each has its own representatives and experts, and each forms an (in)distinct stream of biotechnical knowledge, practice, and relations. It is these streams that etch the biotechnical ethnoscape of the valley, carving unique topographies of power and relation. Each stream offers a different sense of what matters in the world, and a different path to get there. And at the centre of these multiple streams of curing, and multiple notions of health and land use problems, are parents and farmers. They are the central agents in Mae Chaem and it is fundamentally within their lives that decisions are made, from their experiences that individual cultural worlds are built, and through their hands that the valley's biotechnologies change.

At its core, my research can be seen as an inquiry into the twin processes of globalization and localization as experienced through northern Thai agency. How does knowledge and choice help shape the flow of local and global traditions within lived practices of health, ecology, and 'development' in northern Thailand? How have local agents maneuvered between the various systems of child health and land use practice over the past fifty years, and what have these choices meant? Addressing these issues has involved taking an interest in the various sources of medical and ecological knowledge

available, the ways that parents and farmers have put these into practice, and the difference that these choices seem to have made to the experience of life and illness in the valley. This approach locates my research firmly within the phenomenological study of cultural globalization and localization, as well as the emerging field of social studies in technology and science (SSTS). It also places a strong emphasis on the evaluation of the material, ecological, and cultural consequences of local choices within complex cultural flows.

2.4 On Validity: Remembering Development and its Discontents

Jonathon Rigg (1997), writing on the tradition of Southeast Asian post-developmentalism to which Pravit Phothiart and others belong, has argued that negative views regarding the advantages of development and modern technology tend not to revolve around evidence, but instead around unduly nostalgic, romantic and unrealistic assessments of an actually quite difficult and unpleasant Southeast Asian past. To be sure, many post-development writers in Thailand and elsewhere in Southeast Asia do argue from a particular and strongly held ideological position. However, this, in itself, does not mean that their arguments are without warrant and I would argue that, based on the results of my own work, Rigg dismisses them too easily. Grounded in lifetimes of experience and local history, many of the parents and farmers of Mae Chaem see the benefits of modernity as anything but clear. If anyone can argue grounding in the particulars of the Southeast Asian past, it is likely them.

Taken together, the accounts of most local parents and farmers, and those of Thai post-development writers, strike a dissonant (and dissident) chord against much simpler and less ambiguous notions of rural tradition and modern development. As shown in later

chapters, local narratives of child health and land use in Mae Chaem, while diverse, resonate with the complex and ambiguous images of rural life common to critical Thai writing on development issues. The critical question then becomes whether or not these ambiguous local assessments of historic change are biased by nostalgic, romantic, and unrealistic perceptions of the past. At the level of image and narrative, they strike counter-image and counter-narrative. But can the memories, critiques, and understandings of local parents and farmers (in short, their oral histories), be regarded as a reasonable account of actual health and land use change over time?

One of the key problems in this debate, and in my thesis, is that the past is not directly accessible to academics. Nor is it accessible to younger people who have not lived through the history of biotechnical experience in a particular locality. We can only understand past activities as mediated by memory, media or by archival records. This is complicated by the fact that knowledge encoded in written accounts of the past is almost always privileged by academics over the knowledge encoded in oral accounts of the past²⁹. Both inside and outside anthropology literate academics tend to privilege particular forms of historic data (such as written archival material) over other forms of historic data (such as remembered and orally recounted histories).

Where the memories of parents and farmers confirm written documents then they are easy to accept. But what do we do when the memories and assessments of parents and farmers contradict written documents, or in the absence of written documents, contradict deeply entrenched notions of 'modern' society? It is tempting to avoid these difficult questions. From the perspective of narrative, what people say about their past, how they remember and reconstruct it, is more important than what actually happened. It is based

on current memories and reconstructions that current decisions and choices are made, not on what 'actually' happened. On this basis we can choose to let the sleeping dog lie, but this seems to me to be a somewhat unhappy compromise. We still have the problem of why parents and farmers in Mae Chaem remember the past as a better place than the present, and are left with the disturbing possibility that they may be right.

To defend the privileges of western developmentalism we can, in the absence of documentary evidence, easily dismiss the memories of parents and farmers as based on nostalgia rather than reality, as Riggs does the writing of Thai post-development scholars. However, I argue that careful anthropological research and analysis of remembered life experiences can inform this quandary and provide insight into both past events and present reconstructions of those events. In suggesting this epistemological possibility, I do not mean to suggest that parents and farmers are not situated political actors or that memory cultures are not often flexible and subjective. However, I do mean to suggest that ethnographic research, carefully applied and using consistent methods, can be used to collect oral histories and understand them in a way that focuses on what oral histories say about their referent (that is, the remembered past), rather than on how they relate as narrative or discourse to the particular positioning of the narrator. I argue that at the level of accurate reflection of actual changes in the experience of sickness (in rice or children), living histories of memory and narrative can be more than subjective image, narrative and discourse. This remains true in the presence or absence of documentary evidence that can support or contradict oral accounts.

As such, I would maintain that the memories of Mae Chaem's parents and farmers can be analysed as narratives of meaning, but can also be analysed to trace local

experiences of health and land use change into the past with a reasonable expectation of historical accuracy. In making this argument, I am not allying myself with some form of naïve ethnographic positivism. Discourse and subjectivity are very real and important factors, but oral history can involve more than meaning and identity. Ethnographic interviews, when designed to do so, can involve the participant and the ethnographer, not only in telling stories, but in telling stories about the experience of particular things. By collecting many people's experiences of many particular things together, remembered and orated histories can provide a powerful tool for understanding and tracing how particular things, in this case crop problems and sick children, have changed over time.

2.5 Other Studies

Ronald Renard (2001) provides a notable historical analysis of northern Thai development where its evaluation is based on the standards of that development. Renard's work is fundamentally a historical analysis of Thai and international NGO funded development programs in the north with particular emphasis on opium eradication and crop replacement. Renard uses historical documents to evaluate the success of development in the north using measures of success that are closely linked to the kinds of information that development agencies were interested in collecting at the time (opium production rates, child mortality, income levels, etc.). What is missing from his work is the wealth of information regarding changes in other values (child morbidity, incidence of pesticide use) that exists in the minds, memories, and stories of local people. As a result, it is not surprising that Renard's evaluation of development in northern Thailand, using the measures and values enshrined by that development, sees the results of development in Thailand in a largely positive light. A different perspective is gained

through paying attention to local histories of change. While I have used the sparse and selective archival documents that are available for Mae Chaem where possible, I situate my own work as a backwards glance that is largely based on a systematic collection and analysis of the rich local memories and histories of Mae Chaem parents and farmers.

The work of Sanitsuda Ekachai, a popular journalist with the national Thai English language daily, *The Bangkok Post*, provides one perspective on Mae Chaem:

What would a traditional rice-growing Thai community have been like before modernism set in? What was it that we once used to be? Answers may be found at Mae Jaem, a valley community hidden away behind Doi Inthanon, the country's highest peak. Protected by its isolation, this district maintains much of the system of beliefs and traditions that were once universal among Thais. It holds a glimpse of what we once held dear and what we have lost in our frantic search for something 'better'... (Sanitsuda 1994: 02)

The above quote began the first of a series of newspaper editorials published in the early 1990's. The series of articles on Mae Chaem (*Mae Jaem* in Sanitsuda's transliteration) were later published by a Bangkok based NGO, the Thai Development Support Committee. Sanitsuda is one of Thailand's foremost activist-journalists and her articles comprise one of the few extended commentaries on the Mae Chaem valley. In Sanitsuda's words, *Baan Paa Daed*, a village just outside Mae Chaem's district centre, is "Thailand's Shangri-La...embraced by mountains and crisscrossed by running brooks" (*ibid*: 13), but the valley becomes a gloss not only for the vibrant potential of traditional Thai culture, but also for the tragic consequences of modern change. Mae Chaem is, "more than a magnifying glass of an idyllic past," (*ibid*: 08) it is also where:

we see a microcosm of the effects of development and modernisation on local communities in Thailand. The villagers are struggling to maintain the values and traditions that remain meaningful to them as they face real economic hardship from lifestyles encouraged or imposed upon them from the outside...The dilemma they now face is how to resist the economic

exploitation and materialistic values that threaten their existence while, at the same time, responding to the new needs and potentials arising from within their own communities. (*ibid: xii*).

In Mae Chaem, Sanitsuda's romantic and activist gaze sees the vestiges of a coherent and balanced cultural and ecological system that was once shared by all Thais, but that has been damaged by connections to a homogenizing and capitalist world outside. Mae Chaem is, "a replay of an old story that the government has never learned from: how 'development' undermines and finally destroys a self sustaining community" (*ibid: 11*). New roads and televisions have brought an influx of "new values and aspirations," and, "trying to catch up with city life styles, farmers [have] switched from self-sufficiency to cash crop cultivation". In Sanitsuda's analysis, since the 1970's this has led to massive deforestation, water scarcity, overuse of farm chemicals and increasing debt, a process whereby:

...the very basis of agrarian culture- the land- is taken away from the community. Its magic is evaporating. Now, Mae Jaem is clinging to the final traces of its culture. It is only a matter of time before the last thread snaps. (*ibid: 11*).

In my own understanding of Mae Chaem, the immanent danger of 'snapping threads' is not nearly so clear. Nor are any of the other characterizations of the valley. Major changes have occurred in Mae Chaem over the past fifty years, and particularly since the 1970's with the construction of the first roads. While at the surface the general currents of change noted by Sanitsuda are present, a deeper look reveals swirling eddies and competing under-toes that run counter to Sanitsuda's overriding sense of ascendant modernity and traditional decline. The role of local agents and their ability to negotiation of the tradition-development divide is far more complex than Sanitsuda's dyadic sense of 'resistance' or 'surrender' makes it appear. In Mae Chaem of my experience the

consequences of globalization, modernity and development flow over, but also contour around the interests of local actors.

In contrast to Sanitsuda's work on Mae Chaem is that of the staff and faculty of Chiang Mai University and its affiliated centres, as well as other scholars.. Several researchers associated with the International Centre for Agroforestry Research (ICRAF) have written extensively on the transitional agricultural practices of Mae Chaem, particularly in relation to the ecological consequences of reduced upland swidden (Prasit 2001). But while there is more detail for urban areas such as the city of Chiang Mai, to my knowledge, only one detailed account of historical health change in a remote northern Thai valley exists (Kunstadter 1986). This account, involved research associated with a study on demographic change and infant mortality in the Mae Hong Son valley, adjacent to Mae Chaem in the early 1980's. Kunstadter's work encountered a similar paucity of archival documents as my own study and so relied upon remembered oral reports going back more than fifty years. The objective of Kunstadter's study was to better understand the realities of demographic changes associated with 'development' in northern Thailand, and especially as related to changing mortality (and to a lesser extent morbidity) in the area. The study found that data on causes of morbidity for particular ethnic communities developed through seven-day recall surveys and reviews of hospital records generally echoed the causes of mortality reported in the reproductive histories of parents.

My own analysis, is similar to Kunstadter in that it takes the narratives of Mae Chaem parents and farmers as a useful source of information regarding changing health practices, but it differs from Sanitsuda's and Renard's accounts in that careful attention to Mae Chaem's narratives refutes an uncomplicated understanding of developmental

history in Mae Chaem as a progression from either a backward or romantic past towards either a bright, or dark and threatened future. My own work considers post-development perspectives that view the benefits of development, at least in terms of child health and land use, with deep ambiguity, but does so with reference to the oral histories of parents and farmers, and where possible, the documented histories of hospitals and academics. Other anthropologists (Guillette *et al.* 1998) have addressed childhood exposure to pesticides in other places but have not paid explicit attention to bringing local histories to bear on understanding change over time.

Within the contexts of contemporary rural Thai lives, images of the past and future, positive and negative, simple and complex, exist together, complementing and competing with each other. There is no clear and universally accepted winner within the diversity of biotechnical worlds available in Mae Chaem. Shops filled with pesticides sit next to temples filled with Buddhas, high tech cash crops are farmed by Karen in hand-woven shirts, pharmaceutical pills and NGO vaccinations are taken along with spirit rituals and forest medicines. Understanding the complexity of the available concepts of Life in northern Thailand involves understanding how knowledge and practice flow through networks of biotechnical authority, and how local actors move between these alternate authorities in pursuit of happiness, success and a healthy life. It requires an understanding of the choices implied and the interests at stake in seeing and accepting one set of biotechnical images or another as real, as authoritative and as reliable.

Such choices matter. Important decisions are made in accepting one image of life, or another, as grounds (or partial grounds) upon which to understand and affect the health of children and the productivity of fields. The choices of parents and farmers have real

implications for the health of children and the success of crops in the valley. They make a difference in biological experience. While some of these differences may be seen by local actors and articulated within individual narratives (i.e., they are emic), other trends and consequences in land use and child health practice can be traced only through taking a step back. This thesis involves thematic analysis of statements made by particular speakers, but it also involves a broader analysis that takes all of the oral narratives as a composite whole. Taking many individual health and land use narratives together and recognizing them as parts of a broader composite oral history that can be used, through etic analysis, to map and articulate change over time, is one way of taking a step back.

‘Doing’ Anthropology: Methodological Background

3.0 ‘Doing’ Anthropology: Methodological Background

Why do particular Thai actors choose to affiliate with particular (or multiple) health ideologies at particular points in time, particularly within the lived processes of building and adjusting personal medical worlds within dynamic ecological and cultural surroundings? Beyond theory, Barth (1993) provides a strategy for doing anthropology based on the notion of culture flowing in streams:

we can start by looking at the way certain connected activities in the village link up with the historical traditions or streams that have contributed to the cultural stock ... One can readily identify several such, each with distinct organizational networks and incongruent knowledge and assumptions... Each of these is today embraced to variable degrees, or by some people only, within the total population...and each such stream is itself constituted as an internal discourse, a process reflecting a distribution of knowledge, authority, and social relationships, which propels those enrolled in it. Pursuing the social links within such a stream, moreover will regularly lead us not just outside villages but also outside the region ... embedding local persons and circles in systems of much larger, and in some cases, global scale.” (p. 173).

I designed and carried out my research in Mae Chaem very much in the vein advocated by Barth. My goal has been to contribute an ethnographically grounded response to the question of how and why local actors build the medical worlds that they do within dynamic historical, ecological, social, and political-economic contexts. I have also tried to answer these questions in a way that may ultimately prove useful to the communities of Mae Chaem, as well as to anthropologists and other academics working

in the area, but this is often a very difficult task (McKinnon and Vienne 1989, Cooke and Kothari 2001).

My research covers an ambitious breadth. It spans issues of local agency, health and ecology within complex cultural contexts and over a long period of time, and as such, a well-defined set of research objectives has been essential for structuring the research and maintaining its focus. Even with well defined objectives, in many places I have collected enough information for a dozen dissertations. Despite this, I have understood my overall research questions within a framework of three objectives: two ethnographic objectives and a third more analytic objective, all with associated methodological steps. The three objectives include:

Objective 1) Documentation of the 'Biotechnical Streams':

Taking from Barth (*ibid*) my first task was to identify and describe the “historical traditions or streams that have contributed to the cultural stock” of health and land use knowledge and practice in Mae Chaem. This involved attention to the particulars of what I have call biotechnical streams, both medical and ecological, accessed by parents and farmers in the valley, including the representatives that advocate for them, their perceived sources of power, values, orientations and limitations. The primary method used to achieve this objective was a set of ‘expert’ interviews and participant observation engaged in during the first half of my field work.

Objective 2) Documenting Parent Farmer Narratives of Changing Child Health and Agricultural Land Use

Recognizing that the relationship of local agents to biotechnical streams is dynamic, my next objective was to document how individual parents have moved between the various streams available to them. I did this by documenting their remembered child health and land use practices over time. This involved building a set of remembered individual child health and land use narratives chronologically ordered over the past 50 years, and broadly representative of the valley as a whole. Child health and land use narratives were collected from each person for several concurrent years with attention paid to their remembrance of child health concerns, practices, illness episodes and treatment patterns, as well as a similar range of issues with regards to agricultural land use. The primary method used to achieve this objective was a large set of detailed parent-farmer interviews providing careful documentation of concurrent land use and child health narratives for seventy eight families between 1952 and 2002.

Also involved in this objective has been an attempt to find written historic and archival documents (rooted in Thai bureaucratic/scientific knowledge) of local health and health practice over the same period. My attempts to find relevant archival accounts have met with limited success.

Objective 3) Analysis of Relationships between Changing Child Health and Agricultural Land Use Practices and Concerns from 1952 through 2002

This objective involved analysis of the historical child health and land use narratives individually, and taken as a whole. Thematic analysis was focussed at

the individual level in order to understand particular trajectories of practice. A more quantitative approach, focussed on description of the data as a collective whole, was used to interpret the narratives together. The focus of this work was to identify relationships between the remembrance of particular child health and land use practices, and remembrance of particular patterns in child health and land use experience. Of particular interest to me has been the issue of how local agency engages with the enrolment efforts of actor-networks, and how this connects to other ecological, social, or political-economic transformations at local and global levels.

3.1 The Origins of the Thesis: A Reflexive Background

Ethnography is not simply a recording of culture expressed to the anthropologist by the ‘other’, and academic studies do not spring full born from the minds of theorists. Ethnographic research is a dialogic and productive interaction between participants, some anthropological, some not, but all coming from their own places and bringing with them their own conceptual ‘things’ and social relationships. Ethnography is an account of what is learnt from the productive friction (Tsing 2005) that occurs between the participants in an encounter. Understanding ethnography involves understanding what the anthropologist brings to the research process as well as what the ‘others’ bring to it.

I first spent time in Thailand in the early 1990’s as part of an international youth exchange living for four months in a small Thai-Lao village in the northeast border province of Muk Daharn. I was confronted with how different the world can be when lived in another place and seen through another set of cultural eyes and that first

experience of rural Thailand was a formative one. Even then I was impressed by the diversity of medical traditions that flowed within the little village: spirit mediums, Buddhist monks, medical clinics with herb gardens in the back, and khwan ceremonies providing various approaches to the inevitable challenges of life and death. I returned to Canada fascinated by a taste of an alternate cultural universe bundled with attendant possibilities, puzzles and complications.

On my return I spent several years completing a BA and then an MA in anthropology, hungry to understand more of the cultural complexities of my own homeland. I wrote an MA thesis on the impacts of industrial development in northern Canadian First Nations communities and worked for several years as a consultant for First Nations communities in northern BC and Alberta who thought a trained anthropologist might be useful in mapping and articulating traditional land use where it was at odds with industrial development concerns. In 2000, almost a decade after my first experiences in rural Thailand, I submitted a brief proposal to the Canadian Social Sciences and Humanities Research Council to conduct doctoral research on, “the diversity of global and local medical systems that coexist in rural Thailand”. That proposal was accepted and launched me into many years of PhD study.

It was because of these early connections that I began to reflect on my research plans in light of concerns that I had heard from First Nations communities back in Canada. In many First Nations communities people draw links between health and environmental change. However, many First Nations communities also find it difficult to convince governments and developers of these links. Rooted in the words and worlds of Cree and Dene communities in northern Canada, I began to wonder if health change and

land use change in northern Thailand might be seen as similarly connected as something linked to the whole flow of development and modernity in rural communities. As an anthropologist I was particularly interested in what local memories and histories of change might have to say regarding this. Over time, and as research in Thailand progressed, it became clear that in rural Thailand, as in Aboriginal Canada, health and land use are linked together but the links are related to particular experiences, particular choices, and particular structures of authority that are experienced, lived, and narrated both in the village and at higher levels. My research became focussed on issues of local choice, and how technologies, in particular, entangle health and ecology within particular understandings of the world.

3.2 Scope: Why Mae Chaem? Why Fifty Years? Why Child Health?

The scope of my work has been defined by several key choices. One of these was the choice to do my work in Mae Chaem. Another was the choice to focus on child health. A third was the choice to focus on changes over a fifty year period.

I chose to do my work in Mae Chaem primarily because of the complex and interesting history of change I knew had occurred in the valley, and the relatively compressed and intense development efforts that the valley has been subject to. I knew from colleagues at Chiang Mai University and the University of British Columbia that these related largely to its history as an area of opium production and the resulting attention from national Thai and international NGO development agencies. The fact that my contacts in Chiang Mai were also able to facilitate introductions to the valley also played a major role in my decision to situate my work in Mae Chaem.

The decision to focus on child health and its relationship to ecological change came about largely because of my interest in local systems for understanding and treating the body, as well as the understanding that children tend to be more sensitive receptors of environmental health effects than adults. Health problems related to infectious disease, poor nutrition, or pesticides in Thailand are all likely to have disproportional effect on children under five (Ralana 1989). This is due to a number of reasons, including greater childhood nutritional requirements, lower body mass resulting in lower tolerance of contaminants, and particular kinds of play and interaction that expose small children to greater disease and contaminant vectors (US EPA 1995, UNEP 2004). In a study on pesticide use by Hmong farmers in Chiang Mai province, Kunstadter *et al*: (2001) found large portions of Hmong adults with risky or unsafe levels of cholinesterase inhibition, an indicator of exposure to particular pesticides, and found that exposure rates were as high among those who did not actually apply pesticides as among those who did, suggesting exposure by routes other than direct application. Children in both upland and lowland Mae Chaem may have contact with agricultural chemicals in a general way through ambient exposure through the foods, water, air, and soil of the valley. At certain times of the agricultural cycle when cash crops are being sprayed, the unpleasant smell (*min*) of chemicals wafting in from the fields permeates the air of the district centre. Parents and farmers also frequently raise concerns regarding the presence of chemicals in foods at the market and in waters running down from cash cropping areas in the surrounding hills.

Beyond ambient routes of exposure, the children of farmers who use pesticides in their fields are at risk of higher levels of exposure than those of farmers who do not use pesticides. Parents bring agro-chemicals home from the fields unintentionally on skin and

clothes to the domestic realm where food is prepared and children's clothes are washed. As well, because they are valuable, storage of spraying equipment and chemicals is often done within the domestic compound, and because water is often more reliable and plentiful in the village (because of domestic water systems) than in the fields (especially unirrigated fields), rinsing of equipment and mixing of chemicals with water for application in the fields is also often done nearby the homes of pesticide using families. While older children in Mae Chaem spend much of their day at school, younger children often remain at home or accompany their parents to the fields to help with work or play nearby. As well, very young children who may accompany their mothers to work in the fields, are also potentially exposed to concentrations of fat-soluble contaminants through breast milk.

Finally, while both children and parents in a household may be exposed to agro-chemicals, children are more likely to be affected by lower levels of chemical exposure than adults. Similar to how the safe and effective dose of aspirin for a child is lower than the safe and effective dose for an adult, the unsafe dose of contaminants for a child is lower than the unsafe dose for an adult. Based on these understandings, while parents and farmers who apply and work with agro-chemicals risk direct acute exposures resulting in rashes, headaches, or other immediate symptoms requiring treatment, a child's body is also subject to exposure and is more likely to react to lower levels of exposure. Children not yet attending school are likely to have higher levels of exposure than school aged children, and children of pesticide using households are likely to have higher levels of exposure to agro-chemicals both within the household and in their family's fields than the children of non-pesticide using households. At least in terms of biophysical effects, if

there are connections between changing ecological practices and changing bodily health in northern Thailand, the health of children is likely to be especially sensitive to them. Another reason for focussing on child health is that while parents and farmers are both key agents in making decisions regarding child health and land practices, respectively, both lands and children are experienced as mysterious and often difficult entities that may cooperate, or not, with the ministrations of concerned parents, farmers, and biotechnical agents. In this way, at least, children and fields seem to allow for an interesting comparison in the strategies used by local actors to affect the unpredictability of life.

Finally, the decision to focus on a temporal scope reaching back 50 years provides contemporary narratives of child illness dating from before the extension of national Thai and NGO development programs into the valley, including Thai prohibitions on opium in 1959 and the resulting decades of national and international intervention. A fifty year time span opens up the possibilities of enquiry to include the whole sweep of what is commonly understood of as ‘modernity’: the period of the ‘green revolution’, the Thai village development movement, pro- and anti-communist movements, development of significant infrastructure (schools, health clinics, roads, power, etc.) and tourism, the transition towards cash crops, and the rise of national and international NGO’s and multinational corporations in the north. While not all of these areas were fully investigated, all were possibilities.

At a more pragmatic methodological level, fifty years is also near the realistic limits of living memory. A mother or father who was a new parent in 1952 at the age of twenty would be into their seventies at the time of my field work. While living memory is not always a stable medium within which to record the past, particularly over a fifty year

period, the actions taken to remedy one's sick child or to counter a threat to the productivity of one's own fields, are significant and directly experienced life events that, based on the detail and internal consistency of histories collected in Mae Chaem, can be recalled with at least moderate accuracy by parent-farmers even fifty years later. To be sure, such recollection is also a reflection of the social memory of the community, particularly as the health of children and the success of crops are frequent subjects of conversation and comment in rural Mae Chaem. However, I would argue that the social conditioning of memory, at least in Mae Chaem, has less effect on the recall of particular directly experienced life events than it does on the broader recollection of historical change which those particular life events are considered a part of. The assumption of at least moderate accuracy in parent-farmer recall of particular child health concerns and practices over long time spans is reinforced by Peter Kunstadter's work in the 1980's on child mortality and morbidity in the Mae Hong Son valley, discussed later in this chapter.

Much of my analysis is based on the division of the fifty year period from 1952 to 2002 into five equal decades³⁰. While this division is partially for convenience and comparability between decades, it also has historical rationale. The mid-1960's saw some of the earliest efforts by the Thai government to 'develop' what was then a very isolated rural valley. As such, the decade from 1952-1962 reflects a period prior to the establishment of permanent roads and state institutions in the valley, and a time when Mae Chaem was still relatively isolated and weakly integrated into the Thai state. The period from 1963-1972 was a transitional one that saw increased state involvement in Mae Chaem and the first nationally sponsored efforts at 'development' including the introduction of new cash crops, basic national health services, the building of the first

roads and the establishment of the first secular school in the valley. These development efforts corresponded with growing national level concerns regarding Communist and Vietnamese influence in the North. The years from 1973 through 1982 saw increased fear of Communist influence and the arrival of intensive opium replacement efforts, including advocacy of pesticide intensive cash crops, and increasing integration with the Thai state through the development of the Doi Inthanon road. These efforts were led largely by the Thai military and international NGO's such as USAID. 1983 through 1992 saw continued integration of Mae Chaem into the Thai state and ongoing development efforts oriented towards poverty reduction, while the period from 1993 through 2002 saw this trend continue, but with increased concerns regarding the potential environmental effects of rapid development.

Parents caring for sick children nurture an unpredictable and sometimes uncooperative subject. In much the same way, the biotechnologies of rice farming are designed to coax a successful rice or cash crop harvest from a sometimes difficult earth. Through the interviews the kinds of child illnesses and land use problems that parents report, the rates at which they report children getting sick, or having problems in the fields, and the kinds of expertise engaged by parents when child illness or agricultural problems occur, were all tracked and changes over time made visible. These reflect a changing material ecology in the valley: changing nutrition, changing exposure to pollutants, changing access to clean food or water. They also reflect a changing mental ecology in the valley: changing religious values, exposure to media and advertising, changing access to biomedical doctors, changing access to commercial products. As

changes have occurred in the material and mental ecologies of child health, so have they occurred in the material and mental ecologies of land use and crop health.

3.3 Timeline and Overview of Methods

Fieldwork related to this thesis took place over a total of approximately 15 months spent in northern Thailand over a series of four trips made from 2002 through 2004. The majority of this time was spent in the Mae Chaem valley itself where I lived with my wife and nine year old daughter for the duration. A brief chronology of my fieldwork and associated methodologies is contained in Figure 3.1 below.

Figure 3.1: Chronology of Fieldwork

| Time Period | Primary Field Activity and Location |
|----------------------------|--|
| May-June 2001 | Scoping and Field Site Identification |
| October-December 2002 | Set-up and Expert Interviews (primarily in and around the Mae Chaem district centre) |
| December 2002-January 2003 | Group Interviews (district centre and Mae Hae Tai) |
| January-June 2003 | Parent-Farmer Interviews on child health and agricultural land use (focussed on district centre and Mae Hae Tai) |
| June 2003- February 2004 | Preliminary Analysis (Canada) |
| February-April 2004 | Follow-up interviews and Community Review (focussed on district centre and Mae Hae Tai) |

My first trip to northern Thailand involved scoping out a field site and developing the institutional relationships and connections needed to engage in extended fieldwork. The following year I returned to conduct the main body of the research conducted between October 2002 and June 2003, a period that was interrupted by a return trip to Canada in March to attend to the passing away of my grandmother and to avoid the bloody consequences of Prime Minister Thaksin's state-sponsored 'War on Drugs' which saw the execution style shooting deaths of more than a dozen people in Mae Chaem and more than twenty-five hundred in the country as a whole.

The early months of this main trip focussed on training, methodology refinement, and generally getting my bearings through interviews with recognized biotechnical experts. Twenty-eight expert interviews were conducted and translated with a wide range of local experts in child health or land use ranging from biomedical doctors and government agents to Buddhist monks, spirit mediums and multinational agro-corporation representatives. It is upon these expert interviews that my documentation of biomedical streams in Mae Chaem is largely based.

In December 2002 and January 2003 four group interviews (two in Mae Chaem, two in Mae Hae Tai), each involving six community members, were conducted in order to develop locally based chronologies of change in the two communities. These interviews were designed to begin developing a sense of the historical dynamics surrounding child health and land use in the valley. The group interviews were gender specific (male and female respondents participated in separate groups) but each involved two younger, two middle aged, and two older participants.

In 2003, following the expert and group interviews, our research team began the long process of carrying out parent-farmer interviews with seventy eight individuals from across southern Mae Chaem. The interviews were semi-structured and followed a consistent set of questions that were repeated for each year documented. Details of the parent-farmer interview process are discussed below. Archival research was also conducted, but the usefulness of this was limited. More than a thousand digital photos and over four hundred pages of fieldnotes were collected.

Following this main research phase, I returned to my family in Vancouver to conduct a preliminary analysis of the completed interviews. I returned to Mae Chaem for three months in early 2004 to conduct follow-up interviews. Follow up interviews were designed to elaborate or clarify issues raised during the main research phase. These interviews also served as an opportunity to review the preliminary results of my analysis with elder community members from Mae Chaem and solicit local responses to and interpretations of my findings.

The majority of interviews and participant observation took place in two focal communities: the district centre of Mae Chaem and the more remote upland and largely Christian Karen community of *Mae Hae Tai* (also called *Mae Hae Kii*), both discussed in greater depth in later chapters. Interviews were conducted in Thai and Skaw Karen (Pghakinyaw) with local Thai and Pghakinyaw co-researchers providing linguistic and interpretive support. Additional and supplemental interviews were conducted in the Hmong village of *Baan Pui*, the Buddhist Pghakinyaw villages of *Baan Mae Raek* and *Baan Paa Phung*, and the Thai and Hmong cash cropping community of *Lomphong*. All of these sites are located within the southern half of the Mae Chaem valley.

3.4 Local Connections

My arrival in Mae Chaem was facilitated by researchers associated with the International Centre for Research in Agroforestry at the University of Chiang Mai. My first weeks in the valley involved finding a home for myself and my family, introducing ourselves and the possible intrusion of my work to the communities that I hoped to work with, and building the relationships with community members and co-researchers that would provide the foundation for later work. Several researchers at the University of Chiang Mai, some of whom I had corresponded with from Canada, already enjoyed strong relationships with communities in Mae Chaem, including the upland Karen village of Mae Hae Tai. In particular, Ajaan Prasit Wangpakapattanawong of Chiang Mai's Department of Biology was both a kind friend and a key ally in introducing me to the valley. With the help of Ajaan Prasit and other early assistance by ICRAF staff and students, I arranged to rent a house and met with the school principal to make arrangements for my seven year old daughter to begin attending the local school. We also posted several notices around town (at the temples, the central market, and at a government office on the edge of town). The notices announced that a Canadian researcher was looking for two research assistants from the valley who could help carry out a one year research project on child health and land use change. One would help arrange interviews in upland Karen communities and would translate from Karen to Thai, the other would help arrange interviews in the lowland Thai communities and help translate from Thai to English. Interviews for the two positions were to be held at the ICRAF office in one week. The salary was several hundred baht per day, slightly higher

than that of an average Thai school teacher. I was able to hire an exceptional research team of three local co-researchers within the first month of my stay in Mae Chaem.

These three co-researchers quickly became both good friends, and central players in the successes and challenges encountered in the ensuing months of field work. Other than my self, our research team included:

- Khun Surasit, a father, farmer and trained Karen-Thai translator from *Mae Hae Tai* who had two young children and several upland rice fields of his own. He was recommended to our project by a well respected Karen community liaison for ICRAF, my institutional affiliate at the University of Chiang Mai. Surasit played a central role in all of the highland and Karen interviews.
- Khun Laan, a young woman from *Baan Kong Kaan* near the district centre. She was a graduate in business from a Chiang Mai agricultural university who operated a noodle stand and then a small bar in the district centre before becoming a researcher with the project. She brought with her a keen awareness of local social dynamics and an innate gift for making people comfortable within the context of an ethnographic interview.
- Khun Raewat, a new father and excellent Thai-English translator from *Baan Paa Dtaet* near the district centre. Khun Raewat was a native of Chiang Mai city who had married into the valley. He had graduate training in agronomy from a university in the Philippines and was unique in Mae Chaem for both his excellent English and his Christian faith, both of which he picked up during his time studying abroad. Khun Raewat was an invaluable asset whenever the subtleties of an interview with local parent-farmers or biotechnical experts went beyond the limits of my own Thai language ability.

In my first few days in Mae Chaem I made a series of early and critical decisions: where we would live, who would my research assistants be, who I would interact with on a day to day basis. These early decisions, made quickly and based on only the sketchiest of understandings of the valley's dynamics, were probably the most important ones I made in Mae Chaem and set the foundation for all my later work. They have strongly influenced my work and contributed, in large part, to the very nature of the Mae Chaem that I have come to know. It is upon this slightly haphazard and jury-rigged foundation,

based on subjective and aesthetic decisions as much as on scientific or pragmatic ones, that fieldwork is based.

3.5 Detailed Methods

Our first weeks together involved my co-researchers helping me to understand the basic goings on of the valley while I trained them in the basics of ethnographic research and translation. Early in our work we sought permission to conduct interviews, and initial advice regarding them, from a series of community leaders, including the village headmen, the *tambon* (sub-district) councils, senior monks, and respected elders. Formal meetings were arranged in both the district centre and in upland Mae Hae Tai in order to introduce the research and myself to community leaders, and solicit feedback from them regarding my initial research plans. Following these initial steps we were able to begin work on the three core stages of research that have resulted in this thesis.

3.5.1 Expert Interviews

Following the establishment of the research team and arrangement of logistics, the initial substantive stage of research involved developing a detailed understanding of the various streams of land use and child health current in the valley. Following Barth's approach, already mentioned above, our work in Mae Chaem began with trying to identify the biotechnical streams accessed by parents and farmers in the valley, and then following these streams to identify their key actors and representatives both within and outside the valley. While Barth (1993) recognizes these links and actors as primarily social ones, I would argue, more in line with actor-network theory, that technological and ecological actants are equally as important. I began this process through working with my

coresearcher to develop an initial list of local ‘experts’ in health and land use that parents and farmers might turn to if they had problems with the health of their fields or the health of their children. This initial list was developed largely through discussions within the interview team and was refined and adjusted through the group interview process and later analysis.

This list of biotechnical experts was used to structure the process of conducting a series of thirty-two detailed key expert interviews with various biotechnical experts active in Mae Chaem within the domains of land use and health. In addition to formal key expert interviews, this research also involved less formal interactions and participant-observation at the sites of medical and ecological practice. Figure 3.2 summarizes the key biotechnical expert interviews and other methods used:

Figure 3.2: Summary of Expert Interviews

| Biotechnical Expert | Primary Methods Used |
|--|---|
| Buddhist Monks | Three key expert interviews, participant observation at various temple rituals and celebrations. |
| Spirit Mediums | Three Key expert interviews, participant observation at various rituals and related celebrations. |
| Biomedical Doctors and Nurses | Two key expert interviews, participant observation at Mae Chaem hospital. |
| Pharmacists and Drug Sellers | Two key expert interviews, participant observation at pharmacies and with drug sellers at local markets. |
| Local Doctors (<i>Maw Muang</i>) | Three key expert interviews, participant observation during healing rituals and other medical interactions. |
| Birth Attendants (<i>Maw Tamyeh</i>) | Two key expert interviews. |
| Public Health Nurse (<i>Anamai</i>) | Three key expert interviews and participant observation at <i>anamai</i> at Mae Hae Tai, Baan Paa Dtaet. |
| Senior Public Health Officials | One key expert interview |
| Massage Therapists (<i>Maw Nuat</i>) | One key expert interview, participant observation. |

| | |
|--|---|
| Pesticide Sellers | Three key expert interviews, participant observation at pesticide shops in Mae Chaem district centre. |
| NGO and Government Agricultural Extension Officers | Three key expert interviews. |
| Farmers Cooperative Staff | One key expert interview. |
| Multinational Contract Staff | Two key expert interviews. |
| Christian Ministers (Pgha'knyaw) | One key expert interview and participant observation. |
| Community Elders (Mae Chaem and Mae Hae Tai) | Two key expert interviews and participant observation. |

The key expert interviews were designed to assist the development of a broad understanding of the various streams of health and land use available in Mae Chaem over the past fifty years, the sources of these paradigms, and possible connections between them. Interviews were completed in the district centre, as well as surrounding Pgha'knyaw and Muang communities. They were conducted during visits to the locations of practice for the various experts interviewed. This included audiences with monks at the local temples, visits to the homes of maw Muang and spirit mediums, the shops of pesticide and medicine sellers, as well as public health clinics, the Mae Chaem hospital, and various government and corporate agricultural extension offices. Expert interviews were semi-structured according a set of key questions and prompts developed prior to the interview process and adapted by the research team during it and lasted from one to three hours. For many of the experts interviewed, we returned several times over several months to follow up on questions and topics raised by other research activities. The expert interviews were conducted in Thai or Karen with some English translation. Wherever possible, interviews were recorded directly onto digital .mp3 audio files and through field notes, as well as through photographs.

The expert interviews emphasized the daily practice and knowledge of biotechnical experts in their own words and as related to health and land use issues in Mae Chaem, sources of expert knowledge and technologies needed for practice, strategies for promoting or maintaining the health of lands and children, common problems, treatments, ideas of causation, and paths of referral or recourse in case of ongoing health or land use challenges. A similar set of questions was used to guide the interviews for all experts, regardless of ‘stream’ or area of expertise. Beyond these expert interviews, I also spent time with local parents shopping for food and medicines at the local market, attending the local temple, church and clinic, learning to work with people in the fields and forests, participating in ceremonies, harvests, and agro-chemical application, and generally getting to know what different biotechnical things mean to different people in Mae Chaem. Reported practices and observed practices were compared wherever possible, and questions regarding their meaning and significance were pursued either through follow-up interviews, or less formally through in-situ discussion.

This stage also involved the review of expert ‘documents’ that often act in the place of experts, or in conjunction with them. These documents included public health posters, previously collected research datasets, news articles, pesticide and crop technology advertisements, religious materials dealing with healing, health, and ecology issues, government pamphlets and brochures from clinics or agricultural stations, NGO and gray-literature reports on health and land use in Mae Chaem, and map resources. A range of archival, media, and statistical sources were collected, and translated.

The process of ‘following the links’ between local streams of knowledge and practice available in Mae Chaem (both now and in the past) continued throughout the fieldwork and into the following analysis and writing phases. This took place through ongoing thematic analysis of interview tapes and field notes and ongoing discussions with biotechnical experts who later became friends and colleagues. Through this process I began to develop profiles of the streams of medical or ecological knowledge identified by the communities³¹ as well as the major ecological and health concerns and cures associated with each. Profiles of each stream included their perceived sources, values and limitations; how they are accessed; and who or what represents them in the community.

In her work in rural Mexico, Garro (1986) concludes that while there are differences between the understandings of biotechnical experts (curers) and patients regarding medical knowledge, the knowledge of medical streams is generally shared between expert and non-expert. In Mae Chaem as well, knowledge of parents and farmers regarding particular traditions of land use and child health practice was generally consistent with the knowledge of experts affiliated with those same traditions. My initial understandings of these biotechnical streams were first tested through discussion and refinement with the help of my three person research team, and then through subsequent group interviews conducted with parents and farmers in the district centre and in Mae Hae Tai (discussed below).

3.5.2 Group Interviews

Once we had developed a general understanding of the kinds of knowledge and expertise available to parents and farmers through the various biotechnical experts

currently practicing in the valley, we then began the process of understanding local histories of change. This process initially involved gendered intergenerational focus groups that provided broad local histories of health and land use change for the lowland district centre and the upland community of Mae Hae Tai. The focus group interviews developed locally based chronologies of change in the uplands and lowlands, and to refine and add to the list of biotechnical expertise as reported by parents and farmers.

With the help of my co-researchers, we conducted one set (one with men, one with women) of small group interviews in each community. In December 2002 and January 2003, the four group interviews (two in Mae Chaem, two in Mae Hae Tai), each involving six community members, were conducted. These involved six people of common gender and representing a range of ages from elder in their seventies to younger people in their twenties. These group interviews allowed for the development of a general idea of ecological and health concerns, services and ideas current in the communities since the 1950's. Discussions were organized around a loose and open ended structure in order to allow, as much as possible, for community defined concerns and relationships to emerge. They were recorded through notes and flip-charts in order to minimize the intrusion of other recording technologies into the interview context. These interviews took place in the home of one of the participants. Food and drinks were served during the focus groups in order to facilitate a more fun and less formal dynamic. Large pieces of flip chart paper were used to record and focus discussions. These were labelled in Thai with smaller English labels added during the interviews.

The group interviews lasted approximately six hours (one full day). The cross-generational and gender specific nature of the interviews allowed distinctly gendered

concerns to be identified and traced through the interview process. Interviews involved developing community-based timelines of land use and health change, as well as community based lists of the various health and land use problems, experts, and technologies prevalent at different times in different communities. This process provided a set of collective community and gender specific accounts of what the most important land use and child health issues, including challenges, solutions, and resources, have been over the past 50 years. In the final stage of the group interviews participants were asked to rank the issues and actants that had been raised. While very general, and open to many interpretations, these rankings of importance offer community perspectives that show difference between communities, genders, and generations while balancing and challenging my own understandings as a visiting researcher. In both Pgha'knyaw and Muang communities women play a major role in land use, and men frequently play important roles in child rearing. Due to time constraints, only the men's groups were able to rank land use issues and only the women's groups were able to rank health issues. While this division of effort was mainly due to time constraints, both men's focus groups seemed more interested in discussing farming and land use issues and women's focus groups seemed more interested in discussing child health issues. This interpretation is consistent with other observations of social interactions in the valley, but it is recognized this interpretation may also result from implicit bias within the interview process. The group interviews provided broad chronological themes and lists of locally important actants for further investigation.

As part of the focus group interviews we asked men and women of various generations to name all of the different things they might do, or kinds of help that they

might seek out in order to strengthen a child's health, or to help a child if he or she was ill. Likewise, we repeated this to find out what kinds of practices or expertise people rely on in order to improve the growth of crops or resolve problems in their fields. This produced a set of practices that were attached to the various sources of expertise regarding those practices. The local histories of land use and child health change that emerged from the group interviews recognized many different traditions of biotechnical expertise in the valley and many different actors and influences. Some of these were identified as stronger in the past, in the sense that their practitioners were more popular and had more adherents, while some were identified as relative new comers to the valley and did not exist as options prior to the development of roads into the valley and the involvement of the national government and international NGOs in the valley in the 1970s. These responses were used as a foundation for grouping concerns and cures into a set of seven distinct, but related, biotechnical streams. The various identified problems, solutions, and resources were organized into themes and these served as the basis for the seven biotechnical streams discussed in this thesis. Each of the seven streams plays a part in determining the face of health and land use in Mae Chaem as it appeared and was reported during fieldwork in 2002 and 2003.

The process of identifying relevant cultural streams within a community, or set of communities, is not something that Fredrik Barth (1993) discusses in any detail, nor have other anthropologists, such as Lyttleton (2000) who have applied and extended Barth's approach in the field. In these ethnographies, cultural streams seem to emerge out of some invisible process of analysis. In my own work, I have attempted to make this process more visible and collaborative. Figure 3.3 shows the seven streams identified and

the experts associated with child health and agricultural land use in each. The list of streams and associated experts described below is based on information provided through focus group interviews and refined through subsequent discussion and reflection through the parent and farmer interview process. These seven streams are largely defined by the array of biotechnical expertise reported by parents and farmers as resources relied upon in times of need. Each stream is associated with a distinct kind of biotechnical experts with particular access to distinct sources of knowledge, practice, and authority.

Figure 3.3: Seven Streams and Associated Experts

| Stream | Child Health Experts | Land Use Experts |
|---|---|---|
| Buddhist Stream | <i>Phra</i> (Monks), sometimes specialized in health related practices. | <i>Phra</i> (Monks), sometimes specialized in land related practices, as well as lay leaders of the <i>Yorei</i> sect. |
| <i>Muang</i> (local, or northern Thai) Stream | <i>Maw Muang</i> (local doctors) and <i>Maw Tamyeh</i> (midwives) skilled with herbs and/or ritual cures. | <i>Maw Muang</i> (local doctors) skilled in land related practices. |
| Spirit Stream | <i>Jiaw Song</i> and <i>Maa khii</i> (spirits and spirit mediums). | Irrigation societies (<i>Muang Fai</i>) and local elders skilled in making offerings to various land and water spirits. |
| Domestic Stream | <i>Khun Paw Khun Mae</i> (parents and elders). | <i>Khun Paw Khun Mae</i> (parents and elders) and <i>Phuu Ruu</i> (knowledgeable farmers). |
| Christian Stream (Karen) | <i>Ajaan Satsana</i> (preachers) and Christian aid hospitals/staff. | <i>Ajaan Satsana</i> (preachers) and Christian NGOs and aid groups. |
| Commercial Stream | Pharmacists and drug sellers. | Pesticide sellers, agrocorporate extension staff. |
| National/NGO Stream | Biomedical doctors, nurses, <i>Anamai</i> (health clinic) staff, other health representatives | <i>Kaset Amphur</i> (government agricultural extension agents), NGO staff (CARE Thailand, etc.) and research scientists. |

Even with these efforts, the splitting of streams from the complexities of life is a messy business. While distinguishing between the streams based on the practitioners who represent them is a useful and locally relevant way of understanding biotechnical

complexity in Mae Chaem, the lines between streams are not always so neat. Some biotechnical experts blur the lines between streams. Maw muang sometimes work under the sponsorship of the Mae Chaem hospital, and Buddhist monks sometimes recommend pharmaceutical medicines as well as herbs and ritual cures.

Overall, the main challenge in identifying streams was not a lack of diversity, but a lack of similarity in the ways people approach biotechnical problems in the valley. In the effort to maintain the number of streams at a manageable, but still ethnographically reflective number, I have ‘lumped’ some together where perhaps they should not be. I found the following particularly painful to lump together: (1) maw muang with maw tamyeh, (2) local pesticide and drug sellers with larger and often transnational health care and agricultural corporations, and (3) the diverse NGO and state interests involved in national health care and national agricultural extension. The relationships within these three streams are particularly heterogeneous, as reflected in their respective chapters. Hopefully what I have sacrificed by ‘lumping’ is more than made up for by increased clarity.

While counting the available streams is important for analytic purposes, it should also be noted that this provides only an impoverished view of the actual diversity of local biotechnical worlds. In fact, Mae Chaem is full of stream mixing and complex manoeuvrings that results in connections between local actors and larger cultural systems that are both flexible and partial (Strathern 1991). Through local choices, streams are combined by parents, farmers, and practitioners into an almost infinite variety of hybrid biotechnical worlds filled with creative combinations of pesticides and herbal medicines, spirits and heart rate monitors, prayers and development strategies. It is at this level of

diversity that farmers and parents enact and embody everyday practices and knowledge of biotechnology.

Taken together, the biotechnical streams of Mae Chaem inscribe and define the valley's ethnoscape in much the same way that the valley's geoscape is marked, cut, divided, and linked by the life supporting network of creeks, rivers, streams and irrigation canals that flow through its hills, villages and fields. Southeast Asian civilizations have risen and fallen according to their ability to manage, control and regulate the flow of both water and culture (Geertz 1963, Lansing 1991). The health of both rice and people is as dependent upon streams of biotechnical practice as it is upon flows of water. Where there is a useful and reliable stream, one that flows clear and nourishing and does not prove poisonous or polluted, then fields of rice can be planted and villages can be sustained. Likewise, in order to thrive, both fields and families also need a dependable flow of biotechnical knowledge enacted through the life-protecting, restoring and increasing practices of parents and farmers. And just as watercourses settle into both natural depressions and cut trenches, the particular actor networks through which biotechnical knowledge, authority and expertise flow also become more entrenched over time. For farmers and parents, these cultural streams and actor-networks constitute possible resources of expert advice, technology, and assistance. Each offers different ways of understanding and various practices for dealing with the uncertainty, adversity, and joy of being a parent and making a life in rural northern Thailand.

3.5.3 Parent Farmer Histories

While the group interviews were designed to provide a broad understanding of the distinct histories of land use and health change recognized in the two focal communities, the second, much larger set of interviews, were conducted with individuals who had been, or are presently, parents and farmers. The interviews were conducted with mothers and fathers who were also farmers in the valley and each parent and farmer interview represents a different household. These histories, casting back 50 years, were developed primarily in Pgha'knyaw community communities in the uplands, and the lowland Northern Thai (Muang) district centre of Amphur Mae Chaem.

Participants for the individual parent-farmer interviews were selected based on a model of the valley's population designed to be representative of ethnicity (Thai Muang, Pgha'knyaw, and Hmong) and gender. Efforts were also made to ensure that the sample reflected the distribution of religious beliefs (Buddhist, Christian, and Anamist) in the valley as a whole. The basic demographic data was based on population statistics for 2002 obtained from the district government offices for the Mae Chaem valley as a whole. Because the total Hmong population of the valley is small (less than 10%) one Hmong mother and one Hmong father were interviewed in each of the three age groups used. All categories used (religion, age, ethnicity, and religion) are somewhat malleable in Mae Chaem so self-definition was used to identify all seventy-eight interview participants. Distribution of the sample is illustrated in Figure 3.4 below:

Figure 3.4: Distribution of Parent Farmer Interviews

| | Karen Male | Karen Female | Thai Male | Thai Female | Hmong Male | Hmong Female |
|------------------------------------|-------------------------------------|-------------------------------------|----------------------------|----------------------------|------------|--------------|
| Age 18-29 (20% of population) | 6 total (3 Ch, 3 Bu) | 6 total (3 Ch, 3 Bu) | 6 total (6 Bu) | 6 total (6 Bu) | 1 | 1 |
| Age 30-45 (21.5% of population) | 6 total (3 Ch, 3 Bu) | 6 total (3 Ch, 3 Bu) | 6 total (6 Bu) | 6 total (6 Bu) | 1 | 1 |
| Age 45+ (19.6% of population) | 6 total (1 An, 3 Ch, 2 Bu) | 6 total (1 An, 3 Ch, 2 Bu) | 6 total (1 An, 5 Bu) | 6 total (1 An, 5 Bu) | 1 | 1 |

Total Parent Farmer Interviews=78

Ch=Christian

Bu=Buddhist

An=Animist (Naptu Pii)

Parent farmer interviews were guided by a semi-structured interview format

intended to document the self reported (first hand) memories of parent farmers regarding their own experiences of child health and agricultural land use (see appendix A). These recollections of child health and land use issues were recorded as a kind of seasonal round for consecutive years beginning just prior to the birth of the person's first (oldest) child and continuing until the child was six years of age. For each year of child health memories recorded, the parent was also asked to recall their land practices in that year including what was grown, what challenges were encountered, and how those challenges were dealt with. Where opportunity allowed, a second child health history (usually for the youngest child in the family) and concurrent land use history were also recorded following the same interview format. Where possible, interviews took place in the respondent's home and with a single parent and farmer as respondent. In several cases, the other parent, or another friend or relative was also present, or joined the interview mid-way through. Where this occurred, the other parent was invited to listen and often

provided input, but the primary respondent remained the focus of the interview. None of the respondents were spouses and so the seventy eight interviews represent discreet households and discreet child health and land-use narratives.

Parents and farmers were asked to recall the techniques they used to help strengthen or promote the health of their lands and their children, problems and illnesses encountered, ideas of causation, solutions sought, and who they relied on for help or expertise in order to solve biotechnical challenges. The interviews were designed to provide linked chronologies of local child health/illness narratives and land use practices reported by a sample of parents and farmers that was broadly representative of the population of the valley. Semi-structured interviews were conducted with men and women who are, or have been, the parents (or primary care givers) of young children (0-6 years) over the past 50 years, and who were also farmers. Basic birth, genealogical, and educational histories were taken and primary care givers and land users were encouraged to speak broadly on what their concerns were regarding their children's health or regarding the conditions of their fields at particular points in time. These narratives frequently include what illness or land use challenges occurred, what biotechnical practices and treatment patterns were pursued in response, as well as ideas regarding the particular sources of child illnesses or land use problems, potential dangers (including nutrition, accidents and infection). With regards to land use, narratives also included what specific land management practices were followed (crops grown, growth rituals performed, length of fallow, use of fertilizers, etc.), what ecological events or challenges occurred or caused concern (such as insect problems, droughts, crop disease, or low prices), what the farmer's interventions or responses were (use of pesticides, temple

offerings made, planting trees, cash-crops planted, etc.), including what biotechnical experts may have been involved. Parents of multiple children provide separate narratives for each child, but due to the average length of the interviews, no more than two children's narratives (generally the youngest and oldest) were collected from any one participant. Each illness narrative can be connected to a single identifiable care-giver (or set of care-givers) and to an identified period of time. These can then be compared across individuals and within the narratives of a single individual. With repetition, this strategy has provided a large set of chronologically ordered, and individually differentiated profiles of child health concerns and practices dating back 50 years and derived from a sample of individuals that is broadly representative of the valley as a whole.

Peter Kunstadter (1986), in his study mentioned in chapter two, follows a somewhat similar method in research associated with a study on demographic change and infant mortality conducted between 1981 and 1984 in Mae Sariang and Mae La Noi districts in the Mae Hong Son valley adjacent to, and immediately to the west of, the Mae Chaem valley. Kunstadter's work encountered a similar paucity of archival documents as my own work and so relied upon remembered oral reports going back more than fifty years.

Kunstadter recognized that due to the area's isolation and because of the variety of non-biomedical health strategies resulting in relatively few people accessing nationally documented sources of health care, there was an almost total absence of detailed and reliable historical documents regarding morbidity and mortality for the area. Considering this, Kunstadter chose to work with local accounts of health and mortality (memories and narratives) to understand past health challenges, practices, and causes of death.

Kunstadter's sample was far more extensive than my own and involved, at its core, an extensive questionnaire survey covering more than 17,000 people in more than forty villages and towns in the valley bottom (Thai, Karen), mid elevations (Karen and Lua) and hill tops (Hmong). This survey involved collecting information on the rate and cause of death occurring in the various communities within the previous twelve months. In order to add historical depth to his data, Kunstadter "relied on the memories of informants going back fifty years" (p. 132) through the collection of 'reproductive histories' from ever-married women. These included accounts of just over 15,000 births and 2,600 deaths for children born to the women who participated. In these interviews Kunstadter and his co-researchers asked women to remember back more than fifty years to recall child health events (births and deaths) ranging from prior to 1930 through to the early 1980's. Morbidity data was developed through two sources: a morbidity survey conducted in 1984 with four communities asking participants to recall any illnesses in the household in the previous seven days, and a review of biomedical diagnoses from patient records at a local hospital.

Data on both child morbidity and mortality developed through the parent-farmer interviews in Mae Chaem are broadly consistent with Kunstadter's findings for Mae Hong Son (see chapter three), despite the much smaller sample and more intensive interview methods followed in Mae Chaem. Kunstadter also found that data on causes of morbidity for particular ethnic communities developed through seven-day recall surveys and reviews of hospital records generally echoed the causes of mortality reported in the long term reproductive histories of parents.

While Kunstadter recognized the challenges inherent in asking people to remember health information occurring more than five decades in the past, he concluded that the remembered accounts were generally reliable and did provide useful information on mortality trends. Kunstadter states:

Questionnaires rely on respondents' memories...the limitations [here] are particularly important because we have relied on the memories of informants going back as much as 50 years...It is conventionally assumed that the completeness of memory declines with the length of time from the event in question, and that births of children who were stillborn or died at a very young age are forgotten more easily than the births and deaths of children who lived to ... old age or which happened recently. Our experience, both in interviewing and in analysing the results, suggests that these were not important limitations...(1986:132).

Kunstadter's conclusion is based on his observation that trends reported in the reproductive histories were generally consistent with known patterns, and that the reproductive histories seemed to be generally complete (except for those provided by very elderly and ill women) based on supplementary and supporting information from other relatives. While it is very difficult to prove accuracy of oral histories in the absence of documentary evidence, I side with Kunstadter in that the general validity of oral historical research as more than narrative can be maintained.

The psychological and anthropological literature on memory and the potential flexibility and fallibility of human recall is voluminous (see Middleton and Brown 2005). Remembering and forgetting takes place inside the brain, but also takes place through social processes of language and interaction, as well as the commemorative nature of the environment around us. Keith Basso (1996) notes the role of landscape and language in remembering and teaching, and many others have looked at the various sites of memory,

be they museums or battlefields, that help shape our personal cognitive worlds, and inform our notions of the past

In my own work, through reliance on consistent methods, repetition across individuals, and focus on first-hand accounts of personally significant events, I have tried to elicit and document the memories of parents and farmers in ways that say something about the past as well as about how people remember the past. With Kundstadter, I argue that the historical memories of parents and farmers can be relied upon as generally accurate accounts of the past, as well as narrative indications of the present. Conventional understandings of memory recognize the existence of many different kinds of memory, and different forms of memory have different qualities. Some forms are relatively durable, while others are much more ephemeral. In a work on the reliability of recall over long periods of time within survey methods, Mathiowetz (2000) suggests that the emotional salience of a question can be of greater importance than length of recall, “it is not the length of the recall period, but rather the nature of the question which impacts data quality” (Mathiowetz 2000: 6). Other efforts to test the long term reliability and validity of first person biographical recall (Hoffman and Hoffman 1996) have found that while the precision of memory for things like dates or specific details is highly variable, the general recall of first-person historical events can be highly stable over long periods of time and can serve as a foundation for understanding the past even in the absence of written documents. Ethnographic work on memory such as Cole (2001 and 2006) and Kleinman *et al.* (1997) tends to focus on the social, contextual, and embodied nature of memory as a felt recollection of simultaneously personal and historical event. While

memory biases may either enhance or impair an individual's recall of a particular event, the social remembering of the past is always done within present contexts.

In northern Thailand, some forms of local memory, notably the memorization of Buddhist scripture and magical formulae (*kata*) by Buddhist monks and maw Muang, make use of formal training, ritualized protocol, and standardized mnemonic devices to facilitate recall of complex and abstract passages. As influenced by Buddhist precepts, idle gossip and telling of falsehoods is discouraged, but autobiographical remembering of problems encountered and practices engaged, as a parent or farmer, is generally not subject to formal or ritualized protocols of remembrance. Instead, stories of child illness and land use challenge are told informally by parents and farmers in the valley, talked about while sitting on the floor of one's house while visiting over water or whisky, or on the street or at the market in commenting on the events and challenges of the day. While not formally ritualized, the kinds of social remembering of one's own experiences and practices asked of parent and farmer interview participants are quite common in the valley. The sites of this kind of memory are the fields and homes of Mae Chaem. The respect accorded to elders in northern Thailand is pronounced, and their memory, particularly as it relates to their own experiences, tends to be highly valued. Older or more experienced parents and farmers, in their role as experts within the domestic stream, often recount their own experiences of farming or parenting when asked for advice by younger parents and farmers, and it is common for farmers visiting at market or elsewhere to discuss the best crops to be grown, or compare the current price of rice, or of a day of labour, to the past.

Within these accounts, the individual parent or farmer is the primary authority regarding her or his own actions and experiences. While it goes somewhat against the grain of some current psychological approaches that emphasize the malleability and fallibility of human memory, I contend that an individuals' recall of their own first-person child health and land use histories can be approached as being accurate in terms of practices remembered and issues faced, and is of key relevance because retrospective experience and remembering is the primary form of history used at the local level of navigating biotechnical choice. I have not relied upon participants to remember specific dates, and use only a general sense of temporal accuracy (to the decade) in my analysis.

In the parent and farmer interviews, the reliability of first-hand memory in Mae Chaem was reinforced by the mnemonic device of eliciting recollection of child health and land use experiences concurrently, by following a consistent chronological order in eliciting information, and by linking both child health and land use recollections to a concrete and personally salient temporal benchmark in the form of the birth of one's first child. In interviews, parents and farmers frequently referenced child health challenges to what they were doing in the fields that year. By linking recollection of child health and land use within the same interview context, I contend that the reliability of both is reinforced. Another factor that reinforces the reliability of parent-farmer recall in my work is the focus on particular practices or actions. The interviews were designed to document health or land use practices that involved reliance on expert others. In some cases this involved recollection of trips to the local clinic or hospital, in others it involved recollection of visits to spirit mediums, or to request help from elders or relatives. Where parents or farmers recalled child health or land use concerns and relied upon themselves

(*tam eng*) then this was recorded as reliance on the domestic stream. Finally, because parents and farmers were encouraged to recount child health and land use concerns and practices in their own words, personally salient illness categories, such as *khii yeh*³² (crying too much) were used to record personal accounts. As show in chapter 14, a small set of general illness categories were shared by parents and farmers in Mae Chaem.

In conducting these interviews, my intention has been to develop a matrix of local histories of ecology, health, and change, that can provide the necessary longitudinal time depth to see patterns in the connections between local histories of land, health, and knowledge. For my own work, while patient records from the Mae Chaem hospital would have been useful in providing a partial account of child illness and health practices in the valley since the late 1960's, these kinds of records were not accessible at the time of research. Even if these records had been available, it is likely that they would have shed very little light on the majority of child health challenges and practices as most of these occur and are dealt with outside the stream of national biomedical concern and surveillance, and would have been conditioned by the various scientific, bureaucratic, and personal biases that went into their making. Even where archival records of public health in Thailand are available, they are frequently considered to be unreliable. McGuire (2002), in an assessment of available Thai public health data, finds data regarding child and infant health to be particularly unreliable. He quotes from a 1981 report by the Thai Ministry of Public Health that, "deaths are highly underreported in the provincial vital registration system, and the proportion of underreporting is highest for infant and child deaths. This makes vital registration data generally useless" (MoPH 1981:19).

While documentary and archival sources for Mae Chaem proved difficult to access, the oral history data does illustrate parents' and farmers' own recollections of child health and land use concerns. It is based on these recollections, not on documents in some archive, that parents and farmers understand the past and make decisions regarding the future. In common with many other anthropologists, I understand memory as a subjective medium and, undoubtedly, narratives from Mae Chaem reflect current remembrances of past events, understood and reconstructed according to present needs and desires, and according to social conventions of narration and plot making (Good 1994, Mattingly 1998, Mattingly and Garro 2000). Remembering is a social, creative and constructive process:

As persons talk about their experiences, past events are reconstructed in a manner congruent with current understandings; the present is explained with reference to the reconstruction of the past; and both are used to generate expectations of the future. In response to a disruptive life event like illness, the reconstruction of the past in accounting for an illness, and dealing with the illness in the present and future, are often closely connected. (Garro 2000: 70).

With this recognition, I would also argue, as Kunstadter does, that through careful collection and analysis of recollections, accurate historical understandings are also possible. As in Kunstadter's work, I found a high degree of internal consistency between the narratives of parents and farmers in Mae Chaem, and the durability and accuracy of recalled autobiographical information that is emotionally salient is generally supported (Mathiowetz 2000, Conway 1995). The likelihood of accuracy in the oral histories was also enhanced by soliciting concurrent child health and land use histories. It was common for participants to check their recollections in one domain against recollections in the other as part of the interview process. I would argue that, taken together, the recollections of parents and farmers not only provide the most relevant information upon which to

understand histories of local agency, but also provide a reasonably sturdy scaffolding of local remembrances of ecological and health change. This is particularly true as the emotional immediacy of both child health and land use concerns lend themselves to later remembrance. Through the composite of multiple personal histories, connections can be traced upwards into the broader national, international, and global arenas in which they interact, and also downwards, through the layers of cultural and personal meaning within which, for local actors, they are embedded.

3.5.4 Analysis of Streams and Narratives

Based on the extensive child health and land use narratives provided by parents in communities across the valley's three ethnic and language groups (Thai, Pgha'knyaw, and Hmong), I have tried to trace local land use and child health experiences and choices (including gender and ethnicity) using both qualitative and quantitative analysis. I have tried to combine a mapping of actor-network relations (in this case through biotechnical streams) with a temporal mapping of child health and land use strategies reported over time by parent-farmers.

Local understandings of illness causation (epidemiology) often have little relation to the actual health practices sought out (Young and Garro 1993). As Davis notes regarding his work in northern Thailand, "the powers which are thought to influence people's well-being form a hotchpotch of theories and concepts which are but poorly integrated into a coherent system" (1984: 73). People in Mae Chaem tend to be extremely flexible and partial in choosing their biotechnical streams, partly because the streams themselves are offering up contradictory definitions of illness and disease, as well as

imperfect strategies for addressing them. At least in my own work, mapping the relations between local recollections and the available traditions of medicine and ecology seems to provide a useful strategy for developing a nuanced understanding of how externally driven ‘development’ and globalization efforts have been turned by local agents into the experience and practice of child health and land use in the fields, communities, and homes of Mae Chaem parent-farmers over the past fifty years.

Fieldwork in Mae Chaem left me with accumulations of two main types of data: data provided by biotechnical experts in the valley, and data provided by parents and farmers. In analyzing the data provided by biotechnical experts my emphasis has been on a thematic analysis of issues and topics raised through interviews, and analysis of the data in terms of actor-networks and the kinds of relationships that seem to exist between parent-farmers, local experts, and larger systems of knowledge, ecology, and technology. Data from the parent-farmer interviews, including extensive notes detailing personal histories of child health and land use, were reviewed, categorized within a simple database, and analyzed in terms of dominant themes.

A portion of the parent-farmer interviews (the thirty six conducted with Muang participants) were also analyzed through simple quantitative techniques. The quantitative analysis provides a composite picture of the change in Mae Chaem lowland over the fifty year period. As this analysis was based on individual recall of events, and given the small size of the sample, it is suggestive but not necessarily indicative of actual change. Given the composition and size of the sample, the analysis and resulting figures do not allow for generalizations from the sample to the community as a whole. Nonetheless, the results are interesting, and I think provide an alternative way of considering the historical

perspectives provided through the parent-farmer narratives. Within this analysis the Muang parent-farmer narratives were first grouped by decade. Accounts of child health actions, including curative and protective actions, were categorized according to the biotechnical stream that they relied upon. As presented in chapter 14, this provides a picture of how Muang parent-farmers have moved between the streams in different decades. Accounts of child health cures and attempted cures were in all cases targeted towards resolving particular child health concerns. These concerns were documented using the parent-farmers own recalled understanding of what he or she thought the concern was and was caused by at the time of the child's illness. For analysis, each account was categorized into several broad indigenous illness categories and considered over the fifty year period in terms of changing Muang child health concerns and definitions (see table 14.13).

Reported child health concerns were also considered in terms of the average number, or frequency, of child health concerns reported per year by parent-farmers over the fifty year period of the study. The frequency of reported child health concerns considers the total number of concerns reported within the context of the total number of child health and land use years collected in a given decade. Finally, documentation of concurrent land use and child health histories also allows comparison of the frequency of child health concerns reported by Muang parent-farmers engaged in different kinds of land use practices. Chapter fifteen considers the frequency of reported child health concerns within the context of pesticide and agro-chemical use by Muang parent-farmers in the vicinity of the Mae Chaem district centre.

Validity was checked through a community-based process whereby I returned to Mae Chaem after the preliminary analysis was complete to present the early findings, discuss the results, and solicit local interpretations of them. This final analytic stage was intended to subject my early analysis and results to local scrutiny in order to balance and challenge my understandings with the possibility of alternative local perspectives. The strategy of returning to a community for local review of preliminary analysis was employed successfully by Scott (1985) in rural Malaysia, and is further explored in Young et al. (1996). Set in the far more positivist light of ‘community verification’, it is also a common practice beyond the domain of ethnography. In subjecting my preliminary analysis of child health and land use narratives to the review and interpretation of select community members, I have tried to open my research to a more participatory and community based critique of my research, and of what it says. This has both bolstered and challenged my understandings of local medical and ecological streams and their meaning within the life histories of the valley. Responses and elaborations based on local review of the results have substantially influenced my interpretations and are included in the final chapters.

Taken together, and coded within a database, health and land use interviews provide a diverse, but impersonal, matrix for tracing local memories of ecological and health changes through a chronological framework that includes numerous actors and multiple streams. This matrix allows reflection on historical changes in people’s health and land use knowledge and practice over a significant enough time depth to discern patterns and make comparisons. Reported shifts in child health and ecological concerns and practices can be traced and provide a basis for future comparisons.

Beyond the significant challenge of recording and presenting narratives of how parent's child health and land use choices have changed over time, I have also tried to understand underlying reasons of why they have changed. *Why* are particular streams of health and ecological knowledge/practice adopted, accommodated, ignored, or resisted by particular people at particular times and in particular places? It is at this level of questioning that the temporal connections provided by the matrix have most required interpretation through an ethnographic lens refined through the daily wear and tear of dialogic and productive fieldwork experience. It is here that analytic tools are balanced against personal experiences of suffering and illness and the accumulated weight of personal, lived, and qualitative relationships, interactions, and understandings within the Mae Chaem valley. It is also here that the ethnographic insights developed through attempting to describe and articulate how various medical and ecological streams available are understood can be traced back into the details of individual experience and narrative, as well as forward through local social relationships and into more global levels of national and international scientific and bureaucratic policy and interaction.

Ethnographic Contexts

4.0 Ethnographic Contexts

This chapter places Mae Chaem within the local, regional, national, and international contexts within which my fieldwork was conducted. In describing the contexts of my work I move generally from the local scale towards more national and international levels. I begin by introducing the Mae Chaem valley, then try to place Mae Chaem within the Thai nation and larger contexts of global connection and historical, as well as, cultural transformation. I draw on various sources to outline the ethnography, geography, history, and economy of the local, regional and national contexts of field work. The chapter concludes with a reflexive consideration of my own position as a farang anthropologist living with my family in contemporary Mae Chaem, and as part of a larger transnational flow of tourism, research, and foreign influence in the valley.

4.1 The Road to Mae Chaem

Mae Chaem is a small and remote mountain valley district in northern Thailand. The valley consists of an encircling mass of forested mountain tops whose slopes are dotted with the shifting swidden fields and small villages of Pgha'knyaw (Skaw Karen) and occasionally Hmong upland minority communities. In between the mountains and slopes, the valley floor is carpeted with permanent irrigated rice fields centred around khon Muang (northern Thai) villages and the more densely populated neighbourhoods of the district centre: *Amphur Mae Chaem*. The tallest of the surrounding mountains, Doi

Inthanon, is named after the last independent monarch of Lanna, the name of the northern kingdom before the integration, in the late 19th century, of what is now northern Thailand into what was then the Kingdom of Siam. Doi Inthanon stands between the Mae Chaem valley and the city of Chiang Mai, and is the highest peak in Thailand. It is also a national park popular with Chiang Mai based *farang* (foreigners) tourists and *khon thai* (Thai citizens) alike. At Doi Inthanon, orchid soaked cloud forests, royal temples dedicated to the current Thai monarchy of King Bhumibol Adulyadej and Queen Sirikit, and a large Thai military and defence installation vie with masses of tour buses in a potent symbol of the Thai nation state. While the road to Mae Chaem passes through Doi Inthanon National Park, the tourist busses go only to the park and no further.

Beyond the armed check points that guard the park entrance/exit from poachers and drug couriers, the road forms of a twisting black snake of asphalt descending the western slopes of Doi Inthanon. The steepness of the mountain road restricts Mae Chaem to motor bikes, private cars, or (my personal favourite) the bright yellow public *songtaew* (converted pick-up trucks) that provide the primary means of public transportation between Mae Chaem and the world. The main road into the Mae Chaem valley was first built in the early 1970's by the Thai military as an effort to improve access to a district that was, at the time, considered to be a communist stronghold and a centre for illegal opium production.

As the road descends, it slips down through a series of drops and twists that challenge even the strongest of stomachs. The cool mountain forests of Doi Inthanon turn to rocky slopes planted with young teak trees waving massive leaves, then to steep upland fields planted with mountain rice in the wet season and rows of dry feed corn in

the arid and windy months. The road levels and straightens somewhat as it comes to the valley bottom. Doi Inthanon, with tourist clad royal temples glinting on its sides, stands to the east, visible from almost anywhere in the valley, but also seems a world away from quiet Mae Chaem.

As the road approaches town through a patchwork of irrigated rice fields, brightly coloured posters appear stapled to trees, plastered on concrete power poles, and attached to almost anywhere else that may be visible to passing motorists. The posters are glossy with big, bold Thai letters. Some show mammoth potatoes, giant cabbages, rows of perfect onions, or overflowing cornucopias of plenty. Others display huge insects or monster caterpillars eating through sickly looking roots and leaves. Still others depict shining swords, ferocious tigers, warriors and exploding rockets. Each one cries out the advantages of the latest agricultural products: fertilizers, pesticides, fungicides, herbicides and hormones designed to cure the ills of today's cash crops and make both fields and profits grow. Like advertisements all over the world, most of the writing is brief and bold. Slogans in Thai tell of rich productivity and high yields alongside proclamations of "New Formula!", "Safe", and "No Smell". Some of the posters have corporate logos with English names that sound familiar, even to those from half a world away: Bayer, Syngenta, Dow, Monsanto. All are present in the biotechnical parade of the Mae Chaem valley. Smaller, less colourful signs, in Thai only, advertise easy access to credit and loans available to cash strapped farmers.

Canadian anthropologists and academics are obviously not the intended audience of these rural Thai advertisements. They are intended for the eyes (and hearts and minds) of Mae Chaem farmers, and especially those who see production and marketing of

agricultural cash crops as a path towards the achievement of wealth and success. They are intended to represent particular chemicals, brands and commodities, as well as particular corporations, but they also advocate particular conceptions of the world, and of how nature, technology, money, health and disease are related within it. Posters advertise biotechnical ontologies at the same time as they advertise biotechnical commodities. Such market oriented representations are only the first and most obvious indication of the agricultural traditions and changes that run through life in Mae Chaem. Others, both locally and globally derived, are represented by traditional doctors, Buddhist monks, local spirit mediums, village elders or grandparents, and NGO or government extension agents, though the advertising of these traditions is less obvious. Each stream has its own experts and advocates that proclaim its own brand of biotechnical efficacy, each seeking to attract the allegiance of Mae Chaem parents and farmers.

On the edge of town the road passes several large compounds where pesticides, fertilizers, and agricultural equipment is stacked for sale. More brightly coloured signs indicate the prices of the products and tell farmers of prizes, including shirts, televisions, and vehicles, that can be one if they purchase enough of a particular chemical. Large vehicles scales are nearby, ready to weigh loads of cabbage and other cash crops before they leave the valley for sale and then export to international and domestic Thai markets. Smaller signs indicate that the Mae Chaem offices of several large multinational agricultural companies are nearby, the local purchasing and extension office of Frito-Lays among them.

Where the road levels out and stretches towards the banks of the Mae Chaem river³³, the houses and small shops that make up Amphur Mae Chaem, the district centre,

begin to appear and increase in number. One and two story teak and concrete houses and shops stretch along the road and multiply as you approach the centre of town. Speeding by in the back of a songtaew pick-up, they first give the impression that the district centre is much larger than it is. As I got to know the community better, I realized that this illusion of size is a deception: the rice fields, unseen from the road, start again immediately after the first or second row of houses. Closer to the centre of town, a large sign indicates that off to the left, hidden by more shops and houses, sits the Mae Chaem hospital. In the same direction, a brilliant and unmistakable arched entryway, complete with sculpted mythical animals and glistening coloured glass mosaic, indicates the presence of a large Buddhist temple. Behind it, an immense transmission tower reaches up into the sky to send television, radio and cellular signals hurtling towards household TVs and ubiquitous personal cell phones all over the valley until their invisible waves are swallowed up by the surrounding green of hills and mountains.

The epicentre of town is marked by a busy intersection where the east-west running Doi Inthanon road crosses the Mae Chaem River and another north-south running road splits up and down the valley, sending little motorbikes and aging pick-up trucks in all directions. A few noodle stalls and fruit sellers spill out from the main market on the far side of the intersection. A drug store, convenience store and several restaurants stretch out on either side. The busiest time of day is in the early morning when the mountain mists still hang low around the buildings and the market is in full swing with local residents joined by villagers from the hills, many of them, especially women, wearing the distinct woven or embroidered clothing of Hmong or Pgha'knyaw (Karen) minorities. As the afternoon moves on, the blazing sun bakes the surrounding

asphalt and concrete sending up waves of heat that ache for the cool return of monsoon rains. Wealthy store owners move inside to their air conditioned interiors while less protected pedestrians keep close to the shade of buildings and nearby trees. The local branch of the Thai Farmer's Bank stands nearby, complete with ATM: a tall and incongruous structure of mirrored glass with broad white washed steps. The whole scene is watched over by a small spirit house tucked away on one side of the intersection, and, at its centre, a large and brightly coloured billboard picture of the Thai monarch, King Bhumipol, and his Queen. Behind the billboard and stretching toward the river stand a large cluster of government buildings that form the administrative seat of the district centre and the Mae Chaem valley as a whole. Beyond them are the local elementary school, several car dealerships, an internet café, more shops and restaurants, and the neighbourhood of *Baan* (village or neighbourhood) *Sanong* where my wife, daughter and I were based for the duration of our fieldwork.

4.2 Waking Up in Mae Chaem

Morning coaxes a soft hazy grayness from the milky polyester mesh of our mosquito net. My body slowly comes awake on a hard sleeping mat laid out on the teak wood floor of our house. I am always surprised at how cool the morning air is in these tropical hills, and how full of noise. The vertical teak planks that form the upper story of our home's walls are thin. They constrain the gaze of prying eyes, but do little to separate the world of sleeping dreams from the nighttime and early morning beyond. The raucous crow of a neighbor's rooster in the courtyard below encourages a wave of warbling bird song from the young mango tree outside. Carolyn is still sleeping beside me.

The first shafts of early pale light slant in through the window frames and usher in outside smells of charcoal and wood cooking fires. The roosters are always followed shortly by stirrings of life in Pii Paa's house next door: loud, hacking coughs and the sound of running water. Pii Paa, our hard working, hard drinking next door neighbour begins her days, and today in particular, by loudly clearing her throat, shaking loose years of harsh Thai cigarettes and home made rice whiskey before making breakfast and heading out on her motorcycle for another day working as a laborer in the fields, harvesting rice or whatever cash crop might be in season. Between her and the rooster it is a rough, rasping ritual to begin each day. I linger beneath my warm blankets, left guessing the meanings, the possible pathologies, networks and social processes hidden within the morning sounds.

In time I hear the click of Pii's gas stove, the tinny roar of water gushing from a tap into a bell shaped aluminum rice pot in the concrete space between our houses. The faint hiss of propane gas feeds the single burner of the stove and is followed by the sharp clicking of the igniter. I hear the rice being put on to cook and imagine the boiling water turning to steam and forcing its way up through the inverted cone of the rice basket loaded with grains that are already soft and swollen from being put out to soak late last night by Fai, Pii's ten year old niece. The sticky rice cooks quickly and the fragrant steam rises up through the gray morning to mix with wood smoke and cool mountain mist until the mid-morning sun burns it away.

4.3 Mae Chàem, Mae Hài Tài and the Mountains in Between

The city of Chiang Mai also gives its name to the largest province in the north with a population of almost 1.5 million. Like all Thai provinces, Chiang Mai is divided into administrative districts (amphur). Amphur are further divided into sub-districts (tambon) and finally villages (baan) which are governed by an elected *paw luang* or *puu yai baan* (village head). Mae Chaem is an amphur on the western edge of Chiang Mai Province. The valley is located immediately to the west of the much larger Chiang Mai valley, separated from it by a set of mountains that includes Thailand's highest peak, Doi Inthanon (2565m a.s.l.) and the associated national park through which the main road to Mae Chaem runs. West of Mae Chaem is the long, narrow northern province of Mae Hong Son, and beyond that Thailand's western border with Burma. The district is composed of a single watershed including all of the various networks of streams that flow through the northern hills into the Mae Chaem river before it joins the river Ping in the more accessible and southerly amphur of Hot.

Because of its mountainous surroundings, Mae Chaem is one of the more isolated districts in Chiang Mae province and in Thailand more generally. The amphur of Mae Chaem consists of ten tambons (sub-districts), and one hundred and thirteen administrative villages. Because of poor road infrastructure the northern half of the valley is effectively cut off from the southern. The valley is informally divided into a southern and a northern half, with the northern half much more accessible via highways that pass the valley further to the north, and the southern half accessible via the roads the branch out from the district centre. Because of these transportation challenges, southern Mae Chaem effectively operates as a distinct entity centered upon the district centre. My work

has focussed exclusively on this southern half of the valley. Slightly more than half of the population (approximately 35,000 people) live in the southern half of the valley that is accessible from the district centre.

While the district as a whole is rural, the district centre itself has the feel of a small northern Thai town complete with a large market area, several large temples, government offices, and numerous shops and services clustered along the main streets. At the semi-urban core of the district centre the *baan* are equivalent to neighbourhoods within a single small town. *Baan Sanong*, *Baan Chang Kung*, and *Baan Chang Kung Bon* make up the core of the district centre. Beyond the district centre *baan* are spatially distinct villages consisting of a core of houses, shops and perhaps a school or temple, surrounded by rice fields and garden plots. The *baan* of the more productive valley bottom tend to be closely spaced with only a few kilometres between each. The *baan* of the less productive upland areas tend to be much farther apart and travel between upland villages is much more challenging because of often steep and rugged terrain and very basic road infrastructure.

It is in *Baan Sanong*, in the district centre, where I chose to live with my family and base my field research. In addition to living and working in and around the district centre, my research team and I made frequent trips to upland and lowland villages around the district centre, and particularly to the upland Karen community of Mae Hae Tai. The two communities are contrasts. The district centre is in the valley bottom, surrounded by paddy fields. It has good road access, reliable power, running water, and even several email shops along the main road. Mae Hae Tai is located on a high mountain ridge surrounded by steeply sloping swidden fields and forests. Household water comes from a

gravity-fed water system that depends on springwater flowing from higher up on the mountain, road access is unreliable, and the village has no power system other than a series of solar panels that are used to recharge flashlight batteries and an emergency satellite telephone.

4.3.1 Demographic and Ethnographic Summary

Mae Chaem is the largest amphur in Chiang Mai in terms of physical size (nearly 4,000 km²), but is one of the smallest in terms of population. In 2003 the valley as a whole had just over 66,000 inhabitants while the province of Chiang Mai had just over 1.5 million. Slightly more than half of the population of Mae Chaem lives in the southern half of the district that is accessible from the district centre. The district is composed of a mosaic of ethnic groups including Muang (northern Thai) who mostly live in the fertile valley bottom, Karen

speaking Pgha'knyaw (Skaw Karen) who mostly live in the middle altitudes and forested valley slopes, and a very small Hmong minority who tend to live at the ridges and hill tops at the upper-most altitudes of the watershed.

Figure 4.1: Mae Chaem Population 2533-45 (1990-2002)

| Thai/ Western Year | Total Pop. | Male | Female |
|--------------------|------------------|--------|--------|
| Pre-2533/1990 | Data Unavailable | | |
| 2533/1990 | 50 673 | 26 577 | 24 096 |
| 2534/1991 | Data Missing | | |
| 2535/1992 | 56 359 | 28 892 | 27 467 |
| 2536/1993 | 57 690 | 29 488 | 28 022 |
| 2537/1994 | 59 390 | 30 365 | 29 025 |
| 2538/1995 | 60 663 | 31 060 | 29 603 |
| 2539/1996 | 61 497 | 31 499 | 29 998 |
| 2540/1997 | 62 501 | 31 958 | 30 543 |
| 2541/1998 | 63 579 | 32 487 | 31 092 |
| 2542/1999 | 64 330 | 32 853 | 31 477 |
| 2543/2000 | 64 763 | 33 086 | 31 677 |
| 2544/2001 | 65 367 | 33 358 | 32 009 |
| 2545/2002 | 65 960 | 33 675 | 32 285 |

The valley is somewhat unique in northern Thailand in that only about half of the valley's population identify themselves as northern Thai or khon Muang. The other half of the district's population self identify as either Pgha'knyaw (slightly less than 50%) or Hmong (<5%). Statistically, Muang tend to be healthier, wealthier, and better educated than highland minorities (Ralana 1989, MoPH 2000). Despite efforts by the Thai state to increase services in remote upland villages, including health clinics and water services, rates of childhood malnutrition as well as infectious and water-borne diseases are particularly common in upland minority communities.

While the uplands and lowlands are closely linked by economic ties, Muang, Pgha'knyaw and Hmong populations maintain distinct cultural and linguistic traditions. Younger Muang individuals frequently speak both the central Thai dialect that is taught in schools, and the northern dialect of Thai which is referred to locally as *kham Muang* or *phasa lanna*. Older generations of in the lowland Muang villages frequently speak the kham Muang dialect exclusively. Muang villages tend to be almost entirely Buddhist, and agriculture is largely focused on irrigated rice paddy rather than dry upland or swidden cultivation.

Despite many changes, the lowlands of Mae Chaem are recognized as a heartland 'traditional' northern Thai, or Lanna, culture. The lowland villages maintain distinctive Muang Buddhist forms, as well as traditions of collective water management (Muang fai) and labour sharing during the rice harvest, that are no longer practiced in many other areas of northern Thailand. Lowland Mae Chaem is also recognized for its distinctive tradition of weaving (a style known as *tinjok*) now celebrated in an annual Tinjok festival complete with parades, boat races, and the beginnings of tourism promotion.

Pgha'knyaw communities in Mae Chaem, generally located at middle elevations, speak Skaw Karen (a Sino-Tibetan language) and frequently northern Thai, are as frequently Christian as Buddhist or animist, and primarily engage in dry hill rice cultivation supplemented by some irrigated wet rice production, wage labour and cash cropping. The few Hmong communities of Mae Chaem tend to be located at the highest elevations, speak Hmong (a Hmong-Mien language) and Thai, are generally animist or Christian, and engage almost entirely in cash cropping and trade. Hmong, Karen and Muang women and men tend to wear distinctive clothing and all are seen frequently in the district centre. Of course, while broad ethnic generalizations are useful at the population level, there is considerable variability at the individual level.

Regardless of ethnicity or group allegiance, the population of Mae Chaem is linked by reliance on common resources. In Thai, Mae Chaem means 'Clear River' and refers to the fast flowing (but no longer very clear) stream of water running through the district's central town and administrative centre. The river is, in many ways, the lifeblood of the valley. It provides the water necessary for life and crops in the valley and is an ongoing concern for parents and farmers alike. The headwaters of the Mae Chaem's tributary streams are the sites of special veneration and offerings to powerful water spirits. Rowdy festivals (*ngaan khaw fon*), held at the end of the hot season, use fire works and generous amounts of whisky to call the rains that herald the onset of the monsoons. Local irrigation societies put communal labour to use in maintaining the complex irrigation systems that channel the waters of the Mae Chaem through the most productive irrigated rice paddy that surround each of the lowland villages and towns.

The streams and irrigation canals of Mae Chaem also provide water for mixing chemicals and pesticides used in growing the many cash crops. Disputes over water access and water contamination frequently occur between upland Hmong and Karen farmers, and northern Thai farmers further down stream. As a result, the Mae Chaem river is no longer considered a source of clean drinking water. Instead, almost all lowland Mae Chaem households have access to piped water that is used for washing and cooking. For drinking water most families in lowland Mae Chaem purchase large bottles of purified water from local suppliers. Beyond the valley, the waters of the Mae Chaem river flow south into the river Ping, joining it below the regional capital of Chiang Mai, and then on into the Chao Praya, the 'River of Kings', that irrigates the rice-producing heartland of central Thailand before winding its way through the Thai capital of Bangkok (Krungtep) and on to the salt water of the Gulf of Thailand.

4.3.2 The District Centre

As well as being the name of the district, the river, and the valley, Mae Chaem is also the name of a small town (pop. 1,700) that serves as the market and government centre for the district. The Mae Chaem district centre is long and linear: an assemblage of the several large villages that have become contiguous and semi-urban neighborhoods as a result of population growth and the concentration of business and administrative activities in the area since the 1970's. Shops, bars, schools, and government buildings run along two axis: the east-west axis of the main road to Chiang Mai and the north-south axis of a road that parallels the east bank of the Mae Chaem river. At no point does the town extend more than two or three streets back from these two main roads.

The centre of town lies where the road from Chiang Mai and the road along the river meet. It is here, on the river's banks that the main market is located, as well as the main bridge across the river, the larger shops, the tall glass façade of the Thai Farmer's Bank (complete with ATM), the district government buildings, the police station, and a little further on, the district's public health administration offices, a hotel, the hospital, the temple, and a public elementary school. Dispersed between and amongst these major buildings are dozens of small shops and vendors selling noodles, food, sweets, cold drinks, medicines, construction supplies, newspapers, motorcycles, and a hundred other commodities of desire.

Houses in Mae Chaem are laid out along the numbered streets, or *soi*. Older houses built before the ban on logging tend to be built from large teak timbers and roofed with corrugated metal. The main living areas of the older houses are raised seven to ten feet above the ground and enclosed with wood plank sides and flooring. The lower ground level is traditionally left open and used for storage, but many of the older houses now have lower levels enclosed with concrete blocks and tiled to make a cool living space. Newer houses in the district centre tend to be made of concrete cinder blocks or brick, with the largest and wealthiest roofed in tile. Beyond the roads, buildings and houses that make up the district centre there lies the irregular patchwork of wet-rice fields divided by mud walkways and narrow irrigation canals. The fields beyond the district centre are dotted with smaller outlying towns and villages, and beyond them, the darker forested green of hills and upland swidden fields.

4.3.3 Mae Hài Tàì

Approximately forty kilometers west of Mae Chaem's district centre is Mae Hae Tai (pop. 350) my second focal research site. Mae Hae Tai is a Karen community located in a mountainous area on the border of Mae Hong Son Province. Under ideal conditions it takes a little more than an hour to travel the rough, steep road from the district centre to the village. In the rainy season the dirt road connecting Mae Hae Tai and its adjacent villages to the rest of Mae Chàem are often made impassible by slick mud and deep ruts. The community includes a state run school and medical clinic (anamai) and serves as a centre for several smaller outlying Karen settlements.

Mae Hae Tai (literally, southern stream or southern tributary) and its fields lie on the slopes of a long, low mountain ridge at an elevation of approximately 1000m above sea level. As is typical for Karen villages, this is a middle altitude sandwiched between ethnic Thai villages located in the more productive intermountain valleys below, and other minority villages located at higher altitudes. Karen presence in the area is reported to have been ongoing for at least three hundred years (Prasit 2001), and has been bolstered only occasionally by the arrival of ethnic Karen refugees displaced from Burma (Myanmar) and ongoing Karen and Karenni conflicts with the Burmese military regime.

Both religious and linguistic affiliations mark Karen identity in Mae Hae Tai as distinct from the largely Buddhist and Thai speaking majority of the nation. Mae Hài Tàì is predominantly Skaw Karen speaking, although most people in the village, especially younger generations who have attended compulsory Thai elementary schools, also speak the northern Thai dialect with varying degrees of fluency. Like many Karen communities, Mae Hae Tai is predominantly Christian. Missionaries introduced Christianity to Mae

Hae Tai in the early 20th century and by the 1950's most of the village was Christian. At the time of my fieldwork almost everyone in the village defined themselves as Christian, but for some of the older villager this was a fairly recent conversion.

The seasonal inaccessibility of the village and its lack of electricity and access, as well as the marked ethnicity of its inhabitants, play major roles in its marginal economic and social status within the bounds of the Thai state. As in many upland areas, land tenure is insecure because, within the Thai legal tradition, swidden fields are seen as forest lands belonging to the state rather than farmed lands belonging to the farmer. Cash crops play a relatively minor role in Mae Hae Tai's land use, partly because of the difficulties associated with getting them to market. Lower cash incomes in the village are made visible in the houses of Mae Hae Tai: similar to those of lowland villages, but built of less costly and less permanent materials. Like traditional Thai houses, Karen houses consist of a single enclosed upper level raised on posts and a lower unenclosed level with a dirt floor that is used for storage and as a shelter for animals. The houses of poorer families in Mae Hae Tai are made of crushed and woven bamboo rather than the concrete blocks and teak planks that predominate in the district centre of Mae Chaem. Access to water in Mae Hae Tai is from a gravity fed system of pipes and hoses that moves water into individual houses from a cistern connected to a stream above the village. The only power in the village is supplied by either solar panels used to recharge small batteries, or electric generators maintained by a few wealthier families to operate lights, TV sets, and VCR's.

4.3.4 Agriculture, Cash Crops, and Rice

Due to the rugged topography and differences in altitude, the Mae Chaem valley includes several distinct ecological zones ranging from intensively modified lowland

landscapes of irrigated wet-rice paddy, through middle altitudes of deciduous tropical forest and rotating dry-rice swidden fields, up to the highest peaks and ridges where thick evergreen 'cloud-forest' predominates along with fields planted with cool weather fruit orchards and cash crops. From the 1950's through the 1980's the steep slopes and cool climates of the uplands were the preferred areas for cultivation of opium poppies, often in conjunction with dry rice cultivation, within rotating swidden fields. Through the efforts of national Thai and international NGO development organizations in the 1970's and 80's, the growing of opium has largely been eliminated in Mae Chaem. As a result, opium poppy has now been replaced by cabbages, carrots, corn, red onions, and potatoes. These are sold for cash to supplement, and sometimes replace, the subsistence rice agriculture on which many villages still depend. However, many upland villages, including Mae Hae Tai, continue to farm rice and other cash crops using modified swidden or "slash and burn" agriculture. This practice has been considered environmentally destructive by many NGOs and government agencies through the 1980s and '90s. With both opium production and swidden agriculture as targets, over the past fifty years several Thai and international agencies have tried to discourage traditional crop cycles in Mae Chaem and replace them with new cash crops and permanent fields, both of which often require large inputs of pesticides and fertilizers.

Even with massive increases in cash crop production, the rhythms of agriculture and rural life in Mae Chaem, as in many other parts of the north, continue to be dominated by the cultivation of rice and the cycle of wet and dry seasons upon which rice depends. Several kinds of rice are grown in the Mae Chaem valley, all of which can be divided into two main types: wet rice that depends upon the seasonal flooding and

irrigation of generally lowland paddy fields, and dry rice that grows in dryer, steeper upland areas that are primarily rain fed. While the valley bottoms can be farmed intensively in permanent, irrigated, and relatively productive wet-rice fields, the forested hills are traditionally farmed extensively using a permanent swidden agriculture generally involving a short cultivation period (1-2 years) and a long fallow period (ideally 15-20 years) and growing upland rain-fed rice varieties planted alongside a variety of other subsistence crops including beans, chilies, gourds, and other vegetables.

In the case of both dry and wet rice, the growing cycle begins and ends with the burning of fallow fields and swidden areas during the hot, dry season (March-May) when arid winds drive the flames through carefully contained stubble or recently cut brush. This is followed by the arrival of the monsoons in the rainy season (May-October) after which the rain softened soil can be ploughed and planted with sprouted rice in the lowlands, or dibbled and seeded in the uplands. During the rainy season the young rice grows and ripens in the colder and drier season that follows (October-March). By December, both lowland wet-rice paddies and upland dry-rice swiddens are dry and ready for harvest and threshing. After December, as the weather warms towards the hot, dry season, fields may be left fallow, but are increasingly planted with cash crops that require irrigation in order to ripen before the coming of the rains and the re-planting of the fields with rice.

While the lowland irrigated fields generate a reliable surplus of rice (and other cash crops) that can be sold at market, the highland fields generally provide harvests that result in a rice deficit for highland villages. This deficit must then be compensated for through some kind of market involvement, usually wage labour, cash crops, or livestock

(Kunstadter *et al.* 1978, Hanks 1972). Pgha'knyaw communities tend to depend almost entirely on low-input, and largely subsistence rice production (often using a rotating swidden land use pattern), while lowland Thai tend to rotate low-input subsistence rice production and high-input cash crops within the same irrigated fields. As discussed in 4.6.3 below, for all groups in Mae Chaem, rice is the dominant staple food, and also holds a unique place in terms of ritual, cultural identity, and economy. It is also unique in that, even in the lowlands of Mae Chaem, it is extremely rare for farmers to use pesticides or herbicides on it.

The few Hmong communities of Mae Chaem tend to depend almost entirely on input intensive cash cropping (using high levels of pesticide, hormonal, and fertilizer inputs) in permanent upland fields with very little or no rice produced for consumption. Upland Hmong communities were the main growers during the opium trade and received the lions-share of attention from NGO and aid related agencies as a result. The Hmong, along with farmers throughout the valley, have shifted from opium towards more pesticide and input intensive cash crops, cabbage being the current upland crop of choice. Due to massive fluctuations in the market value of cash crops, farmers may choose from a range of cash crop options that includes shallot, corn, carrot, onion, potato, coffee, fruit crops, and tobacco. Since the Asian financial collapse of 1997 several large transnational agro-corporations (Frito-Lays, Berli Jucker, etc.) have set up offices in the valley and have encouraging farmers to grow various cash crops, particularly corn and potatoes, under contracts that guarantee prices for farmers who agree to standardized agricultural methods and who are able to produce a reliable supply of standardized crop production.

4.3.5 Early Economies: Opium, Teak

Prior to the late 1960's, Mae Chaem was an almost inaccessible mountain valley dominated by thick tropical jungles interspersed with swidden dry rice agriculture in the upland hill areas, and subsistence wet rice agriculture in the valley bottom. Based on the recollections of local farmers, travel from Mae Chaem to nearby centres such as Chom Thong and Chiang Mai was only by difficult foot trails over the mountains. The traditional rice economy was augmented by hunting, fishing, gardening, collecting wild plants, and raising livestock (especially water buffalo, cows and pigs).

Until the 1970's the external trade economy of the valley was dominated by two primary activities: the cultivation and processing of opium poppy and the cutting of teak lumber. Both of these activities took place primarily during months when the rice fields would be fallow and required significant labour. Timber was floated south via river transport while opium was traded via overland routes. In the teak industry, human labour was augmented by carefully trained and valuable elephants. Several foreign owned (largely British and Burmese) logging concessions operated and employed local labour to cut the valley's massive teak trees, haul them, and float them to market down the Mae Chaem river.

More controversial than the logging industry was the cultivation and processing of opium poppies in the upland areas of Mae Chaem. While small amounts of opium were historically cultivated for medicinal and recreational purposes, large scale opium poppy cultivation was openly encouraged by the Thai government throughout northern Thailand in the years following World War II. The production of opium required intensive labour inputs for weeding the poppy fields and then harvesting the sap that was

processed into finished opium. In Mae Chaem, Hmong, northern Thai and Pgha'knyaw (Karen) villages were all active in opium cultivation; however Hmong and northern Thai farmers seem to have been more dominant as growers while Karen peoples seem to have provided much of the wage labour within the opium economy. Numerous independent traders travelled through the hills during the opium harvest to exchange trade goods for finished opium. Prior to the 1970's wages were often paid in refined opium. Opium by weight, functioned as a common currency. Pack animals (donkeys and mules) were used extensively to import trade goods and export opium along the mountain trails. Finished opium was valuable, easy to transport, and did not spoil easily. These qualities made it an ideal trade item for northern Thai valleys with poor transportation infrastructure.

In 1959, in response to international pressure led primarily by the United States and Great Britain and exerted through the United Nations³⁴, the Thai government established a ban on opium production and trade. In remote Mae Chaem, the opium trade continued through the 1960's and 70's during which time the valley became known as a lawless district and a haven for the members of the Communist Party of Thailand and their military wing, the People's Liberation Army of Thailand (PLAT). Through the 1960's and 70's, national and international efforts to suppress opium combined with efforts to suppress the rise Communism in the region resulting in extensive cooperation between international NGO's and national Thai military and state efforts. Effective suppression of Mae Chaem's subversive opium economy came with the development of roads into the valley in 1969 and 1977, and the arrival of international development and crop replacement efforts led by the United States Agency for International Development (USAID) and the national Thai government. Improved roads and communications

hastened the integration of Mae Chaem within the national Thai political and economic spheres.

While efforts to eliminate opium production in Mae Chaem were very successful, the district's reputation as a transit point for illegal drugs continues. Since the 1990's the drugs of choice have simply changed from opiates to synthetic amphetamine type stimulants (ATS) sold commonly as small pills of methamphetamine (yaa baa) across Thailand. Much of the methamphetamine in Thailand is produced across the Thai border with Burma and, because of Mae Chaem's proximity to Burma and its established corridors for drug transport dating back to the 1950's, the valley has a reputation as an important transit route for trade in methamphetamine. The perception of a methamphetamine crisis in Thailand led to a 2003 'war on drugs' by Thailand's President Thaksin. This crackdown resulted in wide spread extra-judicial killings, including approximately a dozen in Mae Chaem, and the shooting of more than 2,000 Thai citizens by 'unknown' assailants³⁵ over a three month period (Candler 2004, Chouvy and Meissonnier 2005).

4.3.6 Roads and Transport

The first road into Mae Chaem was not built until 1969. It followed a long and rather circuitous route around Doi Inthanon and adjacent mountains to connect the valley to the rest of Thailand via amphur *Hot* to the south. This is still the preferred route for large trucks and transport of cash crops (cabbage, shallots, etc.) to markets elsewhere in Thailand and beyond. In 1977 a much more direct route from Chiang Mai to Mae Chaem via the town of Chomthong was built by the Thai army directly over the top of Doi Inthanon. This road followed the general route of earlier foot trails and connected Mae Chaem more securely to the national interest. The Doi Inthanon road remains the primary route in or out of the valley. Since the 1970's, the main roads have been paved and some secondary roads have also been sealed or paved. Because of the steepness of the terrain, there are no public buses into the district. Travel in or out of the valley is by private car, motorbike, or, more commonly, by sawngtaew. From the urban centre of Chiang Mai

city, Mae Chaem is about a three hour drive (120km) via Chom Thong, dodging motor bikes and lumbering cabbage trucks along the way.

Beyond the lowland basin, and away from the asphalt of the main highway, the roads turn to brick as they ascend into the hills, and then to gravel and fine, red dust as they move farther and farther up into the steep hills and away from the Muang centre. Roads into smaller and more remote villages began to be built in the 1970's and the process continues today. Many of the more remote villages are still accessed by little more than dirt tracks: alternately clogged with dust in the dry seasons, or muddy and deeply rutted with the coming of the rains. Despite these challenges, most of the valley is accessible via truck, 4x4 or motorbike in the dry season. With the coming of the rains, access becomes much less reliable for the more isolated (and largely non-Thai) communities of the uplands, including Mae Hae Tai.

Most transportation within the valley and between the district centre and outlying villages is by small motorbikes or by sawngtaew for longer trips. It is rare to see someone walk more than a few hundred meters when a motorbike is available instead. Even in the torrential downpours of the rainy season motorbikes augmented with a carefully balanced umbrella are the main means of transportation.

4.3.7 Mass Media and Communications

Several internet shops operate in the district centre allowing cheap and easy access to global communication, but the shops are dominated by school kids playing video games and are rarely used to access information or send messages outside the valley. Computers in private homes in the district centre are very rare, and in Mae Hae

Tai, due to the absence of electricity, the only computer was maintained by the local health clinic and was only turned on once a day as it required a generator.

Inexpensive cell phones are extremely common throughout Thailand and Mae Chaem is no exception. By comparison, land-based telephone lines are very expensive to install. As such, land lines are correspondingly rare in Mae Chaem. National Thai newspapers are available daily at local magazine shops (even in English, on request) and televisions and radios are extremely common in the district centre and throughout the lowland areas. Beyond the relatively flat flood plain of the Mae Chaem river, the tall mountains of the district make cell phone reception questionable or impossible in more upland areas.

The more remote upland villages, including Mae Hae Tai, have no cellular coverage and no access to electrical or telephone utilities. Such remote villages generally have access to battery operated lights and radios only. A recent development initiative administered by the Thai government has seen the establishment of solar panel stations and satellite phones in many of the remote upland villages, including Mae Hae Tai. The satellite phones are available for emergencies and the solar panel stations allow villagers, for a small fee, to charge batteries for powering household lights or radios without the need for expensive gas powered generators.

4.4 Upland-Lowland Relations: Water, Conservation, and Conflict

Traditional Karen land use practices center on management of a subsistence-oriented landscape composed of a permanent rotational system of forest fallow shifting cultivation combined with limited paddy land, home gardens and ritually protected sacred forest areas

(Kunstadter *et al.* 1978). Most villagers in Mae Hae Tai are involved in shifting cultivation activities growing rain-fed rice for one year and leaving the fields fallow for as long as possible before returning to crop again in a cyclical rotation. Availability of land in Mae Hae Tai is constrained by a combination of ecological availability, population pressures, and the expropriation of forest areas by the Royal Thai Forest Department for conversion to protected national parks (Pinkaew 2000, Prasit 2001). As a result of these pressures, the average fallow period of swidden has been reduced dramatically from more than ten years per rotation in the 1960's to five years or less at present. Also, many families are beginning to use inorganic fertilizers and herbicides in order to bolster the rice production of existing fields and reduce the amount of energy invested in them. These combined changes have raised serious questions regarding the sustainability of 'traditional' Karen land use in the area.

International NGOs and downstream lowland communities in the north have hotly contested the use of shifting swidden techniques involving annual slashing and burning of semi-forested swidden fields by upland groups. As portrayed by Pinkaew (2000), lowland farmer's groups have worked together with environmental and Buddhist NGO's to oppose Karen land practices and land rights through sometimes violent protest. Lowland farmers, and many environmental NGOs and ecological scientists have argued that swidden agriculture is environmentally destructive and endangers down stream water security and livelihoods³⁶. These highland-lowland disputes have intensified as upland minority communities have pressed for recognition of land rights and lowland water demands have increased along with intensified wet-rice paddy production, and the proliferation of water and chemical intensive orchards and cash crops in the valley bottoms (Pinkaew 2000). Sanitsuda (1994) further links the growing dependence on cash-crops in lowland Mae Chàem to a local desire for foreign goods combined

with a cycle of periodic crop failures, expensive agricultural chemicals and low crop prices, and increasing levels of high-interest debts to banks and lenders.

Land and resource pressures have combined to exacerbate the already marginalized status of upland communities throughout Thailand's north, but have also led to an increased politicization of sustainable forestry and mobilization of both highland and lowland community concerns in the region. Karen activism, through organizations such as the left-leaning populist Northern Farmers Network, is becoming increasingly vocal and politically active. In 2004, on my most recent trip to the valley, farmers throughout the valley, including Karen and Muang, had mobilized together to protest the very low price of shallots which had been widely grown by both upland and lowland farmers that year. Demonstrations and a week-long sit-in at the government buildings in Mae Chaem's district centre resulted in wide spread national coverage.

As a result of pressure from local and international sources, and after long discussions with NGO (CARE-Thailand 1997) and government agencies, the villagers of Mae Hae Tai village agreed in 1995 to allocate a 30 hectare shifting agricultural field to be left as protected forest. This protected area removed approximately 15% of the village's swidden fields from active production. The importance of political and land pressure in the uplands is highlighted by the estimate that currently only 60% of the families in Mae Hae Tai produce enough rice to meet their annual needs (Prasit 2001). It should, however be noted that the issue of rice deficit is not a new one in upland Southeast Asia. Leach (1954) notes that the occurrence of rice deficits in highland areas in Burma was common earlier in the century and was one of the primary factors that influenced trade relationships, as well as social and political ties, between highland and lowland peoples. In Mae Hae Tai the rice deficit is dealt with as it always has been: through

trading livestock (pigs and cattle) to other villages where a rice surplus is produced, and by working as wage labourers where opportunities exist.

4.5 Chiang Mai and 'the North'

Beyond Mae Chaem, Thailand's North is a relatively mountainous region centered in the low southeastern foothills of the Himalayas and interspersed with north-south running river valleys that provide fertile fields for wet rice production. Owing to its mountainous geography and natural beauty, the north is a centre for high altitude and cool weather crops (cabbages, apples, etc.), for international tourism, and for numerous Thai and international NGO's. It is an important rice producing area, but not nearly as important as the central plains north of Bangkok. The city of Chiang Mai (pop. 167,000), the ancient capital of the Lanna kingdom and currently Thailand's 7th largest urban centre, serves as the northern Thai metropole. As late as the 1950's, Chiang Mai was the second largest city in Thailand, but population increases in other urban areas with higher rates of rural-urban migration and higher rates of birth and industrial growth (particularly in central and northeast Thailand), have outpaced it.

Based on the recent 2003 Agricultural Census, Northern Region (NSO 2003), 40.5% of the northern region's population lives in a household with agricultural holdings. The average size of households with agricultural holdings was 3.6 persons and 76% of household member over the age of 10 engaged in agricultural production. In 1993 47% of agricultural households earned income from agriculture only. This dropped to 38.8% in 1998 and 21.4% in 2003. The number of holdings (farms) in the region fell between 1993 and 1998 from just over 1.4 million to 1.3 million and by 2003 had increased again to

1.37 million. In 2003, 32.4% of holdings were less than 6 rai, 14.4 % were between 6 and 9 rai, and 44.4% were between 10 and 39 rai. In 1993 10.6% of holdings were managed by women. In 2003 20.7% were managed by women. Figure 4.2 compares the kinds of crops farmed and the use of fertilizers and chemical pesticides between 1993 and 2003.

Figure 4.2: Northern Crop Types and Fertilizer/Pesticide use (NSO 2003)

| | 1993 | 1998 | 2003 |
|---|------|------|------|
| % of holdings farmed with rice | 58.1 | 58.9 | 53.2 |
| % of holdings farmed with permanent crop (teak, orchard, etc.) | 7.7 | 9.6 | 12.9 |
| % of holdings farmed with field crop (maize, soy, etc.) | 29.9 | 27.2 | 27.5 |
| % of holdings farmed with vegetable crop (red onion, cabbage, etc.) | 1.4 | 2.0 | 1.9 |
| % of holdings using fertilizer | 75.7 | 87.3 | 86.5 |
| % of holdings using pesticide | 56.3 | 70.4 | 71.7 |

In 1993, 55.9% of northern agricultural households were in debt as a result of agricultural costs. By 1998 this increased to 52.9% and in 2003 increased again to 60.3%. The amount of agricultural debt owed by the average northern agricultural household increased by 114.5% between 1993 and 2003, from 33,760 baht to 72,426 baht.

Based on a 2000 Population and Housing Census (NSO 2000), 73.5% of the 1.5 million people living in the province of Chiang Mai live outside of a municipal area. The mean number of children ever born per married woman (15 to 49 years of age) in the province was 1.63 in 2000, down slightly from 1.78 in 1990. Figure 4.3 compares the

percentage of households in Chiang Mai province with access to sanitation, safe drinking water, and television³⁷.

Figure 4.3: Chiang Mai Province Housing Characteristics (NSO 2000)

| | 1990 | 2000 |
|--|------|------|
| % of households with sanitation | 93.4 | 96.2 |
| % of households with safe drinking water | 84.0 | 85.3 |
| % of households with televisions | 65.2 | 84.4 |

In terms of health, the province of Chiang Mai, and mountainous areas of the north in particular, do less well in national rankings than many other areas. The Thailand Human Development Report 2007 (UNDP 2007) ranks the 76 Thai provinces in terms of performance on health indicators. The province of Chiang Mai is in 65th place. Other adjacent northern provinces such as Mae Hong Son (63rd place) and Chiang Rai (76th place) also rank near the bottom of the country. The same report notes that, in terms of national health problems, “Malnutrition and poor maternal and child health still affect some areas. Eight percent of under-five children are malnourished. For every 1000 births, 24 die in infancy and another 28 before the age of five. The maternal mortality rate was 13.7 per 100,000 live births in 2003. Maternal mortality was worst in the remote mountainous North (37 in Chiang Mai, 36.5 in Tak) and the far South...” (UNDP 2007: 5). Figure 4.4 provides a comparison between Chiang Mai and the country as a whole on several basic health statistics.

Figure 4.4: Health Statistics: Chiang Mai and Kingdom (UNDP 2007)

| | Chiang Mai | Kingdom |
|---|---------------|---------------------------|
| % of underweight births (2005) | 11.8 | 9.3 |
| Infant mortality under 1yr old per 1,000 live births (2005) | 8.1 | 7.6 |
| Maternal mortality per 100,000 live births, within 42 days after end of pregnancy and related to pregnancy or delivery (2005) | 37 | n/a (Bangkok = 8.8) |
| Number of people per physician (2004) | 2,392 | 3,305 |
| Number of people per pharmacist (2004) | 6,710 | 8,432 |
| Number of people per nurse (2004) | 427 | 652 |

4.5.1 Ethnography and Demography

The majority of northern Thai peoples refer to themselves as khon Muang, which literally means local people, or people of a local area. In general useage, it refers to the Thai speaking, and traditionally rice-cultivating majority of northern Thailand³⁸. While Khon Muang speak a distinct northern dialect of the national Thai language, and while there are local differences in religious and cultural practice, northern Thais generally share a common sense of national and ethnic identity with the rest of the country and with Bangkok far to the south.

Beyond the lowland Thai speaking khon Muang majority, Thailand's north is well known for the ethnic diversity of its uplands. Like other mountainous regions of Southeast Asia, the Northern provinces are home to diverse and linguistically distinct highland minority groups sometimes referred to as 'hill tribes'. By far, the largest of these upland minorities is the Sino-Tibetan speaking Karen or Pgha'knyaw, generally divided into Pwo and Skaw subgroups. Other upland minorities include the Hmong (Meo), Luwa (Lawa), Lisu, and Akha.

Khon Muang generally locate themselves and their villages in the most fertile rice growing areas of the north while the Karen (and other ethnic minorities) tend to live on the more marginal hillsides and hill tops, practicing very different kinds of agriculture and maintaining distinct (and often marginalized) perceptions of the land and of themselves (Santita 1997). Of course, this classical division belies the connections between valley lowland and mountain upland, as well as shifting and mixing that occurs between various groups and between more remote and more central areas. Due to their many cultural similarities with majority Thai (ambilineal descent and matrilineal tendencies with a strong reliance on rice agriculture) Karen communities tend to be placed by Thais in a somewhat intermediate position between the Thai majority and the non-Thai status of many other upland minorities such as the Hmong (Pinkaew 2003).

Kunstadter's (1986) account of the Mae Hong Son valley of the 1980's, mentioned in chapter two, reflects many similarities with the adjacent Mae Chaem valley at the same time. Kunstadter notes the same general distribution of ethnic groups in Mae Hong Son with wet rice growing lowland northern Thai (khon Muang) in the lowland district centre and surrounding communities and distinct ethnic minorities (Hmong, Karen and Lua) growing dry rice in the surrounding hills. Kunstadter notes that the Mae Hong Son valley was first connected to the broader nation by an all season road in 1965. Mae Chaem was connected by road only a few years later. In both cases the first biomedical hospitals arrived in the district centres at about the same time as the roads. Kunstadter notes that early biomedical programs in the area included a small pox vaccination and eradication program in the 1950's following a major outbreak that occurred after the second world war, and a malaria control program that also took place

in the 1950's and claimed a very significant reduction in mortality due to malaria within a only a few years. Like Mae Chaem, Mae Hong Son had an active opium economy extending into the 1970's and was a major target of national and international development efforts as a result.

Kunstadter focuses a great deal of his analysis on a comparison of child mortality rates reported through his study. While this mortality data is not directly comparable to morbidity accounts collected in Mae Chaem, the correspondences are illustrative. In the 1980's, Kunstadter found that, in general, "child mortality seems to be more or less a function of isolation or distance from town" (p. 141). Child mortality rates for Mae Hong Son's valley khon muang centres were generally lower in all years than the corresponding rates in upland and minority areas. According to Kunstadter's data (based on oral histories and checked against hospital records), prior to the mid-1960's between 20% and 25% of children died before the age of five in the upland Karen, and Pgha'knyaw communities. By contrast, between 5% and 10% of children died before the age of five over the same periods in the *Muang* communities of the valley bottom. In both areas child mortality rates dropped significantly following the introduction of national biomedical services in the mid 1960's and 1970's, but the mortality rates in the district centre and areas surrounding dropped first and farthest. In terms of morbidity, respiratory infections were by far the most common cause in all areas with diarrhoeal illnesses trailing a distant second.

Kunstadter categorized local memories of past child deaths within a biomedical framework of disease causality from the World Health Organization and found that the vast majority of child deaths (between eighty and one hundred percent) in the early years

of his sample (1930-1960) could be classified as due to infectious disease, but that the number of child deaths due to infectious disease dropped rapidly, especially in the district centres, from the mid-1960's to the early 1980's when the study was conducted.

Data on both child morbidity and mortality developed through the parent-farmer interviews in Mae Chaem are broadly consistent with Kunstadter's findings for Mae Hong Son, despite the smaller sample (and more intensive interview methods) that I followed in Mae Chaem. Kunstadter found a reported child mortality (under 5) rate of between twenty and twenty-five percent in upland Karen villages in Mae Hong Son prior to the 1965 introduction of biomedical services in the district centre. The parent-farmer narratives for upland Karen communities from Mae Chaem showed, for the period between 1952 and 1971, out of nineteen births reported, five deaths before the age of six making for a total child mortality rate (under 6) of twenty-seven percent. In Kunstadter's work, the child mortality rate (under 5) in upland Karen communities drops to around fifteen percent by the late 1970's. My work with upland communities in Mae Chaem shows a similar drop in child mortality to nine percent between 1972 and 1981 (two deaths out of twenty-three births reported) and five percent between 1982 and 1991 (two deaths out of thirty-eight births reported). Kunstadter found child mortality rates in and around the lowland Thai (Muang) district centres of Mae Hong Son to range from ten to twenty percent before the mid-1960's and dropping to less than five percent by 1980. Even with its very small sample, my work in Mae Chaem shows a similar pattern: from 1952 to 1972 a Thai Muang child mortality rate of eleven percent (four deaths out of thirty-six births reported) dropping to around four percent (two deaths out of forty-five births reported) for the period from 1972-2002.

4.5.2 Communists, Opium Growers and Thailand's Rural North

Following the fluorescence of Japanese military and political power in Southeast Asia through World War II, Thailand, and the entire region, became a battleground of independence movements and a staging area for American and Soviet interests. The resulting wars combined transnational ideologies of communism and capitalism with local efforts to invent new nations from the ideals of industrial 'modernities' and agricultural 'traditions'. Through this period Thailand became a key ally and base of operations for U.S. military ventures in nearby Vietnam and Laos. Glassman (2004) provides a lucid historical analysis of the integration of Thai agriculture, particularly in the north, into capitalist markets through the joint development efforts of Thai, American, and Japanese governments and NGOs from the 1960's through the 1990's.

Through the 1960's and 70's, and into the 1980's, the Royal Thai military fought Thai communist revolutionaries seeking refuge in remote hill areas in north and northeastern Thailand, including the district of Mae Chaem. Mae Chaem was designated a 'red' area (*pheunthii sii daeng*) by the national government throughout this period (Uparisit and Isager 2001). Along with military action, the Thai state extended itself into the remote areas of the north through building roads, supporting national schools, and coordinating the delivery of foreign aid and development assistance programs sponsored by UN organizations, USAID, and other foreign governmental and non-governmental organizations.

Many of these efforts drew direct connections between suppressing the political and ideological threat of communism and suppressing the social and ecological threat of

opium addiction and cultivation in northern upland areas. Communism, opium cultivation, and state efforts to eradicate them were associated with a larger national project to bring remote, 'under-developed' areas such as the Mae Chaem watershed, and especially with non-Thai ethnic minority groups such as the Karen and Hmong, into line with the values of the modern Thai state. In the north a keystone of these efforts was the idea of 'crop replacement' whereby traditional agricultural systems involving opium were demonized and modern, scientific, and chemical intensive agricultural systems advocated. By the 1990's opium cultivated in the north had been massively reduced and national and international development concerns turned to issues of poverty alleviation and environmental security. However, 'crop replacement' remained high on the agenda as a strategy for improving cash incomes and eliminating the perceived environmental dangers of traditional swidden agriculture.

As the 21st century emerges, both communism and opium poppies have been largely eradicated from the political and ecological landscape of northern Thailand, and certainly from the soil of Mae Chaem. However, waves of neo-colonial power and transnational influence continue to wash over Southeast Asia, driven by interests in the United States, Japan, China, the EEC, and elsewhere, including Bangkok. These waves are amplified and mediated by new technologies and the persuasive (often coercive) power of global institutions and markets: the International Monetary Fund (IMF), the World Health Organization (WHO), the United Nations Conference on Environment and Development (UNCED), as well as numerous local and multinational corporations and non-governmental organizations (NGOs) help determine the flow of events in northern Thailand (Anan 1997, Bello et. al 1998).

4.6 The Thai State in Southeast Asia

In his 1994 book, *Siam Mapped*, Thongchai Winichakul illustrates the colonial efforts that were involved in inscribing the borders of the Thai nation-state upon a peninsula of land extending south from where the sub-continent emerges from its Himalayan core. Thailand claims what Thongchai refers to as the 'geo-body' of a nation: a territory of approximately 514,000 km², slightly smaller than France, and a twentieth the size of Canada. The kingdom shares a long and mountainous western and northern border with Burma (Myanmar), across which Thai and Burmese power centres have engaged in trade and war for close to a thousand years. The Thai state's eastern boundaries are with the former French colonies of *Indochine*: across the Mekong river, the Lao People's Democratic Republic, and further south a more contested frontier with Cambodia. Thailand's southern extent runs down into a narrow trunk towards the Malay border and the Indonesian archipelago.

Thailand and Southeast Asia exist now, as always, at the junctures of local and more spheres of influence. Immediately to the north of Thailand's peninsular mass looms the millennial presence of imperial (and currently very robust) China and its 1.3 billion or so citizens. To the west by land and sea (across the Indian Ocean) lies India, the other great historic (and current) Asian power, along with another billion or so souls. As such, the entire Southeast Asian sub-continent is a crossroads between ancient imperial centres, and the heartlands of several distinct Southeast Asian identities. Thailand and its neighbouring countries of Myanmar (Burma), the Lao Peoples Democratic Republic (Lao P.D.R.), Cambodia, and Viet Nam have all been profoundly influenced, but to different degrees, by the Chinese and Indian metropolises that flank them.

4.6.1 Thailand and the Urban-Rural divide

Thailand is currently a nation of just over 63.4 million people (NSO 2002). Conservative estimates place 6 to 10 million of them within the urban sprawl of Bangkok (*Krunthêp*). In terms of population, the country rivals nearby Viet Nam, but is dwarfed by Indonesia to the south, as well as China and India. Thailand is a constitutional monarchy where the charismatic and very popular King Bhumipol Adulyadej (Ramma IX) wields remarkable symbolic and social power while an elected government, centralized in the capital, holds all official legislative and administrative responsibility. Despite attempts to decentralize, Bangkok remains the cultural, political, economic, and geographic centre of the country.

Even with its massive metropolitan core, Thailand stands out amongst newly industrialized economies as a relatively 'developed' nation with a surprisingly large rural population base (Rigg 2001). Only thirty-two percent of the Kingdom's total population lives in the urban areas of Bangkok and outlying provincial cities like Korat and Ubon Ratchathani in the northeast, or Chiang Mai in the north. Almost seventy percent of Thais live in small rural villages involved largely in rice agriculture, cash crop production, and small industry. There has been a recent flurry of scholarly debate regarding the ascendancy of the urban in Thailand and Southeast Asia in general, but the majority of Thai lives continue to be lived in places dominated by villages of personal interaction rather than anonymity, influenced strongly by historical connections to agriculture and land, and influenced simultaneously by rooted tradition and introduced modernity.

However, as noted by Rigg (2001, 2003) and others, the rural in Southeast Asia is a filled with urban linkages, global influences, and a sense of the modern. While Thailand was

largely successful in defending itself from 19th century colonialism, through the late 20th century even the smallest, and most remote of Thai villages has become enmeshed with more 'global' national and international influences resulting from war, mass media and education, economic integration and political relationship (Bello et al. 1998).

4.6.2 Thai Religion, Kinship, and the Individual

Thailand is overwhelmingly (95%) Theravada Buddhist, supported by a large and complex male monastic order (*sangha*) strongly connected to the monarchy, and widely dispersed throughout the country. Regional animist beliefs, complete with specialized practitioners, commonly exist along side Theravada Buddhist monks and are enmeshed within Thai moral and social systems (Tambiah 1970). The Buddhist temple or *wat* commonly forms both the geographic and ritual centre of the village or *baan* (Keyes 1977, Hanks 1972). The literature on Thai Buddhism tends to favour its philosophical and otherworldly qualities, thereby explaining the presence of more worldly animist traditions in a functionalist way: Animism and spirit beliefs occupy a field of endeavour that is left open by Buddhism. However, in Mae Chaem at least, village level monks are often relied upon as critical resources for the resolution of worldly challenges, as are village spirit mediums and other practitioners (Candler 2005).

Both rural and urban Thais tend to favour a loosely structured ambilineal and cognatic descent pattern with nuclear or stem family units, often reckoned within widely dispersed kin and kindred groups. This form of family reckoning is wide spread throughout Southeast Asia, and is frequently understood as both a cause and consequence of the relatively egalitarian gender relations that tend to exist in Thailand and elsewhere

(King and Wilder 2004). Residence patterns also tend to be ambilocal with some preference to matrilocality (LeBar *et al.*1964). In Thailand, matrilocality tendencies, as well as significant matrilineal associations, are particularly strong in the north, but are still highly variable according to residency (Rhum 1994). This northern matrifocal tendency holds true in Mae Chaem where households are commonly made up of a youngest daughter, her spouse, and children, living in the household of her parents, and often with the ascendant generation still in residence.

In rural areas marriage is commonly endogamous to the village or *baan* and, even in urban areas, the village forms a primary unit of social affiliation and identity. While monogamy is a Thai ideal, informal polygyny is common amongst the relatively wealthy, and these relationships are widely accepted within the informal notion of ‘little wives’ or *mia noi* (Lyttleton 2000). While Thai society, even in rural areas, is stratified and ranked both in terms of social prestige and in terms of age (ascendant generations tend to be highly respected), Thailand is often discussed in terms of its high degree of flexibility and social mobility (LeBar *et al.*1964), aspects which led to Embree’s (1950) famous characterization of Thailand as a paradigmatic ‘loosely structured’ society.

4.6.3 Thai Religion, Kinship, and the Individual

While consideration of agency and choice in rural Thailand requires attention to the possibility of alternate levels of agency beyond the village (O’Connor 1990); in Mae Chaem it is ultimately the parent or farmer who is responsible for land use and child health decisions. With very few exceptions, children in Mae Chaem do have identifiable

'parents' and particular rice fields do have identifiable 'farmers'. Of course, the position of parent/farmer often is held by two or more people who share this primary agency, thereby leaving it open to active social negotiation. The positions of primary care giver, or parent, and primary land user, or farmer, are often shared by mothers, fathers, and occasionally by grandparents, aunts and uncles (generally maternal)³⁹.

Within the negotiations of 'parents' there is a strong tendency for women to hold more power in making decisions regarding child health, and a similar, but less pronounced, tendency for men to hold more power in decisions regarding land use. However, while these gendered lines seem to be somewhat more structured in Thai families, and less so in Karen households, in all cases the sharing of parental or farmer agency within Mae Chaem's communities is highly flexible and more reflective of particular family dynamics than of culturally or institutionally prescribed gender or kinship roles. In both upland Pgha'knyaw swiddens and lowland paddy fields, women often play very prominent roles, both in rice and cash crop cultivation. Likewise, men in the valley, although with less frequency, often take strong roles in decisions regarding child health and child care. As such, the category of parent/farmer agency must be understood to be loosely gendered and to involve a fundamentally social negotiation between generations, and possibly involving two, three, or more closely related care-givers or land owners/users within a single kin group. In this qualification, parents and farmers possess a primary agency regarding biotechnical issues of child health and land use that sets them well apart from larger social networks of fictive, affine, and consanguine kin.

The question of what constitutes an actor or individual agent in Thai society is an essential one. Leach failed to adequately address this issue with regards to the Kachin of Highland Burma. O'Connor (1990) suggests a model for understanding the locus of agency in Thailand through a metaphor (borrowed from Condominas) of Chinese boxes, each fitting one inside another with an emphasis on multiple boxes (boundaries) and contents (centres). He argues that for central Thai, in general, the smallest, or most basic box, is the individual and that this is the primary locus of agency. He goes on to argue that for northern (Muang) Thai there is more emphasis on the next largest box (the household). However, there is no firm line between individual and household. Agency regarding child health and land use is a socially negotiated practice that involves dialogue between the individual and household levels, and it is that dialogic and social space between the individual and the household that I mean to signify through recognition of parents (primary care givers) and farmers (primary land users) as the primary agents in health and land use decisions.

Thai notions of a sub-individual agency (or proto-agency) regarding health, are made particularly clear in the idea of bodily *khwan*. Within this notion, the human body is dependent on multiple (generally 32)⁴⁰ child-like *khwan* that, as a collective, constitute the human spirit and upon whom the health of the human body relies. In this sense, Thai 'individuals', or bodies, are not the fundamental, indivisible unit of agency that western individuals/bodies are often thought to be. Instead, our individual selves, and our individual health, is divisible and dependent on the exigencies of our constituent parts, including our *khwan* and associated organs, faculties and body parts. *Khwan* rituals are widely reported in the ethnographic literature (Tambiah 1970, Davis 1984, Yos 2003)

with variations in belief and terminology, particularly amongst upland minority groups such as the Pgha'knyaw and Hmong.

Within this field of agency, while the flow of global and local culture helps provide the palate, the particular forms, shapes and colours of local approaches to child health and land use in the Mae Chaem valley are the result of different choices made at different times by different local agents facing different options. These choices are flexible and involve essentially aesthetic and identity-based decisions, as well as the more expected pragmatic issues of socio-economic and political choice.

This said, it is also clear that parents and farmers make their choices and build their worlds within lives and histories where not everything or every change is a choice. As Nichter and Nichter (1996) point out, health actions takes place within the social, political-economic and ecological constraints and dynamics that local actors find themselves living within. Children get sick, bodies age, a field of soybean is destroyed by a late monsoon rain, the price of cabbages drops suddenly due to events far from the local, or military pressure makes particular choices untenable. There are definitely structural pressures: bodily, ecologically, and economically. However, parent-farmers in Mae Chaem seem generally to respond to these as creative agents. Child health and land use in Mae Chaem occupies the intersection of often painful worlds and the various streams of biotechnical understanding and action made available by child health and land use experts. Parents and farmers live at the intersection of various streams of biotechnical actor-network relations that include competing forms of structuration and biopower. But because of this competition, because of the lack of biotechnical hegemony in the valley, there is also latitude for movement and parents and farmers respond to the various

biotechnical streams before them according to very personal aspirations and valuations of health, wealth and happiness.

4.6.3 Rice, Development, and Rural Modernity

The development of Thai nationalism in the 20th century, documented extensively by Keyes (1987 and 2002), Wyatt (1982), Thongchai (1994), Bowie (1996) and others, has largely been a process of knitting together regional loyalties within a larger sense of Thai identity and through a complex history of conflict and alliance between national and international, military, business, socialist, royalist, and religious interests. Thailand is divided into seventy-six provinces grouped into four larger regions: central, southern, northern, and northeastern. The encouragement of national ‘development’ has been one of the key strategies whereby the Thai state has tried to bring together regional interests under a single national identity. In particular, the development of education, health care, and agricultural technologies have been key components of nation building in rural areas such as Mae Chaem.

As alluded to above, rural development in northern Thailand has depended heavily on large-scale market oriented agriculture encouraged through the ‘Green Revolution’ of the 1960’s and 70’s, as well as small-scale crafts production, temporary wage-labour, migration to urban centres and connections with more intensive urban development (Bello *et al.* 1998). The marketing of Thai rice on world markets was at the centre of Thai economic development through the 20th century and has been an important buffer during less stable economic times (Bello *et al.* 1998). Thailand remains the world’s largest exporter of rice. As a result of developmental change over the past fifty years,

Thailand's national economy is no longer overwhelmingly dependent on agriculture, but rice (*khâaw*) is still central to Thai lives and identities, both economically and culturally.

Most rice is produced in Thailand using wet-rice agriculture within permanent, intensively farmed fields, for both subsistence and the international market. For many reasons, the benefits and costs of the Thai 'Green Revolution' (as elsewhere) have not been equally distributed. In particular, wealthier individuals dwelling in lowland areas where new mechanical and chemical agro-technology is most suited have tended to benefit from the 'revolution', while smaller, poorer lowland farmers have often become increasingly indebted and landless as a result (Bello *et al.* 1998, Yapa 1998). Highland areas, including much of Mae Chaem, where 'Green Revolution' technologies such as tractors and new rice varieties are often ill-suited, have participated to a lesser degree in the 'revolution', except where government and NGO extension workers have become involved (Chanthaboon 1989, Rigg 1997, Arce and Long 2000).

The rapid development of Thai agriculture, industry and affluence from the 1970's to the late 90's led to Thailand's recognition as one of the emerging economies of Southeast Asia; one of the 'New Tigers' of the Asian market. In 1997, Thailand was the epicentre of the Asian economic crisis. The regional effects of the crisis resulted in major setbacks to Thailand's economic and developmental status. In many ways, this sent Thailand back into the developing world (Bello *et al.* 1998) and called into question the larger ideological projects of export based 'development' and neo-liberal globalization. Following the Asian economic crash of 1997 Thai rice exports served as an important buffer against the collapse of financial and manufacturing interests in the country. The Thai economy in both urban and rural areas is currently in a period of rebuilding, but the

scepticism regarding globalization and its benefits remains. Beyond economics, the social and symbolic importance of 'eating rice', *kin khâaw*, is at the centre of daily Thai interactions and conceptions of health and power (Hanks 1972, Sharp and Hanks 1978, Van Esterik 2000).

Another 'consequence of modernity' that has called the paradigm of neo-liberal economic development and modernization into question has been the issue of ecological degradation. Deforestation of primary teak forests in the North has been especially serious and has resulted in national legislation against commercial logging (Hirsch 1997). These environmental concerns regarding logging have been raised along with a broader concern for the environmental costs of development, particularly in upland ecosystems where soil erosion and chemical contamination of water sources is felt not only in the immediate area, but also by larger communities and population centres further down stream. Since the late 1980's environmental concerns have become a major thrust in the development of new NGO interests, as well as in the establishment of protected forest areas by the central Thai government, especially in the north. While some communities have been able to insert themselves into these environmental debates, others have found themselves disempowered and dispossessed as people's fields have been turned into national parks and traditional swidden, or slash and burn, practices have been singled out as forms of environmental destruction rather than strategies for environmental renewal.

4.6.4 National Health and Illness

As reported by the Thai Ministry of Public Health, the most serious current health concerns in Thailand, and the current most common causes of mortality, are non-

communicable diseases (MoPH 2000), including heart disease, accidents, and cancers (see Figure 2). Mortality and morbidity due to health concerns such as Malaria, vaccine-preventable diseases, and iodine deficiency disorders are steadily decreasing, as are rates of malnutrition and infant mortality (Figures 4.5 and 4.6). However, the occurrence of AIDS and HIV related deaths and disease is rapidly rising. Rates of new infection, except amongst IV drug users, seem to be levelling off as a result of Thai educational campaigns (Lyttleton 2000). However, there are currently reported to be over 1 million people who are HIV-positive in Thailand, and more than 500,000 cases of AIDS (MoPH 2000). Chronic heart disease and cancer are also reported to be rising rapidly. The Thai Ministry of Public Health attributes the rise of morbidity and mortality due to cancer and heart disease to changes in Thai diet and exercise (*ibid.*).

Statistically, Thailand fares significantly better on a number of key socio-economic and health indicators than its neighbours, with the exception of Malaysia to its south (WHO 1999, Figures 4.5 and 4.6). Thailand's overall population growth rate is lower than its neighbours and Thais tend to receive more education than the peoples of other countries in the region. Thailand's per capita GDP has grown faster than elsewhere in SE Asia, however the recent Asian economic crisis also hit Thailand harder than many of its neighbours. As argued by Bello *et al.* (1998) the unstable Thai bubble economy of the 1990's was built at serious costs to Thai environmental health conditions. Increased occurrences of pesticide and pollutant related diseases reported by the Ministry of Public Health lend strength to this argument (MoPH 2000).

Figure 4.5: Basic Population and Mortality Indicators for Thailand and selected UN Member States (WHO 1999)

| Selected Member States | POPULATION | | | | | MORTALITY RATES | | | | | |
|------------------------|------------------|------------------------|----------------------|------------|-----------------------------------|-----------------|----------------------------------|-----------|------------|------------|--|
| | Total population | | Total fertility rate | | Infant mortality rate (per 1 000) | | Probability of dying (per 1 000) | | | | Maternal mortality ratio (per 100 000) |
| | Size (000) | Annual growth rate (%) | 1978 | 1998 | 1978 | 1998 | under age 5 | | ages 15-59 | | |
| | | | | | | | Males | Females | Males | Females | |
| 1998 | 1978-1998 | 1978 | 1998 | 1978 | 1998 | 1998 | 1998 | 1998 | 1998 | 1990 | |
| All Member States | 5 884 576 | 1.6 | 3.9 | 2.7 | 87 | 57 | 83 | 83 | 225 | 156 | 430 |
| Canada | 30 563 | 1.2 | 1.8 | 1.6 | 12 | 6 | 8 | 6 | 108 | 61 | 6 |
| India | 982 223 | 2.0 | 4.8 | 3.1 | 129 | 72 | 82 | 97 | 230 | 182 | 570 |
| Indonesia | 206 338 | 1.8 | 4.7 | 2.6 | 105 | 48 | 69 | 56 | 236 | 184 | 650 |
| Myanmar | 44 497 | 1.6 | 5.3 | 2.4 | 114 | 79 | 121 | 104 | 262 | 207 | 580 |
| Thailand | 60 300 | 1.5 | 4.3 | 1.7 | 56 | 29 | 37 | 33 | 272 | 173 | 200 |
| Cambodia | 10 716 | 2.4 | 4.1 | 4.6 | 263 | 103 | 141 | 127 | 400 | 323 | 900 |
| China | 1 255 698 | 1.3 | 3.3 | 1.8 | 52 | 41 | 43 | 54 | 164 | 101 | 95 |
| Lao PDR | 5 163 | 2.5 | 6.7 | 5.8 | 135 | 93 | 154 | 146 | 344 | 296 | 650 |
| Malaysia | 21 410 | 2.5 | 4.2 | 3.2 | 34 | 11 | 16 | 13 | 179 | 107 | 80 |

... Data not available or not applicable.

Figure 4.6: Basic Socio-Economic and Health Indicators: Thailand and select UN States (WHO 1999)

| Selected Member States | SOCIAL AND ECONOMIC | | | | | | | | HEALTH SERVICES | | | | |
|------------------------|----------------------------------|-----------|-----------|-----------|---------------------------|------------------------|------------|-------------------------------|-------------------|----------------------------------|---------|------------------------------------|------|
| | Life expectancy at birth (years) | | | | GDP per capita (adjusted) | | | Avg. yrs. of school (age 25+) | | Malnutrition stunting age <5 (%) | | Children immunized for measles (%) | |
| | Males | | Females | | in 1985 US\$ | Annual growth rate (%) | | Females | Male over females | Males | Females | 1987 | 1997 |
| | 1978 | 1998 | 1978 | 1998 | 1992 | 1962-92 | 1982-92 | 1990 | 1990 | 1995 | 1995 | 1987 | 1997 |
| All States | 60 | 65 | 63 | 69 | 4 123 | 2.7 | 2.5 | 4.5 | 2.1 | ... | ... | 53 | 82 |
| Canada | 71 | 76 | 78 | 82 | 16 362 | 2.6 | 1.8 | 10.2 | 0.3 | ... | ... | 70 | ... |
| India | 53 | 62 | 52 | 63 | 1 282 | 1.8 | 3.2 | 2.2 | 2.7 | 52 | 52 | 44 | 81 |
| Indonesia | 52 | 63 | 54 | 67 | 2 102 | 4.0 | 3.5 | 3.2 | 1.5 | 43 | 41 | 46 | 92 |
| Myanmar | 50 | 59 | 53 | 62 | ... | ... | ... | 1.8 | 0.7 | 47 | 42 | 17 | 88 |
| Thailand | 59 | 66 | 63 | 72 | 3 942 | 4.7 | 6.0 | 4.8 | 0.8 | ... | ... | 52 | ... |
| Cambodia | 30 | 51 | 33 | 55 | ... | ... | ... | ... | ... | ... | ... | 52 | 68 |
| China | 64 | 68 | 66 | 72 | 1 493 | 4.1 | 4.5 | 3.4 | 3.6 | 32 | 31 | 63 | 96 |
| Lao PDR | 42 | 52 | 45 | 55 | ... | ... | ... | ... | ... | 48 | 47 | 11 | 67 |
| Malaysia | 64 | 70 | 67 | 74 | 5 746 | 4.5 | 3.3 | 4.4 | 2.3 | ... | ... | 41 | 84 |

... Data not available or not applicable.

Where Thailand has been successful in reducing infant mortality and malnutrition, increasing education levels, and improving per capita incomes, these gains have not been uniform across the country. As already noted, urban populations have benefited, overall, significantly more than rural ones. Children of ethnic minorities, including the Karen, in northern Thailand are reported to have elevated malnutrition rates of 30.3 percent for first degree and another 10.6 percent for second/third degree, while the national average was only 8.5 percent and 0.54 percent respectively (Tienboon *et al.* 1997). Health concerns are

also elevated in the relatively poor northeast due to a radically unequal distribution of health care resources and access that favours the urban areas of metropolitan Bangkok and other more wealthy regions of the country.

Overall, the Thai health profile is consistent with that of other developing nations that have largely succeeded in reducing mortality and morbidity due to childhood and early-onset health concerns, and whose population health profile is shifting to that of a more developed nation where late-onset diseases such as heart-disease and cancers take on an increased prevalence. Thailand is at the epicentre of the Asian AIDS/HIV epidemic and while it has dealt with the disease better than most other countries, it still looms as a major factor within the Thai health care spectrum. AIDS and HIV, as well as other health concerns such as malaria and malnutrition, are particularly critical at the margins of the Thai state where communities may be disadvantaged due to ethnic affiliation, economic standing, and proximity to health related resources concentrated within the Bangkok and Central Thai metropolises.

4.6.5 Mae Chaem and its place in Thailand

The Mae Chaem valley has been presented in many ways over the past fifty years. In the 1960's and 70's, at the time of the Viet Nam war, the Thai press and military saw Mae Chaem as a dangerous hinterland of Thai communist sympathizers. In the late 1970's and 1980's Mae Chaem was presented by USAID staff as a district of poverty stricken opium cultivators and addicts in need of international development efforts (USAID 1983). In the 1990's Mae Chaem, and especially the swidden cultivation practices of upland communities, has been presented by the International Centre for

Research in Agroforestry and various NGO's as an environmental crisis waiting to happen.

In my own writing, Mae Chaem is a valley where parents and farmers effectively navigate many possible traditions, and many possible futures, all of which co-exist in the valley. Mae Chaem's past is not necessarily one of static nostalgia, nor is its future necessarily one of tragic decline. In the past, as now, people have made choices between multiple paths and within difficult and often painful circumstances. Within the context of these changes, local people continue to exert control over their cultural and biotechnical futures, over the determination and treatment of their children's health, and over the shaping of local development and change. While there is some indication that local biotechnical agency is being constrained in the agricultural sphere by an emergent hegemony of pesticide advertisements, chemical effects, and multinational capital relations, the overall picture of biotechnical agency in the health sphere is one of increasing complexity.

4.7 The Other Communities: Science, Development and Tourism

As noted in earlier chapters, while the Mae Chaem valley is certainly remote and rural, it is in no way closed. The contexts already provided point towards two primary ecological and cultural divisions internal to the valley: upland Karen dry-rice swidden farmers who are commonly Christian, and lowland Muang wet-rice farmers who are almost universally Buddhist. However, the recent history of the valley, and particularly the arrival of roads, implicates and enables the active presence of several other kinds of more transient, translocal and opportunistic communities. These include tourists, development workers associated with the national Thai government, international NGOs,

or academic researchers, and other workers associated with multinational corporate interests. While these are communities of a different kind than those of Mae Chaem's lowlands and uplands, their influence, and the importance of their presence in the valley deserves recognition. They provide a constant reminder that the communities of Mae Chaem and Mae Hae Tai do not form some endogamous and closed system, but instead exist in a world of connections.

NGO funded ecological research in the valley provides an example of this. As a direct result of international involvement in Thailand's efforts to replace opium cultivation with more acceptable market crops, the Mae Chaem valley became a primary location for the activities of international development NGO's including USAID and CARE, and a benchmark site for ongoing research by academic organizations such as the International Centre for Research in Agroforestry (ICRAF) based at the University of Chiang Mai. Much of the current research by ICRAF in the Mae Chàem valley is framed and funded within a larger program referred to as the Alternatives to Slash-and-Burn initiative. This environmental-development initiative, funded largely by foreign agencies, implicitly supports the transformation of local shifting agricultural systems to permanent intensive agriculture in the hope that intensification within permanent fields will allow more land area to return to permanent forest. In addition to reducing deforestation, many foresters and ecologists argue that this will help maintain biodiversity and watershed functions for the benefit of the larger Thai society. However, as argued by Anan Ganjanapan (1997), such initiatives also involve a loss of community access, control, and tenure over ancestral lands for marginalized upland communities.

The relationship of both Mae Chaem and Mae Hae Tai to NGO research (including work by USAID, CARE Thailand, and ICRAF) is ambiguous. Both communities seem to realize that these ‘expert’ voices are largely outside of local control and may be used by any agency to speak both for and against community interests. Such research transforms local social and ecological dynamics into objects of expert surveillance and international judgement by standards informed by foreign values of evaluation and measurement. Local support for research programs is tempered by a historical distrust held by many Karen for the Thai government and, in particular, the Royal Thai Forestry Department (a frequent research partner).

Pinkaew (2000) illustrates lowland resistance to research through an account of a demonstration by lowland farmers so incensed by academic researcher’s support for highland land rights that anthropologists and social scientists from the University of Chiang Mai were burnt in effigy⁴¹. The charged relationships between local communities and NGO researchers provides an interesting (and challenging) atmosphere for researching the researchers and the ways that local communities alternately use or contest the ‘streams’ of ‘expert’ knowledge provided to or imposed through the research process (Callon 1986).

4.7.1 Tourism, Research and ‘the Field’

As a farang doing research in Thailand, it is impossible to avoid the far reaching effects of tourism on the country, and potentially on my fieldwork and the anthropological psyche. As such, I find it necessary to say a few words regarding this. Over the past fifty years northern Thailand has become a hub for international ‘backpack’ tourism. The Mae Chaem valley is surrounded by a well beaten route known as the *Mae*

Hong Son ‘Loop’, yet it is barely touched by it. Mapped out in the pages of the Lonely Planet and other travel guide books, ‘the Loop’ runs north from city of Chiang Mai through Mae Rim district before turning south through Mae Hong Son’s long valley and then east by way of Chom Tong and north back to Chiang Mai. The villages and small cities that dot the narrow highways of the Loop are filled with English speaking guesthouses, bars, restaurants, gift shops, and car rental agencies. Travellers making ‘the Loop’ circumnavigate the entire district of Mae Chaem, but only a handful of travellers ever make it off their beaten path and into the valley itself. Of those who do, most are looking for the quickest, shortest route from Mae Hong Son back to Chiang Mai. They stay the night in Mae Chaem only if it is getting late and they choose (wisely) to avoid the narrow, winding mountain road up and over the top of Doi Inthanon in the dark. Despite the incredible beauty of the Mae Chaem valley, the efforts of local politicians and entrepreneurs, and the very recent establishment of several guesthouse and bungalow operations, as of 2004 the district was still barely touched (but perhaps not for long) by the passing feet of foreigners or by the influx of international currency and Thai baht that tourists and tourism represent.

Occasionally, at one of the noodle shops, or shopping in the central market, the face of a tourist appears through the open window of a rental car, or at a table near the back of Pii Naa’s little restaurant. When I see these foreign faces, or when they are excitedly pointed out to me by a Thai friend, “hey, a farang, just like you...”, I feel myself instinctively cringe. They do look and dress somewhat like me. But as a proud anthropologist I try to convince myself that I am different, that I am not just like a tourist. I am *living* here (for the year). I have friends here and I can speak Thai (at least a little). I

know the names of the people on my street, and they know mine, or at least recognize me. But is an anthropologist really so different from tourists and travellers?

The presence of tourist farang forces a recognition of my own transience in the valley, and my own kinship with them. By my education, my chosen profession, and the good fortune of my rebirth, I have the opportunity to spend time in Mae Chaem, to build relationships with the place, the people, get to know a little about what exists here, and what seems important. But my family and I never had any serious intention of settling permanently in Mae Chaem. We are still just passing through, although in slightly slower motion than many others. As farang we are set apart by our access to resources and our ability to leave the valley whenever we want. We may choose to send our daughter to the local school, and we may go to the local clinic or a nearby maw Muang when she needs medicine, but we have other choices beyond the valley as well. We have never had to make our living in this place, never had to depend on the soil, the waters, the people or the weather of Mae Chaem to grow our food or earn our pay. We are ultimately foreign visitors, arriving from a different world and always with the knowledge that we will eventually be returning to home and family far away.

But there is at least one difference. When I talk with the infrequent tourists of Mae Chaem they almost invariably ask, often in thick German, American, Australian or British accents, why I would want to spend so much of my time in a small valley like Mae Chaem when the rest of Thailand and Southeast Asia is all around me? This is where the depth of difference between the tourists and the anthropologist becomes evident. I am left amazed that they could think of this valley as small. As an anthropologist I am boggled by the complexity of the many cultural worlds that flow through the hills and

villages of this valley. If I am different from the tourists who pass through or around Mae Chaem, it is only because, as a result of the time I have spent, and the relationships I have built, I know that the Mae Chaem valley is not a small place at all.

It is common, and I suppose necessary, for our awareness to gloss over the surface of complex things and see only the impressions of their shape, rather than the deeper forms and movements within. In the rush of busy lives there are a thousand details to take care of, never mind the million more that don't seem to affect us. However, when we stop to look closely, the process of enquiry telescopes the formerly insignificant into prominence and miniscule shapes become detailed worlds of interaction and design. When we stop to look, life becomes a much bigger, deeper, more intricately composed thing than we expect it to be. When held up to the magnifying glass of anthropological enquiry the Mae Chaem valley explodes with detail, complexity, and interest. The seemingly sleepy little towns and villages that are evident on the surface become a microcosm of global complexity. The hilly terrain is filled with the dynamics of complex and competing cultural worlds pushed and pulled by the flow of local, national, and transnational influences. Some of these cultural worlds have deep roots in the valley, some are newly added or still emerging, and some are fading into memory and the past.

But anthropology's magnifying glass is not a tool of scientific objectivity that allows an enlightened observer to inspect the complexities of a newly revealed world. It is instead a doorway into the maelstrom of human existence, wonder, and suffering that sucks the anthropologist into its gaping maw and rips away scientific objectivity wherever possible. Within moments of committing myself and my studies to the goings on of the valley, I became part of its competing worlds. In order to begin my work I

became allied with particular agencies, and not with others, and as I began to become aware of the complex relationships that I was quickly becoming enmeshed in. I quickly lost all sense of academic accomplishment and doctoral preparedness.

Back in Canada, I once canoed with my wife onto a stretch of river that we knew very little about and, misled by the apparent calmness of the beginning, we severely underestimated it. The river pulled us into larger and larger rapids, and before long we found ourselves in a frothing mass of white water that effortlessly threw us from our canoe and left us flailing in boiling white water and bouncing over rocks as we were swept downstream. In the middle of that maelstrom we had no idea if or when it would end, or that we would be spat out, our boat far ahead of us, into what was again a calmer, more tranquil river, with the rapids still laughing at us for our insolence.

For me, this is what fieldwork in Mae Chaem felt like. Had I been a tourist, I would likely have only dipped my feet in the river of Mae Chaem and then left for the next sight. In fieldwork, I quickly became immersed in and overwhelmed by the diversity and complexity of local lives and local choices in Mae Chaem. I knew little about the competing eddies and currents of Mae Chaem 'culture', but these unknowns tugged at my awareness, pulled me under, spun me around, and left me confused and gasping. After my initial flailing I began to find useful life lines and navigation points in the anthropological theories and methods I had brought with me from graduate school. With these few scraps of my doctoral preparedness regained I began piecing together a sense of myself in relation to the goings on of Mae Chaem, and a sense of the larger cultural terrain, the flowing currents and channels of information, knowledge, and culture through

which Mae Chaem parents and farmers navigate in order to make their lives and raise their children.

Histories of Child Health and Land Use Practice

5.0 Histories of Child Health and Land Use Practice

The histories of individual parents and farmers provide insight into how biotechnical concerns and practices in Mae Chaem have changed over time and shed light on the changing biotechnical worlds of the valley. What child health or land use issues are remembered, and what responses were used to address them? What streams were available? What ones were sampled, and why? This chapter focuses on the results of the parent-farmer interview process outlined in chapter three and what parent-farmers said about their own biotechnical practices over the past fifty years in relation to child health and land use.

Between seven and fourteen years of consecutive land use and child health history were recorded in each parent and farmer interview resulting in more than seven hundred pages of interview notes. Taken independently, each history provides a personal account of land use and child health change as recalled by a particular parent within a particular family and at a particular period of time. Taken together, the oral histories provide a continuous and locally based record of child health and land use concerns and practices in the Mae Chaem valley between 1952 and 2002. The thirty-six Muang histories represent thirty-six different households from the district centre and nearby lowland Muang villages, and include child health and related land use accounts reported by parent-farmers for a total of fifty five children who were born in, or immediately prior to, the

period from 1952 to 2002. In analysing and presenting this material I have divided it into five decades. In this chapter I provide eleven brief case studies of parent-farmer child health and land use histories at the midpoint of each decade. These case studies provide a sense of the material collected through the individual Muang parent and farmer interviews and represent a small portion of the data used to develop the composite histories developed in chapter fourteen. Each case study presented here focuses on a single year of reported child health and land use practice. As such, each provides an example of the building blocks, or component parts, that make up the larger child health and land use histories provided through the parent-farmer interviews. In chapter fourteen and fifteen these one year histories are referred to as ‘child-land’ years. The thirty-six Muang histories contain a total of 318 separate child-land years

For the purposes of this chapter, I have provided historical contexts for each decade that includes information relevant to both lowland (Muang) and upland (primarily Pgha’knyaw) histories. However, Consistent with the more quantitative analysis contained in chapters fourteen and fifteen, I have drawn the case studies for each decade from the thirty six Thai Muang interviews collected from the district centre and surrounding communities. This focus on the Thai Muang interviews provides a manageable set of material that allows analysis of differences through time with regards to the child health and land use concerns and practices of Thai Muang participants, but it limits the possibility of comparison along lines of ethnicity. Additional analysis of the upland Pgha’knyaw interviews will provide a basis for this analysis and material for future work and publication.

5.1 Case Studies: 1952-62 (2495-2505)

The oldest parent farmers who participated in the study were in their sixties, seventies and eighties at the time of interview. These elders provided accounts of their experiences as young parents and farmers raising children and tending fields between forty and fifty years ago, during a time when access to non-local medical or land use systems was limited. The first decade of lowland health and land use narratives in the sample begins in 1952 and continues through 1962 (eleven years). This earliest decade provides a snap shot of child health and land used prior to intensive integration of Mae Chaem within the Thai state. To provide anthropological perspective, during this period in the valley's history, Edmund Leach was compiling his work on Kachin social and political systems in the Burmese highlands several valleys to the west. At this time, Mae Chaem was a remote and isolated upland valley accessible only by difficult foot paths through the surrounding mountains, or through braving the rapids of the lower Mae Chaem river. However, conditions in the Mae Chaem valley should not be seen as reflective of some pristine or untouched condition. In the 1950's the opium trade, conducted through the mountains to Chiang Mai, was at its height in northern Thailand and the Thai state centred in Bangkok was already trying to make itself felt in remote northern regions beyond the Chiang Mai valley.

Because of the valley's isolation, even though it had officially been part of the Siamese and Thai states for decades, the presence of state institutions was minimal, even in the lowlands. The central institutions in the villages of the valley bottom were Buddhist temples and monasteries, particularly *Wat Pha Daet* and *Wat Bung Fai*, both several kilometres from the current district centre. Subsistence wet rice agriculture

dominated the valley's economy, with some income provided by selling or trading opium, other early cash crops such as tobacco, and soybean, and occasional wage labour sawing teak logs or working in other's fields. In many upland Pgha'knyaw communities, such as Mae Hae Tai, forests were largely intact, logging was active, and long rotation swidden agriculture was the norm. Travel to upland communities was along foot paths and transport by pack animals including elephants and water buffalo. Animist traditions were still common in Mae Hae Tai, but Christianity was already well entrenched through the efforts of traveling American and British missionaries.

The disruption of China's domestic opium supply following the Chinese Revolution in 1949 saw increased demand for opium grown in other upland areas of Southeast Asia, including Mae Chaem, over this period. While opium cultivation was widely practiced by Mae Chaem's Hmong minority prior to the 1950's, many Muang and Pgha'knyaw parent-farmers reported growing opium as a cash crop for the first time in this period. Because opium was valuable, light weight, and could be stored for long periods and transported over long distances without spoiling, it became a key trade commodity to supplement subsistence rice and cotton harvests (Geddes 1976). In addition to cash cropping, some parent-farmers talked about working as wage labourers (often paid in opium rather than cash) in Hmong opium fields, sawing teak logs for timber companies in the forests, or pulling weeds in neighbour's fields.

Despite these early cash and wage economies, the main occupation in both the uplands and lowlands was overwhelmingly rice cultivation. Reports of insect pests, crop diseases, or problem weeds are very uncommon during these years. The conventional agricultural cycle, involving grazing of livestock (usually water buffalo) in the fields in

the dry season, then flooding of irrigated fields in the rainy season prior to and during rice planting, was used to maintain field productivity. Weeds that occurred during the rice growing season were dealt with by hand picking. Reported problems with insects are very rare, but problems with birds, rats, field crabs, or occasionally domestic livestock and elephants eating the rice are common. Almost all participants noted that weed and insect infestations had become much more common by 2002 than they were in the 1950's. The main agricultural concern noted for the 1950's was the timing of the rains at planting and harvest times. Either too much, or too little rain at either planting or harvest could be devastating. According to the land use histories, this concern was dealt with largely through ritual means and through regulation of irrigation waters through the *Muang fai* canal system, but also through reciprocal systems of labour and rice sharing that allowed for redistribution of rice to participating farmers.

In upland Pgha'knyaw narratives from the 1950's, concerns with wild elephants, boars, and bears trampling and eating the upland rice swiddens, as well as rats and birds, are common. In the upland swidden agriculture of Mae Hae Tai, another major concern, tied to with the timing of the rains, was the adequate burning of forest cover prior to planting. Rice deficits in the 1950's were reported by several of the Mae Hae Tai elders, but these seem to have been offset by the selling of livestock (mainly pigs) to Hmong communities, and through working in Hmong or Muang opium fields for wages that were paid in either cash or opium. Several Mae Hae Tai elders indicated that they had tried growing opium themselves beginning in the 1950's but that this practice was stopped when both the Thai military and Christian missionaries indicated that they did not approve. The few Hmong histories collected for this era indicate that, while some rice

was grown, the emphasis of cultivation was on opium, maize and subsistence gardening. This is consistent with later ethnography of Hmong land use in the region (Geddes 1976).

Eight Muang parents provided narratives in this decade⁴², and six of these provided child health and land use histories for 1957 (2500), the mid-point of the first ten years in the sample. The following three case studies from the 1957 histories provide a sample of the kinds of issues at stake, the streams of expertise available, and the agricultural and child health choices being made by Muang parents during this era of Mae Chaem's biotechnical history. All three case studies demonstrate the importance of domestic and kin based streams of land use and child health at this point of time. A diversity of other streams, including Buddhist, Muang, and market based traditions, is also evident, as is the prominence of opium as a cash crop during this period.

1957 Case Study #1: Khun Nai

In 2003, Khun Nai was a successful and respected elder with greying hair and strong features in his early sixties who had lived all of his life in a large village just south of the district centre. In 1957 he was a young man in his late teens. He had married the year before and lived with his wife's family, working in their fields. 1957 was the year that his young wife was pregnant with their first child.

We had four *rai* of wet rice paddy (*naa*) and twenty *rai* of fields in the hills nearby. In the *naa* we planted glutinous rice (*khaaw niaw*), tobacco, red onion, garlic, and soy bean after the rains were finished and the rice was harvested. We used what we needed but always had extra so we sold the rest to others. We planted our upland fields with opium in the cold season and soy beans in the wet... Growing opium was very hard work and we had to hire workers from Karen villages to help. Travelling merchants would come to the valley at harvest time and buy or trade for our harvest. That is how we sold both the opium and the soy bean.

Khun Nai did not recall any problems in the fields in 1957 other than the usual birds and rats which usually could be frightened away. He and his wife would sometimes sleep in a small hut in the fields and use bamboo noise makers to frighten the birds and wild animals off if they heard them approaching. Grazing cows and water buffalo provided the only fertilizer and were left to eat grass in the fields after the harvest. At planting time Khun Nai promised Liang pii (spirit offerings) consisting of whiskey, chicken, rice, and flowers at a small alter and he would leave these in the fields at harvest time to help guarantee the productivity of the rice. The first rice to be harvested was offered to the resident monks at a nearby temple in order to make merit and ensure the health of the family. Khun Nai recalled that in 1957 his wife was pregnant through the rainy season (May-August) and cold season (Sept-Jan). She worked in the fields through the harvest and soon after delivered their first son at their home with the help of her mother who was a midwife:

My wife's health was strong and she worked in the fields until after the rice harvest. After we offered the new rice (*khaaw mai*) to the monks at the temple, the child was born. My wife's mother was an experienced birth attendant so she helped. The birth was easy, no problems. After the baby was born, my mother-in-law took the placenta, placed it in a fish basket and hung it in a tree near the house. This was to keep the khwan of the child nearby and give the young boy knowledge of fishing and how to get food.

Khun Nai's wife and their child stayed in post-partum seclusion (*yuu duan*) for one month after the birth, staying near the house and close to the fire used for cooking. During *yuu duan* she ate special foods such as toasted rice, blackened chilli, and toasted salt and drank a special herbal tea in order to draw the air and water out of the belly and strengthen both mother and child after the challenges of birth. After *ok duan* (exiting the

month of seclusion) both mother and child were strong and healthy. Khun Nai reported that in later years (1958 and after) the child often had problems with *khii yeh* (crying often) and did not sleep normally. To remedy the problem he and his wife took the child to see a maw Muang who performed a *dtaat guut* (cutting birth ceremony) every year until he was four. As discussed in chapter 9, this ceremony involves the use of offerings and magical formulae (*kata*) to sever the ties that bound the young children to the spirit beings that took care of him before his birth into this world.

1957 Case Study #2: Khun Kaewying

At the time of interview, Khun Kaewying is a slight seventy year old woman living in an older teak house a short distance north of the district centre. At the beginning of 1957 she was a woman in her late 20's with her first child, a three month old son, living in the same village. Her family had only a small amount of irrigated rice field, and slightly more land in the un-irrigated hillsides which they farmed on a three year fallow rotation. Despite good harvests, and no problems with insects or other pests, Khun Kaewying recalled that most years they would run out of rice. They made up for this by working in their neighbour's fields in exchange for a share of their harvest.

For the first few months of 1957, while her child was only a few months old (her *yuu duan* was already complete), Khun Kaewying stayed away from the fields and wove cloth at home instead. Later in the year, as the rains came (approximately May), she helped plant rice and soy bean in her family's fields and worked pulling weeds in other people's fields for eight baht a day⁴³. Khun Kaewying recalled that the rains were on time

that year and the harvest was good, though still not enough to support her family through the year.

Khun Kaewying recalled that her son was born early in the cold season of 1956, after her family and husband had finished harvesting the soy bean and rice in their dry (un-irrigated) upland fields, but before the rice was ready in the naa. The child was born with the help of a midwife (*maw tamyeh*). Khun Kaewying recalled that she kept yuu duan for twenty seven days. After this, the newborn child was given an auspicious name by a Paw Ui (male elder) who had been a senior monk at the local temple when he was younger. The infant was healthy most of the year, but near the end of the cold season (approximately February 1957) the child had serious diarrhoea. Khun Kaewying asked for advice from her midwife (*maw tamyeh*), and was told that it was because the mother 'ate something wrong' (*kin pit*), a term generally used to identify the breaking of a dietary restriction or taboo, particularly post-partum. To cure the infant child she was told to make a tea from guava and pomegranate leaves that should be drunk by both mother and child, and used as a wash for the child's body. She did this and the treatment seemed to work because the child's diarrhoea went away. Other than this incident, Khun Kaewying recalled that her first child was healthy and suffered from only a few normal (*thamada*) illnesses which she understood to be caused by the changing weather and natural body changes, such as getting teeth and learning to roll over. Khun Kaewying dealt with these minor problems by using herbal teas recommended by other mothers and parents in the village. The child remained healthy in later years. The only unusual health problem recalled by Khun Kaewying was a very high fever when the child was approximately three. On the advice of her mother, she took the child to a local maw Muang who did a

dtaat guut (cutting birth) and *juu khwan*⁴⁴ (calling the khwan) ceremony for him. This worked and the child recovered.

1957 Case Study #3: Mae Wansii

Mae Wansii, from the same village as Khun Kaewying, was a grandmother in her late sixties in 2002. She had eight children and many more grandchildren. Forty-five years earlier, in 1957, she was a new mother who had just given birth to her first daughter. In January of 1957 she reported her child was four months old and healthy, but not exceptionally so. She stayed home, living in her parent's house, weaving and taking care of the little girl, through the cold season of that year. The infant had serious diarrhoea at only a couple of months old, shortly after mother and child finished *yu duan*. Mae Wansii depended on her parents to help with the child and her father made a tea from guava and pomegranate leaves for her and the infant. Mother and child drank it and it worked well. After the child was better her parents asked a *paw ui* (male elder) from a nearby house to do a *juu khwan* ceremony so that the khwan would come and take care of both the mother and the baby.

Mae Wansii reported that the baby girl had normal fevers five or six times in her first year. These were also treated with herbs provided by Mae Wansii's parents. The child stopped breastfeeding early at around seven months, around the time that the rains came and Mae Wansii's family needed to plough and plant their fields with rice and cotton. Mae Wansii stayed at home weaving and making thread while taking care of her baby, but, like every year, at the time of planting her family promised offerings to the spirits of place *phii jiaw thii* living near their fields. Her father did this for their irrigated

lowland fields, as well as for the upland fields that they planted with cotton in a four year swidden rotation. If the spirits protected the fields from insects and the rice and cotton harvest was good, then at harvest time the family would sacrifice two chickens for the spirits and leave cooked rice and whisky for them. This practice helped make sure that the spirits took care of the fields rather than causing problems in them. Mae Wansii recalled that there were very few problems in the fields in those years, but the harvest was barely enough to last through the year. Despite this scarcity, while birds and rats would both sometimes eat rice and cotton seed, the damage they caused was considered to be so minor that no response was needed. In 1957, when not helping in her family's fields at planting and harvest, Mae Jansii's husband found paying work in the forests near their village sawing teak logs for a timber company.

Mae Wansii recalled that her baby girl's first birthday was just before the rice harvest of 1957. Around this time, the child developed a serious fever and was crying too much (*khii yeh*). Mae Wansii's parents made another herbal tea but it didn't work. With the child still very sick, the family called on a mae ui (female elder) who lived nearby to help. The old woman had many healthy daughters of her own so the crying child was 'given' to her through a ritual adoption. Mae Ui tied white cotton strings on the wrists of the baby girl as a form of blessing and to confirm that she now belonged to her and the child stopped crying and got better. In later years the child's health improved, her health supplemented by an annual dose of anti-parasitic worm pills that Mae Waansii bought at market.

After 1957, the only other child health concern reported by Mae Waansii for her first child was that at the age of four she had another serious fever. This time the family

took the child to a maw Muang who lived nearby who diagnosed the child and confirmed that it was *Paw Guut Mae Guut* (parents in the spirit world) causing the fever, that they were very strong, and wanted the child. Following the instructions of the maw Muang, Mae Wansii made a *satuang* (offering) so that a *daat guut* (cutting birth) could be done. The *satuang* was made with offerings of curry and sweets and red, white, and black thread. The thread was cut as part of the ceremony and then tied around the child's neck.

5.2 Case Studies: 1963-72 (2506-2515)

The second decade of the sample runs from 1963 to 1972. In many ways this was a transitional time for Mae Chaem as it saw the Thai national government beginning to establish its authority and permanent presence in the valley. This brought the beginning of changes, such as the arrival of hospitals, health clinics, vaccination, and other biomedical services, and the advocacy of chemical input and pesticide intensive cash crops, that have since come to be critical to life (and notions of life) in Mae Chaem. The first road into the valley was built from Amphur Hot in the late 1969 to support the development of state institutions (many supported by international development dollars), including the first state sponsored medical services, as well as support of alternatives to the opium economy in the valley. This decade also saw the introduction of the first permanent state supported clinic, complete with resident nurses and a visiting biomedically trained doctor, in the district centre. This clinic later became the Mae Chaem hospital.

The first attempts by state agencies to discourage opium cultivation and advocate alternate cash crops in the valley (primarily tobacco and soy) also date from this era.

Along with these advocacy efforts come the first reports of pesticides, one of which is reflected case study #1 below. Interestingly, the first reported use of a chemical pesticide used in the fields of Mae Chaem, reflected does not come directly as a result of state or NGO efforts to advocate cash cropping and land use change. Instead, it was reported by a woman who, following advice from her neighbours, used DDT powder received from a government sponsored anti-malaria initiative to kill tobacco worms and field crabs in her fields. She found that by throwing handfuls of the bad smelling white powder into the waters that irrigated the rice she could kill most of the crabs that were damaging the young rice stalks.

While the first road in 1969 made the valley bottom accessible, the uplands of Mae Chaem, including the areas around Mae Hae Tai, remained without road access. Mae Hae Tai's traditional agricultural system involving long fallow rotation of dry rice multi-cropped with a variety of other food plants continued to dominate the upland Pgha'knyaw fields. According to interviews with elders, the few Pgha'knyaw who were cultivating opium poppies near Mae Hae Tai in the 1950's stopped growing the crop after it was discouraged by both Thai military personnel and local Christian missionaries. While Thai military officers and international NGO workers were beginning to be seen in the uplands by the early 1970's, in many upland communities, including Hmong villages, where opium production was a long established and lucrative tradition, their influence on opium production was limited.

Nine Muang parent-farmers provided child health and land use histories for this decade and five of these included histories for 1967 (2510) at the midpoint of the ten year period. Two samples of these 1967 histories are provided below. Khun Laa's history

illustrates some of the changes that were beginning in the valley as new technologies such as DDT were introduced in the valley and put to use by local parents and farmers to achieve goals in both land use (killing problem field crabs) and health (getting rid of mosquitoes at home). Khun Muan's history, detailing the health of one son and the death of another, illustrates the persistence of domestic and Buddhist streams of biotechnical response and understanding through this period.

1967 Case Study #1: Khun Laa

Khun Laa was sixty at the time of her interview in 2003. She was pregnant with her first child, a girl, in 1967 and gave birth at home with the help of a maw tamyeh in January 1968. She was in her mid-twenties and lived in her husband's village about seven kilometres up the Mae Chaem river from the district centre. Khun Laa remembered that she had had difficulty getting pregnant and went to the temple to tam bun (make merit) because she wanted to have a child. This seemed to work because she later became pregnant and was very healthy throughout her pregnancy. She did not recall any sickness associated with being pregnant and laughed about how much she ate. During the last six months of her pregnancy she followed her mother's advice and boiled bundles of herbs and roots collected by her parents to make a tea that she both drank and washed with. She did this to help ensure an easy birth and explained that the tea and wash did two things: it improved the strength and appetite of the mother and made the baby strong but small and skinny so that delivery would be easier on both mother and child. The delivery of her first daughter was an easy one and the child was generally healthy with the exception of

occasional 'natural' (thamada) diarrhoea that she treated with herbs received from her parents.

Khun Laa worked in her family's fields throughout her pregnancy. As in previous years, the young couple planted their fields with red onion and tobacco for domestic use in the dry and hot seasons (January through May), though Khun Laa did not help much with the tobacco while she was pregnant as weeding and tending it was too much work during the hot season. In both 1966 and 1967 Khun Laa reported that she used both water buffalo and chicken manure to fertilize their fields before planting tobacco and onion. She recalled that there were problems with worms that would eat the tobacco leaves and that they followed the advice of a neighbouring farmer who showed them how to get a white powder called DDT that was given out for free by a local government sponsored anti-malaria clinic health, mix it with water, and sprinkle it on the tobacco leaves. She found that this worked well to get rid of the worms. When the rains came and the family planted the young rice stalks in their fields Khun Laa sprinkled handfuls of the white powder in the flooded rice fields to kill the field crabs that could otherwise damage the stalks of the young rice. At the time of interview she shook her head and laughed at how she didn't know anything at the time about any dangers associated with the white powder. However, even then, she wouldn't use the crabs that were killed by the white powder to make *naam puu*, a salty, fermented paste made from field crabs that is commonly used in northern Thai cooking. She did not realize the danger of the pesticide until several years later another of her children had to be taken to the Mae Chaem hospital and nearly died after playing with old pesticide containers.

1967 Case Study #2: Khun Muan

Khun Muan's history, detailing the health of one son and the death of another, illustrates the persistence of domestic and Buddhist streams of child health and land use response through this period. Khun Muan was in his mid-sixties at the time of his interview in 2003 and in his late twenties in 1967. His wife gave birth to their first son in late 1967. The child was born at the couple's small bamboo house with the help of his wife's mother who was also a maw tamyeh. After the child was delivered, the birth chord was cut with a bamboo blade. The child was washed and placed in a winnowing basket, wrapped in cloth and placed in front of the stairs down from the main floor of the house to the ground. The placenta was buried at the base of the stairs 'to give the child a strong heart', and the mother-in-law announced that if this was the child of a spirit (*luuk pii*) then the spirits should take it. If it was a human child (*luuk khon*) then the spirits should leave it alone. She jumped on the ground three times and the infant was left to sleep on the winnowing basket near his mother and next to the stove where it was warm. The mother and child kept yuu duan for one month. After the end of the yuu duan period Khun Muan's parents cooked a chicken and did a juu khwan ceremony for the mother and child, tying white strings to their wrists and wishing them well. The child was healthy, but at about two months old was still crying a lot and not sleeping well. The young couple went to a nearby temple and asked the head monk to give the child a fortunate name. The monk chose one and the child seemed to sleep better afterwards. For the rest of 1967 and into 1968 the child was strong and healthy. Khun Muan did not recall any fevers or colds in the child's first year.

In 1967 Khun Muan and his wife had only a very small plot of irrigated rice field and so they supplemented this with cultivation of a small swidden field in the hills. They had to walk several hours to get to this upland field so would sleep there during planting and harvests. Each year they would slash and burn a new piece of land because there were too many weeds if they stayed in one location. In 1967 Khun Muan reported planting dry rice and vegetables including beans and gourds in the upland swidden field. In their lowland irrigated land they planted rice in the wet season and soy bean, garlic and tobacco in the dry and hot seasons. They used no chemicals and had no particular problems with insects or other agricultural challenges. Like other years, Khun Muan made a human figure from sticks and old clothes and hung bamboo bells and noise makers in his upland fields in order to scare off birds and rats in the upland fields.

Khun Muan's first son was generally healthy, except for a high fever in his third year. This was dealt with through a visit to a local maw Muang and a dtaat guut (cutting birth) ceremony. He and his wife had a second son three years later (1970) and this child died after only three months. The birth of this second child was also at home with the help of his wife's mother. As soon as the child was born the family saw that he had a cleft palate (*pak weng pae tanwo*) and could not nurse. Khun Muan and his wife were very sorry for this, Khun Muan particularly so because he considered the cleft palate to have been caused by his own wrong actions and the effects of the resulting *kam* (karma) on his infant son. Khun Muan related the source of his son's misfortune:

My son's problem was my own fault. Our cow got loose and wandered into another farmer's fields when my wife was still pregnant. The other farmer saw the cow eating his rice and threw a knife at the cow to scare it away. The knife hit it in the mouth and cut badly. I did not care for the wound like I should have and it became infected with maggots or worms. When I saw this I became worried. I tied the cow's head, heated a spade in the fire, and

when it was red-hot I used it to cut the wound from the cow's mouth. The wound got better, but my kam affected my child inside his mother's belly. That is why he was born with a mouth that was deformed.

Because of the cleft palate the child was not able to nurse properly, so Khun Muan and his wife fed him with canned milk (condensed) mixed with warm water. Mother and child completed their yuu duan and the child seemed otherwise healthy so at about three months old they took the child with them to their rai (dry rice fields) which were a long walk from their home. That night they slept in the rai. There were a lot of mosquitoes and they had no sleeping nets so they worried about the baby and took him back home the next morning. The child fell asleep and, though there were not signs that he was ill, died very quietly that evening. Khun Muan recalled that there was no crying. He and his wife were very upset by this. They asked friends to help them and carried the dead child and buried him, as is the custom in Mae Chaem at the death of a child, in his sleeping basket (a rice winnowing basket) in a nearby burial forest. In 1970, shortly after their second child died, the first government public health clinic (anamai) outside the district centre was established in Khun Muan's home village. His surviving son, now five years old, received a health check-up there. The family was given vitamins for the child, but Khun Muan and his wife did not think they were necessary and did not give them to their child.

5.3 Case Studies: 1973-82 (2516-2525)

The period from 1972-82 provides the third decade of child health and land use change covered in the parent-farmer narratives. The 1970's and early '80's brought tremendous change as new roads allowed easier connections with cultural streams from outside the valley: national health and agricultural services and market based

pharmaceutical streams in particular. By 1970 the availability of road access to outside markets through amphur Hot to the south was contributing, along with early efforts by national and NGO agencies interested in opium reduction and crop replacement, to increased reliance on input intensive cash cropping in the lowlands. In 1977, the Doi Inthanon road was completed providing another, much faster, link between Mae Chaem and the provincial capital of Chom Thong. State efforts, including the establishment of farmer's cooperatives in the late 1970's and early 1980's, increased local access to credit for pesticides and agro-technologies and contributed to the agricultural transition taking place in the lowlands. Subsistence rice agriculture was increasingly augmented with the chemical intensive cash crop production associated with the 'Green Revolution' occurring worldwide during this period.

Nine parent-farmers provided child health and land use narratives for the period between 1973 and 1982. Four of these included narratives for 1977, the midpoint of the decade and case studies are provided below based on two of these. The first case study from 1977 is drawn from interview material provided by Mae Wansii who was a forty year old mother at the time. Her recollections illustrate the persistence of locally based approaches to health and land use. The second case study, provided by Khun Dang, illustrates how other parents were beginning to move between older traditions of child health and land use and those that were introduced or made accessible with the construction of health clinics and other state infrastructure in the valley after the arrival of roads.

1977 Case Study #1: Mae Wansii

In 1977 Mae Wansii was in her early forties. In the twenty years between 1957 and 1977⁴⁵ she had given birth to seven children including three boys and four girls. In July 1977 she gave birth to her last child, another daughter. She worked in the fields all through her pregnancy, washing with boiled herbs to facilitate an easy birth. These were collected by her husband or herself from the surrounding fields. As she did with her other children, she gave birth at home with the help of a maw tamyeh. The placenta of the child was buried under the steps of the house to make the child's heart strong, and because by that time there were no large trees left near the house to hang it on. She kept her yuu duan for only twelve days as she felt healthy and recovered quickly from the birth. She also drank plenty of coconut juice to help the child have a beautiful complexion. The child was born small, had fevers often, and cried a lot and Mae Wansii understood this to be because she was already over forty years old when the child was born. A male elder (paw ui) from her village did a juu khwan ceremony for mother and child, tying white strings on both of their wrists and asking that the kwan of the mother take care of both the mother and the young child, but the child continued to cry often. When the child was about five months old Mae Wansii went back to working in her fields, either taking the infant with her, or leaving her at home with her older siblings. The rains came on time in 1977 and the fields were planted, as usual, with rice in the irrigated fields and cotton in the upland fields. Mae Wansii and her family did not use chemical fertilizers or pesticides at this time.

In later years, Mae Wansii's youngest daughter continued to cry often and get fevers easily. Mae Wansii took care of her using herbs and cooling her body with a wet

cloth. In her third year her father took her to see a jiaow song (spirit medium)⁴⁶ who had begun to practice near the district centre. The jiaow song explained that a spirit from the upland rice fields had seen and greeted the child and now wouldn't leave her alone. The father followed the instructions given to him by the spirit medium and made offering of chicken, whisky, rice, and flowers in the fields. The child got better for a time, but then got worse again. At the age of four Mae Wansii took the child to see a maw Muang and had a dtaat guot performed. This also worked only for a while. In the child's fifth year (1981), the parents tried again to stop her fevers and crying by taking her to a respected former monk (paw ui naan) who was experienced in giving auspicious names. After receiving a new name from him, the child's fevers and crying finally subsided. When asked, Mae Wansii indicated that she did not take the child to the public health clinic because chemical medicines are good for some things, but not others.

1977 Case Study #2: Khun Dang

Khun Dang was in her early thirties in 1977 and was the mother of four young daughters under ten years old. The youngest was two years old. Like her other children, her youngest child was born at home with the help of a maw tamyeh. Mother and child kept yuu duan for only three weeks because the child was so healthy. The child got occasional fevers and Khun Dang would take her to a public health clinic that was established near her village in 1975. The health workers gave Khun Dang a sweet syrup that she fed to the child to bring down the fever. The medicine usually worked, although once when the child was two (1976) her fever did not improve so Khun Dang consulted her elders and a local maw Muang who diagnosed the fevers and conducted a dtaat guot

ceremony for the little girl. After the birth of her last child in 1975, Khun Dang took all of her children, including her youngest, to get annual vaccine injections that were supplied free of charge by the local health clinic along with medicine (pills and syrups) to get rid of worms. In 1977 a government sponsored school opened in her village and all of her children, including the three year old, attended. The health of her youngest daughter was generally very good after this. The child did have several cases of diarrhoea which Khun Dang dealt with by giving her herbal teas made from the leaves of guava and pomegranate trees as suggested by her parents, and then also taking the child to the health clinic where she was given *naam glua* (oral rehydration salts). A more serious accident occurred when the child was five. She was playing in the river near their house and stepped on a sharp piece of wood. Khun Dang again relied on a combination of streams to deal with this challenge. She took the child to the health clinic where she was given medicine for the wound, and then also went to see a local maw Muang who recommended a dtaat guut ceremony for the child. Khun Dang and her husband gave the child the medicine from the clinic, and performed the offerings for the dtaat guut and the child got better.

In her fields, Khun Dang and her husband were more conservative in their approach to cultivation. They had very little land for themselves and cultivated only rice in their fields. In 1977 they began 'renting' land from others in the village on the condition that they provide half of any rice harvest to the land owners. They would slash and burn their upland fields before the rains came, then grow seed rice in May and plant the seedlings in June once the ground was wet and the fields ploughed. Khun Dang and her children would weed the rice in their rented lowland fields by hand several times

before it was ready for harvest around October or November. During the cold season they would let the fields lie fallow while Khun Dang wove cloth and her husband worked for wages sawing logs. Khun Dang did not recall any problems in the fields in 1977, but in both 1972 and 1974 she reported that many rats tried to eat their rice while it was still in the fields. In 1972 they tried to get rid of the rats by trapping them in the fields as her neighbours did. However in 1974, when the rats came again, Khun Dang talked to a shop keeper in her village and bought a small bag of chemical rat poison (*yaa kaa noo*) which she put into small crab shells and put out in the fields so that the rats would eat it and die. This was very effective and the rats did not return. While Khun Dang remembered 1977 as a good year for the rice harvest, she reported that in 1978 the rains barely came. While the rice in the irrigated lowland fields was fine, harvests from the unirrigated upland fields were very poor. As a result, Khun Dang and her family had to go into debt to buy much of their rice. As a result, in 1979 the family began multicropping⁴⁷ their fields with soy beans as well as rice in order to have a cash crop that could be sold at market.

5.4 Case Studies: 1983-92 (2526-2535)

The fourth decade reflected in the parent farmer narratives, 1983-1992, involves a time period when Thailand was experiencing very rapid economic growth and much greater political stability (at least prior to 1992) than in the previous decade. By the mid-1980's communism was no longer considered a major threat in remote areas like Mae Chaem. Thai government and UN efforts to replace the upland opium economies of the north with chemical intensive cash cropping claimed success by the mid to late 1980's (Renard 2002). In the lowlands pesticides and other agro-chemicals were widely

available and heavily used. Nearly 30% of parent-farmers in the lowlands reported using pesticides in this decade, and nearly all uses were associated with cash crops (red onion, soy, corn, tobacco) rather than with the wet rice production that remained the staple of the valley. By the late 1980's concerns regarding the environmental consequences of national development, particularly logging and deforestation of upland watersheds, began to carry significant weight and development projects began to consider the ecological, as well as the economic, consequences of their work.

Ten parent-farmers provided child health and land use narratives for the period between 1983 and 1992. Two histories were provided for 1987 and these are reflected in the case studies below. Case study #1, based on a history provided by Khun Fa, illustrates the increasing role of cash cropping and use of agrochemicals over this time period, particularly in areas of the valley with good road access. Case study #2, based on a history provided by Khun Song, provides an example from a more remote village in the Mae Chaem lowlands.

1987 Case Study #1: Khun Fa

At the time of interview, Khun Fa was a parent-farmer in her early forties with two children, the youngest in her late teens. Since the early eighties she had lived and farmed land at Lompong, a village approximately twenty kilometres south of the district centre that was established as part of a government effort to provide poor Mae Chaem farmers (particularly those who were dependent on the economics of opium cultivation) with land that was suitable for input intensive cash cropping. In 1987 Khun Fa had been farming at Lompong for several years, had a son who was seven, and a daughter who was

three. Her family grew cash crops instead of rice and used the money that they earned to buy the food (including rice) that they needed.

Khun Fa became pregnant with her daughter in 1983. This was unexpected because she was receiving an injected form of birth control⁴⁸ at the time. That same year, her son, who was five, was playing at a friend's house when his foot was punctured by a piece of wood. Khun Fa took the boy to a maw tamyeh who lived near her house. She made a splint for the boy's foot, but it didn't help so Khun Fa took her son to the hospital at Hot district south of Mae Chaem. They stayed there for three nights while the doctors put the boy's foot in a cast and gave him injections. He recovered well.

Khun Fa's pregnancy went well and her daughter was born at home with the assistance of the maw tamyeh who lived near by. The placenta was buried under the steps of the house along with a needle and a pencil to make the infant 'sharp and wise'. Because there was no public health clinic at Lompong, and because the child was healthy, Khun Fa chose not take her for vaccinations. Khun Fa recalled that the child was healthy and strong and ate well over the next several years. Her only health problems involved 'natural' colds and fevers (*kai wat thamada*) which were treated with medicines bought from a local shop.

In the year that Khun Fa was pregnant with her daughter (1983), a farmer's cooperative was established at Lompong. Khun Fa had been farming cash crops at Lompong, including feed corn and soy bean, for several years but the cooperative encouraged farmers to grow new cash crops using agrochemical fertilizers, pesticides and herbicides. It also enabled farmers to receive the chemicals on credit against the next harvest. For three years after the establishment of the cooperative, Khun Fa chose not to

buy any agrochemicals on credit. She continued to plant and harvest feed corn without purchasing inputs until 1987. In 1987, she and her husband decided to take on debt so that they could buy a range of chemical applications for their cash crops. They had seen other neighbouring farmers have success with chemicals, and had noticed that problems with weeds, worms and other pests were becoming worse. Khun Fa received three thousand baht (about \$600 Canadian) in credit from the co-op and used the loan to plant cabbage and red onion (shallot) which she then treated with chemical fertilizers, insecticides, fungicides and synthetic hormones as suggested by the extension staff at the farmer's cooperative.

1987 Case Study #2: Khun Song

When he was interviewed in 2003 Khun Song was a parent-farmer in his mid-forties who lived across the Mae Chaem river from the district centre. He and his wife had two children: a girl born in 1983 and a boy born in 1990. The history that he provided for 1987 indicated that his four year old daughter was very healthy. When the child was two she had a high fever and cried a lot so they had a maw Muang perform a dtaat guut ceremony for her, and other than that her parent sometimes gave her an anti-worm medicine that they bought at a local shop. The only other child health that Khun Song recalled for 1987 was that around April of that year (before the rains came) a mobile medical unit from the Thai army came to do check-ups. They lined the children up, looked at them and weighed them. Where there were serious problems the unit would tell the parents to go to a military hospital near Chiang Mai city. Otherwise they gave out

vitamins, did vaccinations, and gave out candies. His daughter was healthy, but did get a vaccination from the mobile unit.

In terms of land use, Khun Song indicated that he and his wife followed the same agricultural cycle they had in previous years. They had a few rai of irrigated rice fields and planted rice through the wet season, and various cash crops, including garlic and a kind of green vegetable, in the dry season. Khun Song indicated that he didn't use any kind of chemical fertilizer or pesticides on his fields in 1987, but that, as in 1985, his rice sprouted poorly. In order to resolve this, Khun Song had to flood his fields again so that the main rice stems would develop better. The only other strategy that Khun Song used to ensure a successful harvest was making offerings to the field spirits. In 1987, as in previous years, Khun Song promised offerings to the field spirits in return for a good rice harvest. When planting the rice he would make a *tdaa laew* (hawk's eye) symbol out of woven bamboo and place it on a stick in his fields along with offerings of flowers and a bamboo cup filled with water. He made these offerings in his field and promised to make more offerings if the rice harvest was good. Each year, when the harvest was a success, he would then leave more offerings in the fields after the rice had been threshed.

5.5 Case Studies: 1993-2002 (2536-2545)

The final ten years of narratives cover a time of increased cash cropping with 60% of parent-farmers reporting personal use of pesticides or chemicals other than fertilizers. However, increasing environmental concerns and the economic crash of 1997 also result in questioning of national development strategies. Prices for cash crops are volatile through the 1990's and while some farmers respond by seeking wage labour, others sign

farming contracts directly with multinational companies. Several national parks are established in upland Mae Chaem and both international NGOs and national agencies pressure upland communities to stop traditional swidden practices which they see as a source of deforestation and environmental destruction.

Twenty parent-farmers provided child health and land use narratives for the period between 1993 and 2002. Twelve histories were provided for the year 1987 and two of these are reflected in the case studies below. Six of the twelve (50%) indicated personal use of pesticides in 1987, the mid point of the decade. In 2002, at the end of the decade (including the first year of my fieldwork), thirteen histories were provided and ten of them (75%) indicated personal use of pesticides. Case study #1 is provided by Khun Jeh, a young mother who works in her family's fields and as a wage labourer spraying pesticide. Her choice to work as a sprayer was motivated by the increased wages she received, even though she recognized that others refused to do the work because of health concerns. Khun Jeh reported that her young child had persistent health problems. Her narrative illustrates the increasing role of cash cropping and use of agrochemicals over this time, especially by younger parent-farmers. Case study #2 provides an example from an older farmer-parent who has cultivated his fields with the use of chemicals in the past, but stopped using them later because of health and financial concerns.

1997 Case Study #1: Khun Jeh

At the time of interview, Khun Jeh was in her mid twenties, the mother of one young daughter, and living in her mother's village south of the district centre. In 1997, the year of the Thai economic collapse, she was in her early twenties and her daughter

was two years old. Her daughter was born at the Mae Chaem hospital following a healthy pregnancy that included regular check-ups at the hospital, a daily herbal tea and wash made by her mother to make delivery easier, and vitamins provided by the hospital staff. She kept a yuu duan period of about two weeks during which she stayed close to home with her baby and ate the dry, roasted foods prescribed by her mother. Even in her first year, the child's health was not strong. Throughout her childhood, she received regular vaccinations and was taken to the nearby hospital frequently. She wouldn't take her mother's milk, or the powdered milk supplements she was given and several times a month she would develop fevers. Khun Jeh fed her rice water with sugar until she was old enough to eat solid foods. Khun Jeh explained that the child's fevers were because of *lok bot buam* (pneumonia), an illness of the lungs, that was caused by there being too much dampness at night and the child spending a great deal of time outside. She dealt with the fevers by giving the child medicines in syrups bought from the store, or sometimes by having her mother do juu khwan ceremonies, or by taking the child to hospital. A visit to a maw Muang involving diagnosis in the child's second year did not improve things.

In her family's fields Khun Jeh worked with her mother planting cash crops including corn, cabbage, and red onions using fertilizers and insecticides bought through a loan from the local farmers' cooperative. The profits from the crops were low because of a lack of rain and the high costs of chemical inputs that were used each year. In 1997 Khun Jeh began working as a labourer in other people's fields as well as her own. With the coming of the rains she worked planting red onion and cabbage, and spraying her fields with chemicals, then worked for others doing the same. Later in the year she

harvested cabbage, corn and red onion. As a labourer for planting or harvesting she received a little more than fifty baht a day. Although spraying pesticides and fungicides paid much more, many labourers chose not to do the work because of the unpleasant smell and possible health risks involved. Khun Jeh did not worry about this and started working as a pesticide sprayer. She applied the chemicals using a back pack sprayer and was paid ten baht per bottle sprayed. She would spray between ten and fifteen bottles a day and earn two to three times as much as she would otherwise planting or harvesting.

Through 1997 and into later years, Khun Jeh's daughter continued to get ill frequently. Her respiratory problems continued, as did her fevers. In 1998, when the child was three, she also began complaining of chronic pains all over her body, especially in her legs. Khun Jeh gave her pain medicine bought from a local shop and took her daughter to hospital. The doctors could not find any cause for the pain but gave her more pain medicine. This seemed to work, but only temporarily. The child's health problems continued through later years. When asked at the time of interview, Khun Jeh indicated that she rarely wore a mask or other protection when she sprayed and speculated that her child's health problems in the late 1990's were likely connected to her own work as a chemical sprayer.

1997 Case Study #2: Khun Nok

At the time of interview Khun Nok was in his mid-forties and living with his wife and family near the district centre. He had two children; the youngest was a daughter born in 1996 at the Mae Chaem Hospital. Khun Nok's wife was healthy throughout her pregnancy, went for regular prenatal visits at the hospital, and used an herbal tea and

wash to help ensure an easy birth. After the birth, she and the child kept a yuu duan period of fifteen days. The child was healthy through 1996 and 1997 with only a few thamada fevers. When these occurred Khun Nok would go to get fever medicine from the local shops or from the Mae Chaem hospital. Khun Nok and his wife also took the child to the hospital for vaccinations and worm medicine based on a schedule given to them when the child was born. At just over one year of age Khun Nok and his wife began sending their youngest daughter to a daycare where she also received milk to help her grow.

Khun Nok and his family grow rice in their lowland paddy fields through the rainy season, and since the early 1980's have planted red onion in the same fields through the cold season. Each year they also plant upland fields with cash crops including potato and two kinds of cabbage. From the early 1990's onwards Khun Nok indicated that he used a lot of chemicals in his fields including pesticides, herbicides, fungicides and hormones. He found that his cash crops, including the red onions that he grew in his rice fields, required many chemical applications and commented on how heavily he sprayed his fields. The only crop that was not heavily sprayed was the rice. Khun Nok explained that this was because the rice he grows is for eating, not selling, so he didn't want to put the chemicals on it. He still used a little chemical fertilizer on the rice, but no pesticides or herbicides. He also commented that the traditional flooding of the fields provides both fertilizer and weed control so the rice does not have as many problems as the other crops that are now grown. In addition to the use of chemical inputs, Khun Nok also indicated that he makes offerings (liang pii) to the spirits of the fields and of the rice at harvest time in order to help ensure a successful harvest of rice in the lowlands and cash crops in the

upland fields. Through most of the 1990's he also supplemented his cash crop income with wage labour in other farmer's fields, or in Chiang Mai.

By 1996 Khun Nok had decided to rent out his upland fields rather than continue to grow cash crops in them. He worked as a security guard in the city of Chiang Mai and his wife took care of the fields in between planting and harvesting. Khun Nok came back to help for planting and harvest, and for spraying the red onion with pesticide and fungicide. In 1997, because of the economic collapse, Khun Nok could not find work in Chiang Mai so he returned to his family and fields in Mae Chaem. They planted rice and red onion, as in previous years, but again chose to rent out their upland fields.

I didn't want to keep growing cabbages and potatoes anymore. They took too many chemicals. Each year they needed more and more. Every time I sprayed I worried about what the chemicals would do to my health, and some years there was not enough water for the crops. It was even hard to find water to mix with the chemicals. I also worried about the risk of losing money every year because the chemicals cost so much and you can't count on the price you will get for your crops (Amphur 34, 2540).

Khun Nok continued to avoid the more intensive upland cash cropping until 2000. He stopped renting out his upland fields and began planting them himself after signing a farming contract with a large and well known multinational agrocoperation. The contract provided Khun Nok with seed and access to fertilizer and herbicides as well as a guaranteed price for the feed corn that he planted. In return Khun Nok guaranteed his harvest to the company and promised to cultivate the corn using specific kinds of chemical applied at particular times as recommended by the company extension agents. This included mixing corn seed with insecticide prior to planting, but Khun Nok was happy with the arrangement because once the corn began to grow there were very few insects and no need to spray with insecticide. In subsequent years he has continued to

cultivate rice and red onion in his paddy fields, and contract farming of feed corn in his upland fields.

5.6 Summary of Child Health and Land Use Case Studies

The eleven case studies of child health and land use provided in this chapter are selections from a much larger sample of child health and land use histories recorded through the parent-farmer interview process. As each parent farmer recounted multiple years of child health and land use experiences, the full set of individual parent and farmer histories documents the child health and land use experiences of seventy-two Muang and Pgha'knyaw parent-farmers, and six Hmong resulting in more than five hundred one year histories. The case studies recounted in this chapter provide eleven of these one year sketches drawn from the thirty six interviews with Muang parent farmers. While a composite picture of trends and change, drawing on all recorded Muang histories, is contained in chapter fourteen, the eleven case studies provided here give a sense of the diverse streams of child health and land use available in Mae Chaem, and the flexibility with which individual parent-farmers approach these streams. The case studies provide concrete examples of choices, changes and continuities in child health and land use practices over the past fifty years: increasing cash cropping and use of chemical inputs, increased popularity of national and market based health systems, the ongoing persistence of domestic biotechnologies and those associated maw Muang and other locally rooted biotechnical expertise. As individual case studies, they also provide examples, rooted in lives and histories, of how local actors manoeuvre within the diversity of biotechnical streams available to them.

The Streams of Mae Chaem

6.0 From Parents and Farmers to Actor-Networks

Each of the case studies provided in the previous chapter involves a snap shot of child health and land use practices and choices at a particular point in time and in a particular household in the Mae Chaem valley. Case studies like that of Khun Nok provide examples of how parents and farmers are critical actors drawing on a wide range of medical and ecological expertise. As discussed in chapter three, the various sources of expertise can be divided into a number of distinct biotechnical ‘streams’. The seven streams identified in chapter three are all represented in the case studies. The domestic stream is represented throughout almost all of the case studies, though more prominently in the earlier years. Use of herbs recommended by one’s parents, reliance on subsistence rice harvests and traditional crop rotation, ritual adoption of ill children by neighbourhood elders, and observation of yuu duan periods are all examples of the domestic stream at work. Reliance on market based streams of child health and land use, including purchasing pills at village stalls, and bottles of pesticide, herbicide, or chemical fertilizers at agricultural supply depots provide examples of alternate streams of practice. With the exception of Christianity, a stream that is almost entirely unique to the upland minorities of Mae Chaem, the lowland case studies provide examples from all of the other identified streams: Buddhism, Muang, Spirit, and National.

Each of the approaches to child health and land use represented in the case studies, whether rooted in the dynamics of the family, or those of international pesticide

use, draws on a historically dynamic amalgam of ideas, technologies and personalities. While the affiliations of particular parents or farmers with particular approaches to health or land use are fluid, each stream of medical or ecological resort ultimately ‘hangs together’ as a discernable system, represented by discernable experts and technologies, and representing particular practices for dealing with the challenges of human health and agricultural land use. As such, each stream brings individuals together with practices, devices, and notions of power and effect that are fundamentally biotechnical in the sense that they provide practices and technologies for affecting life. Each stream involves an understanding of life, including the life of children, and the life of fields, that exists within a broader sense of what things exist in the world, or at least matter, and how they relate to each other and to life in Mae Chaem.

As illustrated in the case studies, the decisions that parents and farmers make in navigating and choosing between streams of child health and land use involve pragmatic, economic and aesthetic evaluations, as well as consideration of the social dynamics of persuasive personal relationships. Reliance on medicinal herbs provided by one’s father or mother in order to improve the health of one’s child involves a choice to recognize and affirm particular cultural and kin relationships as much as it involves a pragmatic choice regarding the costs and benefits of the *materia medica* used. Likewise, Khun Nok’s choice to stop using pesticide and other chemical applications, described in the final case study, involved his concerns regarding health, availability of water and debt financing. However, his critical rejection of pesticides and cash cropping can also be understood as a rejection of the kind of agriculture espoused by many NGO and national institutions through the 1970’s and 80’s, as well as by the sales people at the pesticide shops. His

later acceptance of the terms of a farming contract for feed corn involves another choice, this time to accept the use of chemical inputs, but within a new configuration of relationships defined by his contract with the purchasing agricultural corporation.

In understanding the complexity of child health and land use practices in Mae Chaem, and the terrain within which parents and farmers make their biotechnical choices, I have found it useful to understand each biotechnical stream as an actor-network of related actants extending across ecological, cosmological, social, and technological domains. This is the objective of chapters seven through thirteen. Interviews with locally recognized land use and health experts help sketch locally based understandings of each stream's basic constituents, including the practitioners, problems, and sources of power involved. Each biotechnical stream coheres around a different core actor-network of ontological, social, technological, and ecological relationships, and it is these core actor-network relationships that I have tried to describe. For each of the biotechnical streams discussed, both practices and ontologies frequently tie together and transcend the boundaries between medicine and ecology. In other words, the actor-networks assume and create relationships between biotechnologies of child health, and biotechnologies of land use.

As discussed in chapter two, actor-networks are simultaneously social and technological, local and global. Each is fundamentally an ontological system of cosmopolitics (Latour 2004, Stengers 2003), each with its own constitution of interests and propositions regarding the nature of life. Through the relationships they create and affirm, the boundaries between bodies, chemicals, spirits, and ideologies blur. The various biotechnical streams, or actor-networks, of Mae Chaem link together the

suffering, sickness, and salvation of bodies and fields, children and rice, people and their environment.

In keeping with the notion of culture in streams and the subject matter at hand, an agricultural metaphor seems apt: actor-networks extend themselves by sending out new channels, and enrolling new actors. They maintain their shape over time through entrenching themselves, as well as particular biotechnical authorities and power structures. They form new channels and linkages and in the process enable the irrigation of new areas and new lives. In the process they entrench themselves within the richness of life and understanding in the valley.

Just before my final trip to Mae Chaem in 2003 an unusual amount of rain fell on the steep uplands in the eastern portion of the Mae Chaem watershed. In some villages, the surplus energy of the resulting flood, or *naam tuam*, destroyed many of the most valuable upland fields. In other villages the water benefited farmers whose fields would otherwise have remained arid and dry. This same process can be used as a metaphor for the dynamism of biotechnical streams in the valley. Occasionally monsoons of biotechnical change bring new energy and flow, overflowing old banks and setting the biotechnical waters to flood. Such floods irrigate the fields of some and destroy the fields of others, until new channels, new relationships are found, and their flow again sculpts the social terrain into more stable forms, structures, and relations. When such floods happen then the fields and families who have grown to depend on a particular stream often must choose between old and new sources of biotechnical knowledge and practice with which to support the lives of children and the productivity of fields. Occasionally a stream may also run dry and be abandoned in favour of more reliable sources.

Each of the seven biotechnical streams is described based on interviews with locally recognized experts and then interpreted as an actor-network of relationships through which larger, more global power, is brought to bear on the lives and lands of Mae Chaem. In representing these streams I have used diagrams as well as textual description to depict the core actor-network relations. I have also tried to articulate a sense of how each stream of expertise has changed through time. Taken together, these chapters defend the notion that child health and agricultural practices are linked within diverse biotechnical streams and that each biotechnical stream entrenches particular constellations of social, environmental, cosmological and technological relations.

In each diagram the parent/farmer (the primary selective agent) occupies the centre while the expert practitioner (the primary representatives of the actor-network) is depicted above. The biotechnical expert is crowned by connections to the ontological sources of biotechnical power and expert authority. For Buddhism this is the triple gem of *buddha-dhamma-sangha* embodied in the personage of the monk, while for drug and pesticide shops it is a triumvirate of standardized biotechnical commodities, national and international regulation and the mystique of modernity, all mediated through the reputation and educational credentials (either monastic or university) of the drug or pesticide merchant and the communicative medium of multinational advertisement. In boxes to the right and left of the biotechnical expert are listed the specific biotechnologies of diagnosis, prevention, and curing that are most commonly brought into play by the expert in order to affect the recognized causes of land use and child health problems. Child health and land use, the twin subject of these biotechnical actor-networks, are represented by the rice shaped oblong in the lower centre while the rectangular bottom

table articulates the various proximal and underlying ecological factors (ranging from infections and genetics through to karma, malevolent spirits and magical attack) used to explain child health and land use challenges.

The Domestic Stream

7.0 The Domestic Stream

The nature of village life in Mae Chaem is intensely social, and extended kin networks, including one's parents as well as elders and neighbours living nearby, are some of the most common sources of biotechnical advice and expertise used by Mae Chaem parents and farmers. Within about a week of living in the district centre, it became difficult to walk down a side street in the district centre without someone calling out a greeting and an invitation to sit and visit. One of the most common greetings is, “*pai nai?*” literally meaning ‘where are you going?’. One of the most common responses to this question was ‘*pai tio*’ or ‘I’m going visiting’. At all times of year visiting with friends and neighbours, accompanied by large amounts of local rice whiskey, beer, *miang*⁴⁹, or betel nut, and the occasional karaoke machine, is a daily (and nightly) occurrence.

At harvest time the social nature of ‘visiting’ reaches a particular intensity. When the rice is ready in the field, harvesting is often done collectively with friends, family and neighbours working together in each other's fields to complete the difficult work of cutting, carrying and threshing rice. Men and women often work on opposite sides of a field, frequently with young children and elders assisting or at least attending the post-harvest gatherings hosted by whoever's field was harvested that day. Whether in the rice fields, or on the front porch, information, advice, jokes and talk of the latest parade in

town are exchanged. Talk of children (family) and crops (money) are frequent subjects of conversation.

As discussed in chapter 4, the flexibility and informality of reckoning kin and fictive kin in both Thai and Pgha'knyaw communities means that domestic relationships are influenced by locality more than lineality. As such, the line between neighbours and kin are often blurry. Even outside the village, the pronouns *Pii* and *Nong* (older sibling and younger sibling) can, and often are, applied to anyone close to one's own age, even where one has only a general familiarity with the other person. The use of these pronouns implies both respect and informality and brings a set of reciprocal social obligations into play wherever they are used. Other kin terms are frequently applied to elders (male and female), shop keepers, and young children, even when they are not well known to the speaker. In many ways, the village (*baan*) functions effectively as a large extended family with the passing on of advice and expertise to fellow villagers an essential component of social relations.

When a child gets sick, or a crop is at risk of failure, biotechnical advice is frequently not sought from specialized experts, be they monks, doctors, or spirits, but is sought instead from the informal local expertise of parents, grandparents, elders (*paw ui mae ui*) and knowledgeable neighbours living or farming nearby. Neighbours or kin who are seen as successful farmers or parents are often the first stop for other villagers looking for solutions to biotechnical problems, be they in one's fields, or with one's children. Sometimes a neighbour or nearby elder will be knowledgeable enough regarding how to cure a child's fever, or deal with a problem in one's rice fields, that the neighbour or elder will provide a solution directly. In these cases, the domestic stream may serve as a

source of local biotechnical expertise in and of itself. Domestic experts may draw on the biotechnologies of other streams, but more frequently they rely on a set of biotechnologies that is unique to the domestic stream.

In addition to being a stream of child health and land use expertise in its own right, the domestic stream may also act as an entry point to other streams. In these cases, contacts with neighbours and kin result in suggestions, advice, and even social pressure, that lead or push a parent-farmer to engage with another biotechnical stream. Where this happens, the biotechnical stream can be seen as an intermediate step between the recognition of a problem by a parent-farmer and the finding of a solution through recourse to one stream or another.

7.1 Rice, Herbs, and Health

Based on the land use and health narratives of parents and farmers, considered in detail in chapter 12, the most widely accessed stream of medical and land use expertise in Mae Chaem over the past 50 years has been the family, or more broadly, the domestic network of kin and fictive kin that dominates most village-level social interactions in Mae Chaem. Based on participant observation in the fields and on the front porches of Mae Chaem, expertise accessed through the family, and particularly elder members of the family, is also the most diverse, flexible, and informal of the biotechnical streams current in the valley.

By definition, domestic experts do not derive their expertise through formal achievement, education, or task specialization. Instead they are marked because of a depth of knowledge and practical experience as shown by their comparative success at

raising healthy children and skill in agriculture. In contrast to specialized and explicitly recognized biotechnical experts such as monks (*phra*), *maw Muang*, *jiaw song*, or biomedical doctors (*maw payabaan*), domestic experts exist as an informal and tacit category, though one easily recognized in interviews with parents and farmers. Age and level of knowledge are fundamental qualities that determine levels of appropriate respect between people and are particularly critical qualities for the determination of *pui-nong* relationships. As such, in interviews, and more generally, the role of domestic expert was commonly recognized and referred to using the category of *puu ruu* (knowledgeable people)⁵⁰.

The flow of knowledge (or expertise) within the domestic stream is extremely flexible, but generally moves from more experienced (often, but not always older) to less experienced (generally younger) villagers. Where biotechnologies are associated with the ‘traditions’ of the valley (spirit offerings, Buddhist practices, subsistence rice practices) the domestic ‘experts’ relied upon are almost always older villagers, and are frequently considered elders (*paw ui mae ui*). Where biotechnologies are associated with ‘modernity’ (use of infant formula, medicines purchased from stores, pesticides, or recently introduced farming techniques) the domestic ‘expertise’ is more likely to be passed from younger to older generations.

Within the domain of land use, farmers, and particularly young farmers, frequently reported reliance on other more experienced or more successful farmers in making decisions regarding what kinds of crops to grow, or how to use pesticides or other agricultural inputs to deal with various agricultural problems. These domestic experts were often middle aged men and women who were recognized for their experience and

success in navigating agricultural challenges and options in previous years. In the domain of child health, domestic experts were frequently other parents or grandparents (male or female) recognized for their experience and success in raising large families of healthy, successful children.

In some cases a domestic expert may simply recommend a visit to a more formal biotechnical expert, be it a spirit medium, a monk, or the local clinic, thereby referring the parent or farmer on to another, more formal, biotechnological streams. At other times domestic experts recommend specific remedies, often drawing informally from knowledge and practices associated with other streams, but also mixed with knowledge and practices that are unique to the domestic. A new parent, faced with a young child with a fever, will often ask advice from an older, more experienced parent or grandparent. Recommendations may be drawn from that parent's experience with other streams. This might include recommendations of particular herbal combinations (generally the domain of *maw Muang*) followed by what kinds of pills to buy from the corner shop. Alternately, or as well, other remedies unique to the domestic stream might also be recommended, such as avoidance of particular foods, or ritual actions such as *mat muu*, the tying of strings to a child's wrists by elders, to improve the child's health.

In general, any connection of domestic 'experts' to a particular set of knowledge or practice is much less formal and much more flexible than the specialized biotechnical expertise of other streams. Domestic biotechnologies, be they strategies for baby foods or pesticide combinations, are tried and evaluated, and the consequences, positive or negative, are talked about and passed on to friends and family. The domestic stream itself forms an actor-network of knowledge that is made local through domestic expertise, but it

is a local knowledge that combines the ‘traditional’ with the ‘modern’ to form an extremely dynamic, adaptive, and persuasive current frequently referred to by parents and farmers in their narratives of land use and child health. While, as a general rule, domestic experts are informally recognized and not part of any larger, overarching biotechnical institutions, in some cases, especially in areas of agricultural extension and contract farming, the importance of domestic streams of biotechnical expertise has been recognized by government agencies, NGOs, and multinational corporations. In these cases, domestic experts may be formally connected to other biotechnical streams through ‘farmer mentor’ programs or ‘farmer to farmer’ training.

7.2 Domestic Bioecology: the Causation of Problems

The flexibility, informality, and pragmatism of the domestic stream, combined with the lack of reliance on particular sets of institutionalized knowledge, means that domestic experts borrow from a wide range of biotechnical understandings in order to explain and respond to problems in child health or land use. While many of the explanatory models used by domestic experts in Mae Chaem seem to borrow heavily from other biotechnical streams of expertise (ideas of karma, germ theory, etc.), some important explanatory concepts, and their accompanying biotechnologies, are practiced and espoused primarily within the domestic realm. Within the domain of child health, these include important notions of *khwan* (vital essence), ideas of nutrition and illness caused by *kin pit* (eating mistakes), notions of health related to *yuu duan* (post-partum seclusion of mother and child), and the notion of *kai thamada* (natural fevers) that are understood to occur as a natural consequence of child development. Within the domain of land use, explanatory models used primarily by domestic experts include, in the

lowlands, the use and management of water using local irrigation systems (*Muang fai*), in upland Karen communities, the management of *din ron* (hot soil) in upland dry rice fields, and in all communities, particular practices traditionally followed to fertilize fields and control pests or weeds. Common agricultural problems dealt with through resort to domestic experts included infestations of damaging field crabs, insects, birds, or rats, remedies for infestation by insects, more general problems with the growth or productivity of rice and cash crops, and strategies for achieving better cash crop prices.

In some cases primarily domestic concepts are taken up and used within the causal models of biotechnical experts from other streams. For example, ideas regarding the fragility of the *khwan*, along with the particular biotechnologies understood to affect *khwan*, are sometimes used by experts from other streams (especially *Muang* experts and Buddhist monks), but the basic practice of *khwan* biotechnologies such as the tying of strings (*maat muu*) on the wrists of family members and friends in order to bring happiness, health and success through unifying the *khwan* with the body, is primarily done by village elders.

The notion of *khwan* is widespread throughout Thailand and neighboring countries. The general notion of *khwan*, as reported in Mae Chaem as well as elsewhere in northern (Davis 1984) and northeastern (Tambiah 1970) Thailand, is that, beyond the human *winjaan* (spirit), the human body also has a number of *khwan* associated with it. Other beings, including rice and water buffalo, also have *khwan*, though different numbers of them. In Mae Chaem, *khwan* are often described as child-like beings who are both fragile and unpredictable, who may become scared or run away to play ‘like a child’ (*muan dek*), and which are associated with discreet parts of the body. They may be

frightened away from the body by a jarring or stressful experience such as a painful illness, fall or accident, may be captured or stolen in encounters with malevolent pii (spirits) or may simply wander away from the body in order to play or do something fun elsewhere. When a person's khwan are weak or missing then the body-mind is left open to illness, weakness, and spiritual attack. When a person's khwan are strong and present, then the body-mind is healthy, resilient, and happy. As such, maintaining a strong tie between one's khwan and one's body is critical to maintaining the health of children and adults, especially following stressful or painful events (such as child birth) and following major changes or transitions. Explanatory models based on khwan loss are often used to explain chronic illness and unhappiness, and efforts to call and secure the khwan are often used as a first step to both preventing and curing child health problems. Eating rice is understood to strengthen the khwan of humans and also, along with water buffalo, rice is understood to have khwan as well. Ritual offerings traditionally conducted at the planting and harvesting of the rice were traditionally designed, in part, to strengthen the khwan of the rice in order to avoid agricultural troubles.

In some cases, where a mother is consistently unable to carry a child to term, or gives birth to children that are sickly or ill, the problem may be understood as resulting from the mother's khwan being too strong in relation to that of the child. In one parent interview, an elderly woman recalled that as a young mother in the 1950's her first two deliveries were infants who were sickly and died within a month of being born. Domestic experts (mae ui paw ui) from nearby households interpreted this as being related to her khwan being too strong. As a remedy to this she was advised to undertake a ritual

involving crawling under the belly of an elephant three times in order to *rot* (reduce) her khwan. Once completed the woman went on to have several healthy and strong children.

Domestic notions of nutrition and *kin pit* (eating mistakes) are also frequently used to understand and prevent or redress child health problems in Mae Chaem. Following the delivery of a child, the bodies (and khwan) of the mother and the child are often understood to be vulnerable (wet-cold, *piak naw*) and in need of warming and drying influences in order to fully transition the mother and child through the birthing process. Following delivery it is very common for women in Mae Chaem, including those delivering their children at the local hospital, to observe a period referred to as *yuu duan yuu fai* (literally, month spent near the fire) or, more simply, *yuu duan* (Whittaker 2001). While the actual duration of *yuu duan*, and the practices involved, are variable, a failure, or inability, to take a sufficient *yuu duan* period (or to observe it properly) is understood to put both mother and child at risk for physical and emotional problems in the future.

Related to the idea of *yuu duan* is the restriction of particular foods considered too strong for young children, especially red meats like buffalo and beef. Children who eat these foods are understood to be at risk from *kin pit* (eating mistakes) that may cause serious vomiting, diarrhea, and in some cases, death⁵¹. Beyond *kin pit*, other foods, especially local rice varieties (upland and lowland glutinous varieties), as well as infant formulae and packaged milk products available in Mae Chaem shops, are commonly understood to be important for strengthening a child and helping him or her stay strong and healthy. In the domain of agriculture, domestic notions of crop nutrition, including

the need for complete burning of swidden fields, amendment of fields with manure, or other fertilizers, are frequently used to understand and respond to crop problems.

Another very widespread domestic explanatory model used to understand and respond to child health problems is the idea of *kai thamada* (natural fever). This term refers to the idea that the ‘natural’ state of children’s bodies is inherently variable, and that at particular stages of growth (learning to roll, learning to sit up, developing teeth, learning to stand, walk, and talk) the body of a child naturally develops fevers (and occasionally *kai wat*, flu-like symptoms) that do not require any response at all. The notion of *kai thamada* is used especially to explain common and relatively minor childhood fevers.

The notion has its correlate in subsistence rice agriculture in the expectation of farmers, especially common prior to the arrival of pesticides, that some loss of rice, or other crops, was natural (*thamada*) and was expected as part of growing crops. As such, the appropriate response was not to respond. These ‘natural’ agricultural losses were usually due to the presence of birds, rats, and other ‘pests’ like worms (*non*) and field crabs (*puu*), and rice eaten by these animals was considered as part of ‘sharing’ with other beings as long as the losses were not excessive. Where loss of rice or other crops was excessive then other strategies, including use of noise makers and poisons, might be employed.

7.3 Domestic Biotechnology: the Solving of Problems

While elaborate khwan ceremonials are often performed in northeast Thailand and Laos (Tambiah 1970), the rituals of *mat muu* (wrist tying) and *juu khwan* (calling the khwan) are much more simple in Mae Chaem. *Mat muu* is one of the more common

domestic biotechnologies and is designed to firmly attach both good wishes and the khwan to the body through the tying of white cotton strings on the wrists of the recipient. *Mat muu* is frequently considered to be most effective if done by an elder, and is a common occurrence at almost any transition, including births, marriages and illnesses. The making of offerings to elders, and their reciprocal tying of younger people's wrists is also an important part of annual Thai new years rituals. The ceremony is generally a brief affair with the recipient sitting respectfully in front of the elder with one hand extended outwards, offering up the wrist. The elder selects a white string and holds it up as he or she speaks wishes for the recipient into the string (in cases of illness, good health would be the main wish) then ties the string onto the outstretched wrist with three knots. The recipient thanks the elder with a wai to conclude the process. The strings are generally worn for at least three days in order to give time for the khwan to be adequately tied to the body and the wishes time to sink in and stay permanently with the recipient.

The importance of elders as domestic experts and sources of domestic power is born out in other child health related practices as well. Some domestic child health practices also rely on transference of health, strength, or other qualities to children, either through their clothes, or through the special treatment of the placenta after birth. Parents of children who are ill often may be ritually adopted by elder neighbors or family members who have raised many healthy children through a brief ceremony similar to the ritual adoption of children by monks. In other cases, the old clothes of elders who have lived long and healthy lives will be re-sewn to make pieces of clothing or small hats to be worn by infants or small children with the understanding that the success of the elder may become that of the child through the vehicle of cloth⁵². Muang and Pgha'knyaw parents

also reported hanging the placenta on a large tree in order to confer the qualities of long life and resiliency on the child, or of poking the placenta with a needle in order to make the child's mind sharp. While more complex and uncommon herbal remedies are the domain of maw Muang, Elder family members are frequently the source of knowledge regarding simple herbal teas and remedies found in fields, gardens, and forests⁵³, or alternately bought from the market. Similarly, parents also reported referring to elders and domestic expertise for advice regarding pharmaceutical medicines purchased from local shops, and foods to give children in order to improve health and vigor.

The yuu duan period, and the special restrictions applied immediately after the birth of a child, vary a great deal between families, but generally involves a rest and semi-seclusion for the mother and child, with the mother wearing warm clothes (even in the hot season), eating salty foods, often toasted, and keeping the infant child close and warm. During this time, the new mother's immediate female kin (mothers, grandmothers, older sisters, or sister's in-law) remain close to her and help her (and the new infant) through providing advice and support, and taking care of daily domestic tasks like cleaning and cooking. The future health of both the mother and the child is understood to be dependent on the warming, drying, and firming of the body that takes place over this time, and special rules and dietary restrictions followed during yuu duan tend to revolve around ideas of strengthening the body and avoiding harmful influences. Special herbal teas may be taken by the mother, sometimes supplemented by vitamins and other medicines purchased from the market. These are also understood to benefit the infant child through the mother's milk. The actual duration of the yuu duan period, while officially a month, is flexible and depends largely on how the mother feels and the

support available to her. In general, the period seems to have become much shorter over the past few decades, particularly in the lowlands around the district centre. Some younger parents in the district centre reported yuu duan periods of only a week⁵⁴.

In the agricultural domain, the biotechnical solutions of domestic experts tend to be much more materially rather than ritually focused. These may include advice and knowledge regarding the proper timing of planting or harvests, or construction of noise makers or traps to scare away or capture rice eating birds, rats, or other creatures. Experienced farmers are relied upon by less experienced farmers to lead the maintenance and management of village irrigation systems (Muang fai) and provide advice regarding the range of agricultural options available, including what cash crops to plant, use of pesticides or fertilizers to purchase at market, signing of agricultural contracts with large agro-companies, and the keeping of seeds from fields and garden plots. In some cases they are also relied upon to manage conflicts between farmers, be they related to damages caused by an escaped water buffalo or domesticated elephant, or perceived degradation of neighboring fields resulting from intensive cash cropping and use of agro-chemicals.

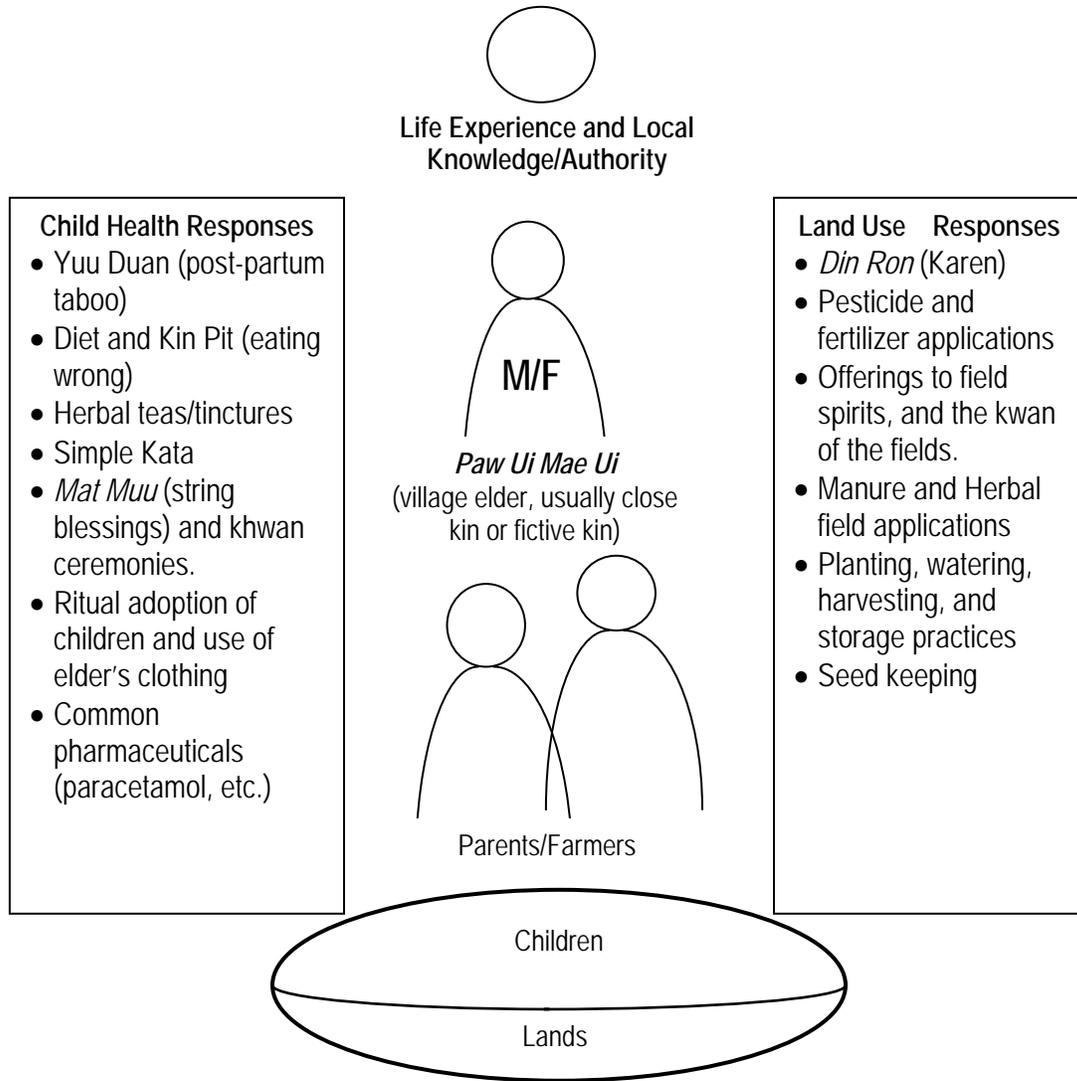
The many crops planted in Mae Chaem can be divided generally into three categories: rice cultivation, garden cultivation, and cash crop cultivation. Unlike more productive regions in central Thailand, rice in Mae Chaem is grown almost entirely for domestic consumption, not as a cash crop. In both the uplands and lowlands of Mae Chaem, cultivation of crops for eating (rice and vegetable gardens) almost never involves the use of pesticides or market purchased inputs because of the perceived health consequences of such chemical applications, and their cost. As such, domestic expertise

regarding food crops tends to revolve around non-market practices such as use of manure as an organic fertilizer, and proper timing of planting and harvest.

7.4 An Actor-Network of Domestic Biotechnology

The domestic stream forms an actor-network where parents and farmers rely upon elders and more experienced parents and farmers in order to access a range of practices and technologies. As such, the domestic expert, can be seen as another obligatory passage point through which parents and farmers can access biologically efficacious knowledge and practice. These actions are based upon a diverse and flexible set of principles and relationships, many drawn from other streams (what medicines or pesticides to buy at market), and others unique to the domestic tradition in Mae Chaem. From a foundation of life experience and local knowledge, parents and farmers rely upon domestic experts to provide pragmatic solutions to everyday child health and land use problems faced by local villagers. relies upon the life experience and local knowledge As illustrated in Figure 7.1 below, the efficacy of domestic biotechnologies and authority of the domestic expert. Whether it is the provision of advice regarding the timing of a rice harvest, the best brand of pesticide to purchase, or the proper foods to be given to a sick child, the suggestions of domestic expertise bring with them the weight of experience. The explanatory models of domestic experts may draw on a range of influences, but domestic expertise tends to defer readily to the knowledge and practices of more specialized biotechnical experts where challenges prove difficult to resolve.

Figure 7.1: An Actor Network of Domestic Biotechnology



| Disease and Poisons (<i>Rok</i>) | Food and Nutrition | Sanitation and 'Development' | Accidents and weather | Genetics and Natural Processes |
|--|--|------------------------------|-----------------------|--------------------------------|
| <i>Sayasat</i> (malevolent sorcery) | <i>Pii</i> (includes ancestral spirits, domestic guardian spirits and malevolent spirits often associated with the landscape or with violent deaths) | | | |
| <i>Phra Puutajaaw</i> (God) and <i>bun bap</i> (sin and good acts) | | | | |

7.5 Domestic Biopolitics: Access and Advocacy

In Mae Chaem, the domestic stream is, in almost all cases, the most readily and easily accessible stream of biotechnology available to parents and farmers in the valley. Domestic expertise is often offered (whether desired or not) by a range of neighbours and relations, free of charge and without solicitation. It flows from the everyday social interactions of daily village life. The ongoing popularity and practice of domestic biotechnology likely relies upon both its easy availability, and the tendency for it to reinforce and support valued kin relationships and social obligations with the *baan* and across generations. As such, reliance on the domestic stream by parents and farmers is a reaffirmation of fundamental social structures within the Mae Chaem valley. While the reputation and life experiences of particular elders may mean that they are more commonly relied upon as domestic experts, the advertisements of the domestic stream are not written on colourful posters, or the architecture of buildings, but in the complex weave of social interactions between parents and children, friends, and neighbours.

The Thai Buddhist Stream

8.0 The Buddhist Stream

Tam dii dai dii. Tam chua dai chua
(Do good and receive good things. Do wrong and receive misery).
(Thai proverb)

Thai Buddhism is more of a braided river than a single stream, even in the little valley of Mae Chaem. Thai Buddhism a whole terrain of beliefs and traditions flowing from the millennia old social institutions of Theravada Buddhism, churning, at least loosely, around the millennia old writings of the Pali canon, or *tripitaka*. It includes dozens of different branches, interpretations, and constantly evolving schools of thought and practice, many of which are represented in one form or another within Mae Chaem. The understandings of Thai Buddhism articulated here are a generalized composite drawn from conversations and interviews with several Mae Chaem experts as well as other influences: afternoons spent with activist monks and more conservative ones, translated writings of well-known masters, and interviews with local lay leaders of contemporary movements such as the Mae Chaem chapter of the Japanese inspired *Yoreh* sect⁵⁵.

For the many Buddhist monks and novices resident in Mae Chaem temples and monasteries, as elsewhere in Thailand, the seeking of alms at the doorways of Thai households is a daily occurrence. Thai Buddhist monks are required to depend on the community around them for their physical sustenance. At our home in the Mae Chaem district centre the early mornings would often start out cold and grey. Mist hangs over the nearby trees and dampens all sounds. Soft, crunching footsteps echo up from the short bit of gravel that leads from the narrow paved soi (street) to our little teak house. Bare feet

and flip-flops, saffron robes, shaved heads, pimply faces: a group of four or five young naen (novices) from Wat Koo, the neighborhood temple and monastery school arrive to receive food. The novices make their alms round every morning to collect food for themselves and their elder monk-teachers.

Pii Paa and Yai Not, her elderly mother, live in the house next to ours. Along with most of the other households in the neighborhood, they put large bowls of sticky rice and other food out every day for the temple boys to collect. Sometimes the food is fresh from the breakfast meal, but most times it consists curries (*gaeng*) or other main dishes (*gap khaaw*, literally food to be eaten with rice) prepared the night before. Yai Not places the food in chipped porcelain bowls and wraps it with clear plastic bags from the market. She leaves the food on a tiled bench outside the house. The novices arrive each morning to collect whatever is left for them, then move on to the next house. There is very little ceremony to this simple daily offering. Like breath, its importance is underplayed by its regularity.

The offering of food and essentials to the monastic community, or *sangha*, is a fundamental Buddhist biotechnology known as *tam bun*: making merit. For Pii Paa, and especially for elderly Yai Not and Yai Dang, the two grandmothers of the family, the arrival of a monk looking for alms is the arrival of a 'field of merit'. The arrival of the monk provides a welcomed opportunity to cultivate *bun* and improve one's karmic lot in life by offering food and sustenance to a member of the monkhood. Steaming balls of fresh sticky rice are always brought out for a monk, along with the very best food in the house, sometimes including desserts and delicacies quickly bought from stalls set up along the main road and paid for with the family's meager supply of cash.

Properly offering food to a full monk involves much more ceremony than the everyday offering of food to the novices. When a monk comes, Pii Paa, Yai Not or Yai Dang step down from the threshold of the house and take off their flip-flops to stand humbly on bare ground. They spoon the food into the monk's metal offering bowl, careful not to touch him or his robes with female hands. Then, kneeling on the bare ground in front of the monk, the women fold their arms into a respectful *wai* while the young monk recites the Pali chant for receiving alms in deep, sonorous tones. The offering of food confers the blessings of merit, and the monk's chanting of the Buddha's words confers blessings of spiritual power on the family and the house.

According to the Thai lunar calendar there are four *wan phra* (sacred days) in each month, and on these the making of merit moves from the village streets to the temple itself. I often join Pii Paa and the grandmothers at the temple on these days. My first visit to *Wat Koo* was very early in my fieldwork and I was joined by my wife Carolyn and our daughter Nancy. Pii Paa's young niece, Fai, showed us the way as we walked through the narrow lanes between the neighborhood houses. We smiled and nodded as curious faces peeked at the unfamiliar *farang* (foreigners) walking through the back streets of town until we arrived at a stretch of banana and fruit trees that mark the back entrance to *Wat Koo*, a few blocks away. The two grandmothers, Yai Dang and Yai Not, were ferried to the temple on the back of Pii Paa's old Yamaha motorcycle along with bags of offerings: cooked rice and food, white flowers, yellow candles, pure water and silver dishes, all for *tam bun*.

Wat Koo itself is neither a particularly large nor old temple compared to others in the valley. Another nearby temple, *wat yang luang*, is famous for its ancient painted

interior walls depicting agricultural scenes and schematics of Buddhist cosmology that are more than three hundred years old. In contrast, the buildings that make up Wat Koo were built in the 1960's and 70's. They include the thick white washed walls and soaring red tile and golden wood roofs of the main temple (*bot*) and ordination hall (*uphasot*) as well as boxy, utilitarian red brick sleeping quarters and classrooms for the many teen age novices attending the temple school. The various building are joined by dusty courtyard parking lots filled with immense shade trees, potted plants, and a small, concrete lined fish pond that always seems to be half full.

Just outside the huge wooden doorway of the main temple, the whitewashed concrete landing was already full of shoes and sandals removed as a gesture of respect. Shoes are always removed before entering any Thai dwelling and especially before entering a temple. We walked up the wide concrete steps, removing our flip-flops, and stepped into the long, cool, pillared main hall or *bot*. We stooped slightly as we crossed the threshold (another gesture of respect), following Yai Dang and Yai Not in front of us into the dim interior. The teak shuttered windows, carved and gilt with protective beings and winged *kinaree*, were pushed open to allow shafts of hot sunlight into the cavernous space. At the far end, facing us, was the gleaming golden form of the main Buddha image, dozens of smaller Buddhas and devotional figures in wood, stone, and heavy plastic clustered around and in front of it. Amongst the pillars of the hall sat clusters of men, women and a few children, all respectfully curled on the floor with legs tucked in at the side. A few sticks of incense set below the main Buddha image sent jasmine smoke up into the high rafters. On the far right hand wall, on a long, low dais sat nine resident

monks, the *sangha* of Wat Koo. They formed a row of ochre robes, sitting and chanting the *dhamma*, or teachings, of the Pali canon.

Carolyn, Nancy, and Fai sit with Yai Not, Yai Dang and the rest of the women, mostly elderly, on plastic mats spread out on the teak floor at near the back of the hall, furthest from the Buddha image. There are far fewer men attending the temple to *tam bun*, and most of them are elderly. The men sit in the front half of the hall, closest to the Buddha, and I am ushered up to sit with them, on my own, without the safety of the Grandmothers to guide me. Although Pii Paa proudly refuses to wear a woman's *pratoong* or skirt, she chooses a place to sit near the rear of the hall with the other women. I find a place and know enough to kneel and bow my hands and head to the floor three times before I sit down: a brief homage to the triple gem of Buddha, his wisdom (*dhamma*) and the community of monks (*sangha*). I sit with my legs uncomfortably at my sides and my hands together and raised in a *wai* of respect as Pali chanting continues to wash over the room, occasionally moving in call and response between the raised row of sitting monks and the cluster of villagers sitting on the floor before the Buddha.

The two old men beside me see that I am unfamiliar with how to *tam bun*. They gesture to me when I need to bow and press flowers and small candles into my hand so that I can *tam bun* properly. When the offerings are done, and the monks have filed out, a white haired man in front of me goes to the alter and gets some water that has been sitting before the huge golden mass of the Buddha. He smiles and walks about the hall splashing the sacred water on everyone present with a switch made of fragrant herbs. *Paw Ui* (old, respected father) smiles at me through stained and crooked teeth and congratulates me on

my awkward and inexperienced efforts to make merit. He says simply: *tam bun jai dii*. Making merit gives you a good heart-mind.

8.1 Monks, Medicines and Making Merit

The dominant schools of Buddhist thought and practice in northern Thailand, as elsewhere in the country, are the mainstream *Mahanikai* and the reformist *Thammayut*, or forest tradition. Both of these branches claim continuity through thousands of years⁵⁶, while others (such as Yoreh) are relatively recent movements, being born from the turbulence of transnational encounters in 20th century Asia. In order to sketch the Buddhist biotechnologies of land and health that are currently espoused and practiced in Mae Chaem, I have blended these together with emphasis on the more popular, and less academic, traditions and interpretations of Buddhist practice, such as merit making (*tam bun*), because these tend to be the notions that most influence the every-day practise of Buddhism by parents and farmers in the valley. As such, the more philosophical, and perhaps more orthodox, perspectives of well-educated and accomplished monks are taken as a less dominant discourse than the strong voice of popular Buddhist tradition and understanding.

With its myriad of subtle and not so subtle variations, Theravada Buddhism occupies a powerful and central place in Mae Chaem's ideas of land use and health, as well as its ontologies of the world and its relations. The central role of the Buddhist *sangha*, or community of monks, is as teachers with deep understandings of spiritual reality, as living embodiments of the Buddha's teachings and virtues, and as fields for the cultivation of merit by the lay community. The Buddhist path is offered by Buddhist

monks, not only as a path towards moral perfection, but also as an efficacious technology for affecting and altering life (through the accumulation of merit) in a way that ultimately results in the avoidance and cessation of suffering in this life and in future ones.

8.2 Buddhist Bioecology: the Causation of Problems

Within the Thai Buddhist perspective, while various medicines, rituals, and practices may reduce or delay suffering, and while the proximal causes of illness may be rooted in organic illnesses, magical attack, or weak *khwan* (vital essence, spirit), the ultimate cause of worldly suffering is the *kam* (karma) that we all acquire through rebirth, and the *bun* and *bap* (merit and demerit) that we acquire through our actions. Within the Buddhist stream, the physical body and all social and material relationships, including relations with friends, neighbours, spirits, and even one's land, exist within a reality where the ultimate condition is change and impermanence. The world is filled with suffering (*dukh*) because of the propensity for living things, including humans, to resist change and become attached to things and objects, including our bodies and mental states, which are conditioned by impermanence.

Old age, illness, and death are all manifest by this natural flow towards impermanence. They result from the inevitable dissolution of the relationships that make up life and the inevitable decay of bodies and the passing away of everything that we may cling to as fundamental to our 'selves'. These existential conditions of old age, illness, and death were what originally inspired the Buddha's search for enlightenment. It is towards these specific conditions of suffering that core Buddhist teachings, including the four noble truths and the eightfold path, are addressed.

To put this in another way, within Theravada Buddhist teachings, suffering, illness and death are natural, necessary, and unavoidable aspects of life, and while they can sometimes be avoided or delayed through expert intervention, in the end they can only be dealt with through personal effort and action. Within this Thai Buddhist ontology of suffering, the experience of illness and loss is one way to resolve karma. But a less painful path also exists, and that is to address the underlying karmic causes of suffering and illness through avoidance of demerit (*bap*), cultivation of merit (*bun*), and the practice of the Buddhism. As such, Thai Buddhism provides a set of practices to affect life. It is a biotechnology of moral action that is designed to resolve the karmic roots of suffering directly, as well as providing (through the sangha) access to efficacious spiritual power and ritual practices that may delay or resolve suffering in the present.

8.3 Buddhist Biotechnology: the Solving of Problems

A common theme in Theravadan literature is the representation of the Buddha as the greatest of physicians. Within this metaphor, the Buddha prescribes the Buddhist path as a cure for the most fundamental of human diseases: mental attachments to changing realities that are fundamentally empty of value and beyond human control (Birnbaum 1989, Buddhadasa 1984). Despite the claims of many scholars (Spiro 1967, Tambiah 1970) and many monks, Thai Buddhism at the village level, at least as practiced in Mae Chaem, does provide a path for the resolution of everyday problems encountered in health and land use (Candler 2005). The pragmatism and need of local villagers do not allow the sangha to abandon the field of biotechnology to non-Buddhist experts.

The Pali scriptures contain many stories of the Buddha himself, as well as his disciples, using their spiritual strengths to help others: healing the sick, bringing rains in times of drought, or driving plagues of insects or rats from endangered fields. However, the idea that suffering is the result of karmic states that themselves result from past action is also central to Thai Buddhist cosmology. Herbal remedies, ritual actions, and medicines from the pharmacy may all be useful for addressing the immediate physical causes of bodily illness. Various soil treatments, fertilizers, or magically effective words (*kata*) may provide some relief from agricultural misfortune or crop failure. However, the underlying causes of illness, suffering, and loss are symptomatic of deeper mental, spiritual, and karmic states. The implications of karma are, in the end, unavoidable except through spiritual practices such as those advocated with the Buddhist path.

The most efficacious way of cultivating merit is through ascetic practice as a monk (an avenue historically unavailable to women in Thailand), or through the more common offering of food, clothing, and shelter to the Buddhist *sangha*, thereby sustaining the teaching and living embodiment of the Buddhist triple gem. The consequences, or fruits, of merit are understood to include the avoidance and resolution of suffering (*dukha*) in this life, and in future ones. In terms of everyday life, this forms the core of a fundamentally moral and social biotechnology for affecting life. Notions of *bun* and *bap* can be understood to be at the centre of this primary biotechnology of Buddhism.

From this perspective, village relationships to the temple, and more specifically to the *sangha*, become fundamental to the sustainable cultivation of health, wealth, and happiness as all of these are predicated on making merit through the practice of

Buddhism. Other meritorious acts such as giving to the poor, or helping one's family are generally considered to be only marginally effective ways of cultivating merit unless the Sangha is involved somewhere along the line⁵⁷. For example, while giving money to a beggar encountered on the street may provide a small amount of merit, giving money and food to begging monks (who may then redistribute it to the poor) is a much more effective way of achieving merit within the Buddhist ecology.

A direct result of the cultivation of merit is the more directly perceivable cultivation of *jitjai dii*, a good heart-mind, or mental-emotional state, through moral practice and meditation. This is a popular point made in the sermons of well educated monks, and a dominant theme in much scholarly Thai Buddhist literature. One Mae Chaem mother meditated regularly during her pregnancy in order to cultivate the health, *jitjai dii* and *jai yen* (literally cool heart-mind, but also calmness, serenity) of her child *in utero*. This seems to be a relatively new practice as she had married a man from outside the valley and had been introduced to the idea of the benefits of pre-natal meditation through Buddhist literature from several contemporary Bangkok based sources. The general notion of cultivating *jitjai dii* through Buddhist practice as a way of benefiting bodily health is more widespread in Mae Chaem. In an interview at Wat Bupharat, an important temple near the centre of the district centre, the head monk of the temple discussed *jitjai* (heart-mind) as 'the boss' of *rangkai* (body) and that monks help people develop *jit jai dii* by encouraging them to come to temple, to *tam bun* (make merit), to follow the five precepts [the basic moral code of Buddhism], and to have good intentions in all their actions.

Beyond individual merit making, the Thai *sangha* also provides more immediate treatments for illness and suffering. Within the scriptural realm, merit cannot be transferred to another and one's karma cannot be resolved by anyone other than oneself. However, within the living tradition of popular Buddhist practice the notion of transference is fundamental. Crops may be lost and children may suffer as a result of their parent's karma. Monks are able to turn the spiritually charged power of the Buddha's words and their own ascetic accumulations of knowledge and merit towards helping sick children, getting rid of problem insects in a rice field, or encouraging the onset of the rainy season. Through various ritual forms, including the ritualized adoption of children by the monks (*luuk phra*), and the transference of merit from the living to the dead through the pouring of lustral water, both villagers and the *sangha* can dedicate their own merit to benefit other beings, living and dead. In the annual offering of the new rice harvest (*thaan khaaw mai*) accrued merit is understood to transfer not only to the families who have made the offerings, but also to the productivity of their fields and the strength and health of the mother earth, *Mae Nang Thoranii* and the rice spirit, *Mae Phosop*. In practice, these rituals of transference allow for a range of effective compassionate actions and relationships of spiritual reciprocity between monks and villagers that are otherwise outside of the cosmological spaces recognized within the Pali scripture.

Beyond merit making and its transference, the privileged position of Buddhism, and particularly the Buddhist *sangha* is reinforced by another more magical, rather than moral, biotechnology of popular Thai Buddhism. Through ascetic practice and the accumulation of great merit, accrued or inherited through rebirth, individuals, and particularly monks, may cultivate *baramii*, a state that empowers one's worldly words

and actions with magical power and efficacy. Royal persons, such as King Bhumipol, as well as highly accomplished monks, are considered to have a great deal of *baramii*, as do the most successful of healers, business people, political figures and others who display exceptional skill, ability, or luck, in a particular area.

Personal *baramii* is also necessary to activate and catalyze the latent power residing in ritualized words, protective amulets (*phraa*), magical gestures, including *kata* (magic formulae) and sacred texts such as those originally spoken or written by the Buddha or occurring in the Pali Canon. While the primary way of accumulating *baramii* is through monastic practice, once developed it can be maintained and put to use outside the monastery. As such, *baramii* is understood as an instrumental and morally ambiguous power obtained through the ascetic practices⁵⁸ of the monastery. This magical and efficacious power of the *sangha* is evident in the prominent role that monks play in the realm of rain making rituals at the onset of the rainy season, as well as their role in some health rituals. Where parents request the ritual of *khaai luuk phra* (literally, selling children to the monks), a monk will give a small amount of money (usually a 1 baht coin) to the parents of a child and the child will receive a new name and string bracelets will be tied to the child's wrists while special phrases are chanted. In a symbolic sense, the child then belongs to the monks and their protection is conferred on the child. Because malevolent spirits (*pii*) are considered to be afraid of spiritual power of monks, this is understood to be an effective cure for childhood illnesses brought on by malevolent *pii*.

Finally, the Buddhist monasteries of Mae Chaem also play material, political, and educational roles in the biotechnologies of health and land use. The temple is the historical center for the transmission of medical, magical, and herbal knowledge passed

down through temple texts and monastic oral traditions. Occasionally this knowledge is practiced by monks themselves, and, while rare, it is not unheard of for people to get medicines, usually herbs, directly from a knowledgeable monk. In this role, the monastery and the *sangha* again step beyond purely orthodox roles and scriptural restrictions against the practice of any skills or professions (including medicine) that may distract monks from the pursuit of enlightenment.

In Mae Chaem, the herbal and medical traditions passed on through the monastery are only rarely put to use by practicing monks. They are much more likely to be practiced by *maw muang* (local doctors) who acquire knowledge, *baramii*, and a reputation for morality through ordination as monks, and then practice as healers once they have left the monastery. Becoming a monk is an almost essential preliminary step towards becoming a *maw muang*. In effect, while the households of *maw Muang* may be the clinics of traditional medical knowledge, the monasteries of Mae Chaem are the universities. While medical and herbal knowledge is rarely practiced actively by monks, it is built up, maintained, and cultivated within the monastic system. The fact that *maw muang* are understood to require exceptional *baramii* in order to empower the ritual and pharmacological efficacy of their cures only reinforces the role of the temple as a fundamental juncture for legitimizing, moralizing, and enabling medical practice in the valley.

Elsewhere in Thailand monks and monasteries play a direct role in providing health services, particularly in palliative care for the estimated 1.2 million Thai suffering from HIV/AIDS related illnesses in the Kingdom. However, in Mae Chaem, this does not seem to be the case. While some local temples have taken a role in treating drug

addiction and related rehabilitation⁵⁹, this role in addictions treatment tends to be seen in terms of reinforcing morality rather than in terms of public health. Buddhism's institutional role has been clearer in terms of public health education and agricultural extension in the valley. Through the 1960's, 70's and 80's "Development Temples" played a central role in the encouragement of sanitation programs in much of Mae Chaem, and they continue to be important sites for the dissemination and debate of Buddhist ecological perspectives.

These general domains of Thai Buddhist biotechnical action are made more concrete through the numerous related biotechnologies, or biotechnical practices and tools, that are brought to bear on issues of child health and land use by the Buddhist *sangha*. Beyond the practices of merit making that have already been discussed, the most important of these is the recitation of *dharma*, including recitation of *jataka* stories (*chadok* in northern Thai) detailing the exploits of the Buddha's many previous incarnations, as well as apocryphal tales of his disciples. Through the oration of these sacred stories by learned monks, both rice fields and human bodies become subject to the biotechnologies of Buddhist practice. Through recitation of *dharma* the transcendent powers of the Buddha and his disciples, embodied in the words and stories of scripture, are made active through the ritual utterances of monks and can be used as powerful tools for reinforcing health and driving illness out of the body. *Jataka* stories and scriptural passages play an important role in calling the rains (*kaw fon*) at the beginning of the rainy season, and may be recited in the fields in order to drive away insects and rats, or calm malevolent spirits. This is a service that many farmers report requesting from young

monks and novices, although their use has become less common with the widening availability of chemical pesticides.

The *baramii* of the *sangha* is also brought into play by other linguistic technologies. *Kata* involve the use of powerful words and arcane Pali formulae that may be spoken, or made more permanent through writing⁶⁰. Regardless of their form, *kata* are simply spoken sounds or inscribed lines until they are activated by the *baramii* and concentration of the speaker or creator. *Kata* are used widely by other biotechnical experts beyond the monastery including *maw Muang* (local doctors), occasionally *maw tamyeh* (midwives), and the more malevolently powerful *sayasat*. Again, *kata* can be applied to both medical and ecological ends. Some *kata* are effective for stopping bleeding or for providing protection from accidents. Others are designed for good fortune in business or success in the fields. *Kata* are also integrated into candles, sky rockets and other merit making offerings made during *songkran* (Thai new year) and *pii mai noi* (little new year)⁶¹ in northern Thailand: their power strengthening wishes for rain, success, and happiness in the coming seasons.

Ritual adoption is a less commonly practiced Buddhist biotechnology that relies on the transfer of merit from monks to small children who become *luuk phraa*⁶² through the symbolic selling of the sick child by the parents to the *sangha*. As a consequence, the adopted child benefits from the accumulated merit of his or her new ‘parents’. Malevolent spirits and dangerous animals are understood to be very reluctant to harm a *luuk phraa*, or monk’s child because of the protective spiritual power of the *sangha*. Another technology, related to a monk’s knowledge and astrological skill, rather than his *baramii*, is the identification of appropriate and auspicious names for a child. One’s name

is considered to have significant bearing on life experiences. Monks are often consulted to provide a child with a name immediately after birth, or to suggest a new name after a series of sicknesses or misfortunes.

Beyond these ritual and linguistic biotechnologies, there are also more material biotechnologies of herbal medicines, and occasionally pharmaceutical drugs, that some monks may become expert in and acquire a reputation for. At the time of my fieldwork the most senior monk in the valley (the abbot of *wat koo*) knew of only one resident monk who was a recognized expert in the use of herbs, and he was frequently away from his home monastery to practice meditation and study herbs in the forests and small villages north of the district centre. Other Mae Chaem monks, although less expert, also occasionally prepared herbal treatments, or provided store bought medicines, for those who requested them. Traditional herbal medicines are generally pulverized and made into small pellets, but are also frequently made into teas, snuffed as powders, applied topically as ointments, or included in steam baths. At one temple festival held at a well known monastery school (*wat yang luang*), which has become a centre for the revitalization of local knowledge, the novices made large batches of a strong smelling herbal ointment used to relieve nausea and sold small bottles along with hand crafts as a way to raise funds for supporting community education programs and a women's weaving cooperative.

As already mentioned, many Thai monks, particularly those within activist oriented 'development monasteries', also play important roles in advocating for nationally sponsored public health and sanitation campaigns. Many monks, especially since the late 1980's, have also become active in the domain of land use change, acting as

advocates for ecological issues, especially involving the protection of forested and natural areas⁶³. This advocate role has occasionally placed Buddhist monks into conflict with both state and corporate interests, as well as with forest communities. As noted by Pinkaew (2000), non-Thai and non-Buddhist Karen communities who depend upon the use of forested areas for livelihood and traditional swidden agricultural have been particularly vulnerable to the Buddhist led popular ecology movements. Since the economic crash of 1997 activist monks have also become key advocates for a return to sustainable agricultures and sustainable livelihoods that are based on what is sometimes called the 'new agriculture'. Monks advocating within this movement are often overtly political and argue for a shift towards what are presented as more Thai and Buddhist social and spiritual values of moderate desires, self-reliance, and local community economic relationships and a shift away from more capitalist values of material acquisition, commodity accumulation and global cash economy oriented production.

A popular monk from the temple of Wat Paa Dtaet, just outside the district centre brings many of these issues together and casts them within an explicitly political and economic perspective:

Here in the valley we put chemical medicines on our fields every year. It must be seen that the chemicals come from capitalist, developed countries. The developed countries profit and the developing countries suffer the damage. The big companies force the government to allow this through donations and bribes, and they force the individual farmers to use chemical if they want to use seeds [through contract farming]. And now maybe there will be GMO [genetically modified organisms]. I am worried about GMO. In the past our problems came from nature, in the future they will come from our selves. Then what will we do?

Now we have to use two times as much pesticide to kill the insects in the fields. This is not the way of kindness (*metta*). The results of this come back to the consumers when they eat their food. Now when we talk about crops we talk about money, the economy, about marketing and prices. In

the past we talked about our neighbours who we need, our friends, the birds that help us by eating pests. These are relationships. This is kindness. Now the *jitjai* of the people is very low because all we think of is money.

I wonder how to explain to people about the importance of nature, but instead they worry about money and business. Everyone wants everything now. It is not good. It is *bap* [a moral mistake or sin]. Capitalism is now stronger than Buddhism for many people. There is so much competition. The goal is to put the other out of business rather than share a little and make sure that everyone has enough. The religions that cater to capitalism will be the only ones that stay.

The monk went on to relate his last statement, about religion that caters to capitalism, as a reference to particular Bangkok based schools of Buddhism that now embrace consumerism and market based values.

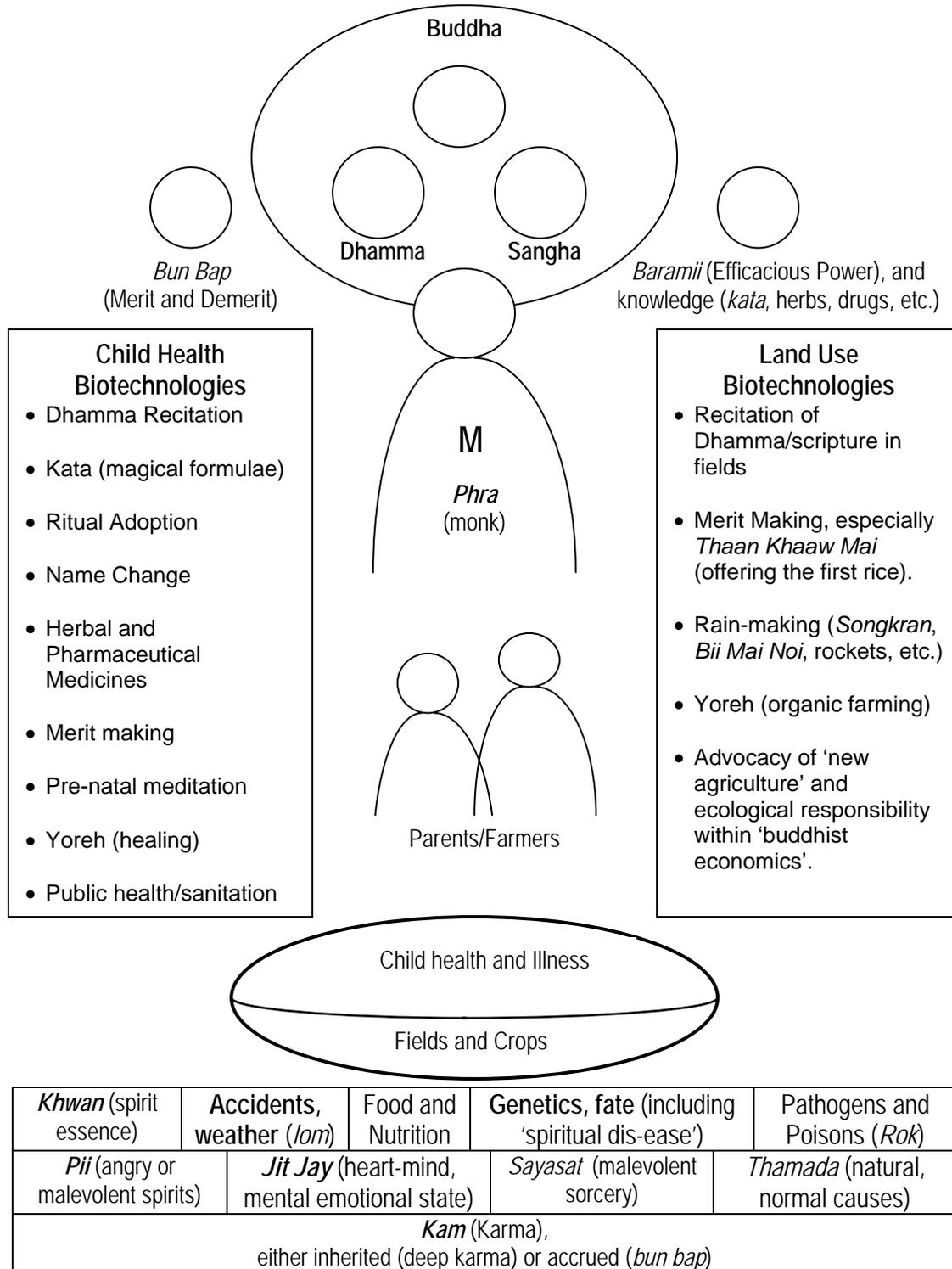
Another school of Buddhism that enjoys increasing currency in Mae Chaem is the recently arrived ecological and health focused of Yoreh. Yoreh (also Jorei, Johrei) is the term used to refer to the local branch of a much larger Japanese based ‘new religion’: Sekai Kyuseikyo. Yoreh devotees follow a particular brand of teachings based on the visions of its founder in 1935 Japan. Yoreh maintains a large temple and teaching centre in central Thailand as well as centers in Japan and Brazil. Yoreh came to Mae Chaem in the early 1990’s as a result of visits from devotees based elsewhere in Chiang Mai province. Devotees of Yoreh in Mae Chaem consider themselves Buddhist. Their practice is based around the use of meditative states accessible to lay devotees in order to channel a divine spiritual energy (called Yoreh) and heal illness through the purification of underlying spiritual states. The teachings of Yoreh also advocate the elimination of poisons and impurities in one’s food through ‘natural farming’ and the cultivation and consumption of organic and vegetarian food. As such, the movement is a vocal advocate for the elimination of all pesticides and chemical products from the fields of the valley.

To this end, the movement advocates the use of its own agricultural product. The dark liquid, sold at local shops, is known as EM (an acronym standing for effective micro-organisms) and is designed primarily as an organic replacement for chemical fertilizers and pesticides. Yoreh involves a currently small and recently arrived sub-set of Buddhism that bases itself on international connections and combines Buddhist ethics with an explicit concern for ecological and land use issues and as well as an overtly health oriented interest in the application of Buddhist spiritual power.

8.4 An Actor-Network Model of Thai Buddhist Biotechnology

In Mae Chaem, the *phraa* (monk), as a member of the *sangha*, and living representative of the Buddhist triple gem, is positioned as a biotechnical expert. In actor network terms, the monk is an obligatory passage point (OPP), through which the power and knowledge inherent in the triple gem and the monastic tradition can be brought to bear on worldly issues of child health, land use, and the improvement of life. Figure 2 is an attempt to diagram the biotechnical actor-network of Thai Buddhism. The many related biotechnologies, or biotechnical practices and tools, that are brought to bear on issues of child health and land use by the Buddhist *sangha* are listed in the rectangles to the right and left of the figure. In addition to this wide range of Buddhist biotechnologies within the spheres of land use and child health, there are also a particular set of causes, or determinants, of health, illness, and land use challenges, that are defined and ranked within a Buddhist ecology of life. These are depicted at the bottom of Figure 2, below the oblong rice grain of child health and land use.

Figure 8.1: An Actor-Network of Thai Buddhist Biotechnology



Within this depiction of Buddhist causality, *kam* or karma is depicted at the bottom and most fundamental level. This level of causality, depicted in bold, is where Thai Buddhism, with its central technologies of merit making and notions of *bun* and *bap*, applies the bulk of its biotechnical attention. Intermediate causes of suffering (illness and land use change involving spirits and emotional states) addressed directly by Buddhist biotechnologies are also printed in bold, as are issues of accidents, weather, fate, and *khwan* or spiritual essence that are addressed directly by Thai Buddhist practice. Other immediate causes of illness and land use problems, including pathogens and poisons, nutrition, and magical cursing, generally lie outside the domain of Buddhist expertise in Mae Chaem and are not in bold. While these are recognized as real, they are generally left to the expertise of others, whether it be *maw Muang* (in the case of Sayasat casting magical curses), or the local hospital (in the case of organic diseases).

8.5 Buddhist Biopolitics: Access and Advocacy

Popular Thai Buddhism offers a substrate of core ideas and practices that address the ultimate causes of illness, disease, suffering, and death, and it provides a systematic approach to remedy these existential problems. The Buddhist biotechnologies of merit place individual action at the centre of both causing and addressing personal suffering, including issues of bodily health, land use and economy. However, they also recognize Buddhism, as represented by the Buddhist *sangha*, as the central force in enabling and regulating the accumulation of merit and the ultimate treatment of underlying causes of suffering. This worldview places Buddhist monks in a particularly powerful biotechnical position. In terms of health and land use, local farmers and parents both benefit from

Buddhist power and knowledge via the monk's teaching of moral practice (and the resulting karmic dividends that this pays), through the efficacious power (*baramii*) of an accomplished monk's words and ritual actions, and occasionally through the expert knowledge of medicinal herbs, rituals, and practices that some monks possess. There are no direct monetary costs for accessing the biotechnical expertise of the Buddhist sangha. No fees are charged, however some form of offering is generally made.

Within this ecology of Buddhist biotechnology, farmers and parents also benefit from merit making opportunities that arise through the simple presence of a monk as a 'field of merit'. While individual moral action in the absence of the *sangha* does play a role in the cultivation of *bun* and the avoidance of *bap*, the presence of the *sangha* enables farmers and parents to cultivate greater merit, through offerings of food, clothing, shelter, and especially the ordination of male children, on a scale that would be impossible otherwise. Therefore, within this ecology, both the direct actions of monks (as teachers and biotechnical experts), and the direct actions of parents and farmers (as moral actors) are efficacious in resolving health and land use problems. However, the monk remains as an OPP because the karmic benefits of merit making by parent/farmers are amplified so greatly by the presence and endorsement of the *sangha*. In return, the monks are supported by the community through offerings and alms.

In Mae Chaem, the ubiquity of this Buddhist biotechnology of merit, and its accompanying understandings of suffering, illness and death at least influences, if not dominates, the cultural worlds of most Mae Chaem parents and farmers. As well as a physical ecology of places, plants and pathogens, Mae Chaem is also a mental ecology of signs and symbols. These signs and symbols say certain things about life and how life can

be affected. In Foucauldian terms, the Buddhist ontology of suffering, and its prescription of Buddhist remedies for resolving suffering, is the cornerstone for a Buddhist biopower: a self-referential system of knowledge that defines the problems of existence, explains their causes, and offers strategies for their resolution. The ways that Thai Buddhism inserts, maintains and advocates its bio-ontology within the contexts of daily life in Mae Chaem constitutes a form of advertising. In other words, they are a way of enrolling, or maintaining the enrollment of local actors, within a larger actor-network of biotechnical ideology and practice. To the extent that the actants within Mae Chaem's Buddhist actor-network (including monks and the triple gem of Buddha, Dhamma, Sangha, but also lay people, notions of merit and demerit, biotechnologies like ritual adoption and kata, etc.) can attract the hearts and minds of Mae Chaem's parents and farmers, then the Buddhist stream will be better able to maintain itself and further define understandings and approaches to illness and land use in Mae Chaem. As indicated in quotes cited above, it is commonly understood that the strength of Buddhism in Mae Chaem is giving way to more market oriented approaches to life.

The Muang Stream: *Maw Muang and Maw Tamyeh*

Life, everyone's life, is the same as a leaf in a tree. Everybody is born. Everybody grows old. We become sick, and after, we die. It is natural. Prince Sidhartha⁶⁴ (*Phra Sitata*) knew it and he left his wife and palace because of it. Some people grow old and turn yellow, then fall off the tree naturally (*thamada*), and some get eaten by worms and insects when they are still young and green... (Paw Naan Niew)

9.0 The *Muang* Stream

In northern Thailand, the term *maw* is often translated as 'doctor' or 'expert'. It is an honorific title used to refer to a person respected for their secular expertise, practical learning and accomplishments in a technical or artistic field. An expert singer or dancer may be called *maw lum* (song expert). Biomedical doctors are called *maw phayabaan*⁶⁵ (literally, hospital expert). Individuals who use massage to heal (massage therapists) are *maw nuat*. The term *Muang* on its own refers to a particular locality, originally associated with the inside of a walled city (for example, the *Muang* of Chiang Mai City), but has come to be used more generally as a linguistic and ethnic self-identifier (*khon Muang*) used largely by rural, northern Thai populations to identify communities that speak the northern dialect of Thai, and who tend to define themselves as descendent from the old northern kingdoms of Lanna rather than the central Thai kingdoms of Siam. Northern Thai words that differ from central Thai are referred to as *kham Muang* and the distinct northern writing style is *paasaa Muang*. The term *maw muang* (literally, local doctors or experts) refers to an expert in medical, herbal, and ritual practices that are both distinctly

local, and distinctly northern Thai. In Mae Chaem maw muang are almost always older men and may apply their specialist knowledge to the health of people as well as to the health of fields. They represent a distinct system of land use and child health practice with deep roots in the valleys of northern Thailand. Maw tamyeh (literally, birthing or delivery experts) are in many ways the female counterpart of male maw muang. Their expert skills are applied within a more specialized domain of assisting women and children through the birthing process, and in protecting both mother and child from harmful influences immediately post-partum.

9.1 *Maw Muang and Maw Tamyeh*

Within almost any village in Mae Chaem, with the possible exception of Christian Karen communities such as Mae Hae Tai, a maw muang or maw tamyeh (and often both) can be found serving the local community. Both maw tamyeh and maw muang generally practice their trades within their own communities, often providing help to family, friends and acquaintances who live in close proximity. While individual skills, reputations and specialties vary greatly, maw muang and maw tamyeh tend to be highly respected for their knowledge. Some well known Muang experts attract parents and farmers from across the valley and from nearby districts. Other less accomplished Muang experts may be called on only occasionally and for more minor health or land use concerns.

Through claims to expert knowledge and skill maw Muang and maw tamyeh offer a rich stream of biotechnical knowledge and practice that finds application in both the fields and the lives of Mae Chaem. While the Muang tradition maintains a distinct core of child health and land use practices and perspectives it is highly versatile and readily

draws upon those of other streams. Most maw muang practice a complex mix of traditions designed to affect life through a combination of strategies: Buddhist and non-Buddhist ritual practices, use of *kata*, herbal medicines (see Brunn and Schumacher 1987), diagnostic divination (*spok*)⁶⁶, and occasionally some knowledge of scientific biomedicine, including the actions of pharmaceutical pills and administration of injections. Maw tamyeh embody a similar diversity of strategies and techniques drawing on diverse sources of authority from domestic through biomedical streams. Although subordinate within the biomedical hierarchy, the Mae Chaem hospital at the centre of town has a resident maw muang on staff to provide ritual assistance to hospital patients and their families and tend an herb garden out back⁶⁷. Maw tamyeh, while not officially recognized by the hospital, often mention attendance at training workshops sponsored by both national health care system and by international NGOs.

There are obvious differences between maw muang and maw tamyeh, and by lumping them together within the same biotechnical stream I am creating a convenient analytic category that portrays a relationship between the two that is not often made at the village level. In current village discourse maw muang and maw tamyeh are quite distinct. They develop their knowledge and skills in different ways and their respective areas of expertise are strongly delineated. Maw muang do not assist at births and maw tamyeh do not claim expertise at any time other than the delivery of a child⁶⁸. The other major difference between maw muang and maw tamyeh is gender. Buddhist ordination and training is an almost universal prerequisite to becoming a maw muang as the temples serve as a critical site for acquiring Muang technical knowledge and skill. As women have historically not been able to ordain as monks in Thailand, there are no exceptions (at

least in Mae Chaem) to the rule of maw muang being men. While there are women in the valley (many of them maw tamyeh) who are well known as experts in herbal knowledge, they are not considered maw muang. Conversely, the profession of maw tamyeh is an entirely female dominated field of expertise, although one that seems to be in considerable decline at present. At the time of research there were numerous maw muang practicing in Mae Chaem communities. However, while some expectant mothers still ask maw tamyeh for advice and assistance (especially in the uplands), the vast majority of deliveries in Mae Chaem, especially in lowland areas, now occur at Mae Chaem hospital where university trained staff provide biomedical expertise⁶⁹.

Maw muang and maw tamyeh tend to rely on very similar sets of explanatory models for understanding illness and loss, incorporating both material and moral realms, and depending upon linkages to other forms of medical or ecological authority (Buddhist monasteries and national hospitals) to support their own. They also use a similar diversity of techniques, from the material (birthing exercises and herbal teas) through to the ritual (*daat guut* and spirit protections) to deal with the challenges of life in Mae Chaem. Despite the differences between maw muang and maw tamyeh, it is the similarities between their practices and understandings, as well as the neat delineation and division of their responsibilities, that stand out most clearly. It is because of these that I consider the expertise of maw Muang and maw tamyeh as a complementary pair within a single stream: the gendered sides of a single Muang biotechnology.

At the time of fieldwork, *Baan Gaa*, a village across the Mae Chaem river and a short distance away from the district centre, was the home village of one particularly well known and well respected maw Muang. His name was Paw Naan Niew, Paw Naan being

an honorific term of respect accorded to only a handful of male elders who have spent a long period of time wearing the saffron robes of the *sangha* (monkhood) and achieved a high ranking in the monastic order before returning to village life. Several *Muang* experts (maw tamyeh and maw muang) practiced in the village, each receiving friends and clients in the courtyards of their homes and specializing in particular areas. While Paw Naan Niew was also well respected for his ritual expertise, he was best known for his expertise in the use of herbs. Other maw muang in the same village focus on the making of charms and use of *kata* (magic formulae) or practiced as leaders of communal rites such as *juu khwan* (calling the khwan).

My first visit to Paw Naan Niew was made on the back of a shiny new Honda Dream, recently purchased by khun Raywat, one of my co-researchers. Laan, another local co-researcher, rode behind us on her much older Honda. It was still early in the wet season and we raced past watery fields and terraces of new emerald green rice, dark clouds looming over the nearby hills. In some of the fields farmers could be seen stooping over picking unwanted plants from between thin green stalks of young rice. Farmers in other fields steered their mechanical plows, powering through the weight water and soil. Our bikes roared along the winding skin of black asphalt passing pesticide advertisements and small store fronts displaying fruits and vegetables to potential customers.

At several points we had to ask directions, calling out to people sitting on teak porches, or eating noodles at road side stalls. I wondered what the old men looking up at me from their yards thought about this strange *farang* weighing down the back of Raywat's bike. Everyone seemed to know where Paw Naan Niew lived and eventually

our little team turned onto a dirt and gravel side road and stopped in front of an old two story teak house, its bottom half enclosed with cinder blocks and cement. We parked the bikes under a young pomegranate tree and stepped into the red dirt yard at the side of the house. The green canopy of a gnarled tamarind tree spread shade in all directions. Only the concrete threshold of the house was exposed to the hot mid-day sun. On a bench in this sunny spot were two tin sheets, each filled with hundreds of small, rough brown pellets: crushed herbs pressed into a form and set out to dry.

A young woman smiled to us with a *wai* of greeting and invited us into the house. We removed our shoes and crouched in respect, stepping into the dark coolness of the cement enclosed ground floor. On the far side of the dim room, past a set of polished teak chairs, Paw Naan sits cross legged on the cool floor next to an open window, chewing on a wad of *miang* (fermented tea leaves) taken from a large clear plastic bag in front of him. Paw Naan's tiny frame seems out of proportion with the enormous smile that crinkles his face as he returns our own wais of greeting. He gestures for us to sit near him as he pushes the bag of miang towards us, carefully folding the leaves into a packet, he inserts another bunch of the wet green leaves into the side of his mouth. Raywat and I sit closest to him. Laan chose to keep a respectful distance and sat nearer to the door. Raywat introduces us and our project, explaining that we wanted to learn about how maw muang help people with child health and land use problems in the valley.

Paw Naan seemed more than happy to have an audience to speak to. At the age of seventy-six Paw Naan speaks with an animated enthusiasm unusual even in younger people in the valley. He tells us how he became a maw muang and answers questions about how he deals with child health or land use concerns with enthusiasm. Befitting his

title, Paw Naan was a high ranking monk in his younger days, and during the ten years he spent in the monastery he studied both the sublime teachings of the Lord Buddha, and the more worldly knowledge of herbal medicines and protective magic formulae. When he left the sangha he continued his studies, travelling up and down the valley learning from other practicing maw muang from many villages. Beyond the monastery, and his learning from other maw muang, he has also participated in national training sessions for maw muang offered in Bangkok and Chiang Mai. He speaks proudly of having once been asked by the head administrator of the district to appear before King Bhumipol as a representative of Mae Chaem at a meeting of traditional healers held in Bangkok. The honour of appearing before the King was a mark of state endorsement that Paw Naan continues to use as proof of his expertise.

Midway through this first meeting, another motorcycle arrived at the house and a man in his early twenties poked his head into the house. Paw Naan greeted him warmly and explained to us that this young man had travelled more than an hour along difficult roads from a Karen and Lua village deep in the hills on the way to Mae Hae Tai. The young man had been very ill several months before with fevers and problems breathing. His parents had taken him to the Mae Chaem hospital and also to Paw Naan. His condition had responded well to the medicines he was given by the hospital, but, despite his recovery, his parents were concerned that the illness had ultimately been caused by a malevolent *pii* (spirit) that the young man had encountered on his motor bike. Despite his current good health, the young man wanted Paw Naan Niew's help in resolving the underlying spiritual causes of his illness.

Paw Naan invited us to stay while he and his wife prepared a *satuang*, a set of offerings held within a four cornered basket made of banana leaves. The *satuang* would be used for a cleansing ceremony to wash (*tam sa'aat*) any lingering problems from the young man. The preparations took some time as the *satuang* was made and filled with offerings of roasted chillis, balls of sticky rice, candles, some of the miang, some rice whisky and a few silver coins. Paw Naan's wife measured out several lengths of white cotton string to wrap around the *satuang* while Paw Naan mixed water with some clay and pressed it into the shape of a small water buffalo. All of these offerings were placed into the *satuang* and we were ushered upstairs to where the Buddha images of Paw Naan's household shrine were set high on one wall. Paw Naan recited Pali passages in a rapid flow of syllables, accepting a small payment from the young man, and calling on the Buddha and his enlightened disciples to assist him by blessing a large bowl of water sitting before him. The young man who had come for help sat with his hands raised in a respectful wai as Paw Naan's rapid recitations came to a close. After Paw Naan was finished he led us all out of the house and down the street to where the rice fields surrounding the village began. The young man knelt in the fields with the *satuang* in his hands as paw naan called on the rice mother and the divine spirits of field and sky to cleanse the young man. Paw Naan used the water that had been blessed in front of the Buddha images and poured it over the man's head, then rubbed the man's back with the blade of an old sword, to wash away any malevolent influences from the young man and cut any ties that angry pii might have made with him. The water poured from the young mans head and shoulders down into the earth of the rice field and the *satuang* was left

sitting in where the rice mother and other protective spirits of place (*Jiaw Thii*) could partake of it.

9.2 Muang Bioecology: the Causation of Problems

Within the *Muang* stream, problems in the health of people (including children) receive much more emphasis than problems in the health of fields. However, problems for both children and fields are understood to be caused by a similar set of primary, or root causal agents, caused by either material concerns (poor soil, poor diet, poisons), or by primarily relational concerns (offences, or inadequate offerings, to powerful spirit beings). These relational concerns include problems caused by external agents including *sayasat* (malevolent sorcerers), the influence of dangerous or easily offended spirits (*phii*) including ancestral spirits and spirits of place. These primary causal influences are often interpreted in terms of foreign or unnatural substances such as poisons or pathogens that may be caused by spirits or malevolent magic used by *sayasat* or contacted through problems in the physical environment. Other causal concerns include issues of fragile or missing *khwan* (potentially caused by a variety of factors including malevolent spirits and intense emotional states), and accidents that attributed to underlying issues of fate or karma (also see Yos 2003).

The practices of *maw tamyeh*, while only applied to challenges immediately prior to, during, and after child birth, offer a similar diversity of material and relational explanatory models to those of *maw muang*. Concerns for nutrition and cleanliness in the cutting of the *satuang* or birth chord are combined with the ritual treatment of placental material and the protection of the child through calling out to any spirits (*phii*) who may

be nearby and inviting them to take the child away if it belongs to the spirits (*luuk khong phii*) and otherwise to leave it alone for the human parents to take care of. As such, the *maw tamyeh* facilitates the safe transition of the bodies and spirits (*khwan*) of mother and child through the birthing process, and the first taboo laden month (*yuu duan*), during which both the mother and child need assistance to safely return to ordinary life.

The practice of both material and relational biotechnologies by *maw tamyeh* is illustrated in a narrative by an elderly *maw tamyeh* who assisted births in the lowlands up until the early 1990's. Asked what kinds of things she thought should be done to keep children healthy, *Mae Ui* (respected mother) replied:

Before the child is born, the mother needs to drink and wash with a tea made from Puu Luey leaves [*naam puu luey*]. This makes the baby strong, but skinny, and makes the birth easy for the mother so that she doesn't get too tired. After the baby comes out, a *maw tamyeh* needs to wash the baby's body with clean, warm water and clean the mouth with her fingers. When the chord is cut, the midwife wraps the child in clean cloth so that it stays warm and places the child in a *kradung* [a round basket for winnowing chafe from rice], just inside the door, at the top of the steps leading up to the house. The midwife jumps up once [*Mae Ui* motions with her hand] and calls out, 'if this child is *luuk pii* [the child of a spirit] then spirits should come and take the child, but if this child is [*luuk khon*] a human child, then the spirits should leave it alone and let the human parents take care of it.' Then the *maw tamyeh* stands at the door and scratches an 'X' at the threshold to block the bad spirit's path. [She points at the floor, at the threshold of her house, and scratched faintly in the dark teak wood is an 'X' made by her several years ago when a granddaughter gave birth in her house.] After this it is important [for the family and the midwife] to tie the wrists (*mat muu*) of the mother and child to protect them and tie their *khwan* closely to them. The midwife should then clean the placenta, making sure that it is free of blood, and then poke it with a needle to make the child's mind sharp. The placenta should be hung up in a big tree, or buried some place where people will not step on it. This will give the child the chance to be very strong and lead a good life.

The old *maw tamyeh* went on to explain that sometimes a spirit called *pii gaa* will enter the young mother after the birth because her *khwan* is weak after the difficulty of birth. *Pii gaa* eat the blood and entrails of a new mother making her cry uncontrollably

and sometimes go crazy (*baa*). The spirit tends to attack women in particular families, so it is important for the *maw tamyeh* to know the mother's family well so that she can know if *pui gaa* is likely to be a problem. The same spirit could also enter the baby if the baby's *khwan* is weak, and this makes the child cry a lot.

Within the domain of child health, the strong relationship between young children and the spirit world, and the fragility of newborns and young children due to this relationship, is a central notion within *Muang* explanatory models. For *maw Muang* this relationship is defined by the social obligations owed by the newborn to the spirit parents that take care of the human *winyaan* (spirit) prior to its birth into this world as an infant. Because of this relationship, young children are born into this world owing offerings of respect to their spirit parents, referred to as *paw guut mae guut* (literally, birth father and birth mother) or, more formally, *Buu Thaen Yai Thaen*. *Paw guut mae guut* often make children sick (especially before the age of six) in order to remind the people (children and parents) of this world of their obligations to the spirit parents. Ties to the spirit parents can be especially strong if a child is very well loved and missed by *paw guut mae guut*, resulting in their calling the child back to spirit world by making them sick and ultimately causing the child's death. Within this understanding, it is the pre-natal social bonds and obligations owing between small children and their spirit parents that give the spirit parents the power to make children ill. Unusually high childhood fevers are especially suspected to result from problems with *paw guut mae guut*. Yos Santasombat notes that, "such belief is mostly found in the northern Tai lowlander groups and related mainly to infant maladies" (2003: 115).

Maw muang who are called on to deal with the problems of rice fields are much less common than those who deal with human or child health, but they use broadly similar explanatory models to understand and deal with the challenges of growing crops. On one hand maw muang may approach problems in the fields as primarily material and requiring a material solution provided by large batches of herbal remedies that may be sprayed or scattered on crops or dug into the soil. On the other, difficulties in the fields may be due to relational problems between farmers and spirits of rice paddies (*pii naa*), irrigation canals (*pii fai*). Such relational problems affecting the health of fields may be addressed through the provision of offerings, often using a *tao tung sii* (four cornered offering), or through enlisting the aid of helpful spirit beings through the use of a *taa laew* or hawk's eye, a protective charm made of woven bamboo and hung in fields and or at the threshold of houses.

While spirits may be a challenge even in cultivated landscapes, they are much more likely to reside and become problematic for humans and fields adjacent to forested areas. Land use problems caused by conflicts between humans and spirits seem to be especially prevalent in upland area where swidden cultivation practices requiring the transition of forested or semi-forested fallow areas (belonging to spirits) into cultivated upland fields under the care of humans through the use of fire and various ritual offerings.

9.3 Muang Biotechnology: the Solving of Problems

When a child's illness is understood by a maw muang to be caused by relational problems, such as the ties between young children and paw guut mae guut, making the

sick child well often involves practices that combine offerings to satisfying the demands of paw guut mae guut and ritual efforts to both strengthen the ties of the child to its living parents, and sever the ties to its other worldly parents. Maw Muang play a central role in this through the ritual of *dtaat guut* (literally, cutting birth). The practice consists of the presentation of an offering (*satuang*) to fulfill the obligations of the child to the spirit parents, a ritual cutting of the social bond between the child and his or her other world relations using a sword and powerful kata, and the affirmation of the child's living relationships through the calling of its khwan and the tying of white cotton strings around the child's wrist.

While Paw Naan Niew was best known for his extensive knowledge of herbal medicines collected from fields and forests, like all *maw muang*, he combined material medicines with ritual practices designed to resolve relational problems. In an effort to explain the *daat guut* ritual he provided the following narrative describing the spirit parents as the progenitors of all humanity, and the practices of *daat guut* as a risky undertaking placing *maw muang* as an intermediary between this world and the previous world dominated by Paw Guut Mae Guut (*Buu Thaen Yai Thaen*):

“...A long time ago, there was a great fire. After the fire came a great flood. This continent was destroyed, and every person died. Only two people lived: they were pii chai nawg sow (older brother and younger sister). Their names were Buu Thaen and Yai Thaen (maternal grandfather Thaen and maternal grandmother Thaen).

Yai Thaen was pregnant and gave birth to a *banum* fruit, with flesh that was both bitter and sweet. Buu Thaen broke it open and inside the fruit, where its many seeds usually are, they found many small people curled up. There were a hundred and one different kinds of human inside. Phra Bram (the god Brahma), who was born before the lord Buddha, came down from his home in *sawan* (heaven) and gave all the little humans a different book, each with their own language and writing. Only the khon thay (Thai people) and the khon Muang

(northern Thai) kept their language and writing well. That is why the Thai and northern Thai languages are the most beautiful. The Chinese let the chickens get at their book and that is why Chinese write like chickens scratching.
[laughing]

After this, Yai Thaen (maternal grandmother) went off to live on her own. I don't know where. Buu Thaen (maternal grandfather) stayed and took care of all of the little humans and gave some of them to each of his twelve wives. His wives names are *naga* (serpent), *maa* (horse), *noo* (rat),... all the twelve animals of the birth years (the twelve animals of the northern Thai zodiac). Buu Thaen is called Paw Guut (birth father) and his wives are all Mae Guut (birth mothers) and they take care of all human *winjaan* (spirits) before they are born as humans. They live with Paw Guut Mae Guut in their house. They are our first parents, and because of that we owe them respect and offerings. They can call a human child back to them if the proper respect and offerings aren't paid.

Many times Paw Guut will make a child sick, usually before the child is six years old. This happens especially to good kids that Paw Guut and Mae Guut love and miss a lot. When this happens, the proper offerings are needed: food and clothing can be offered at the temple, or *satuang* (four cornered banana leaf offerings) can be made and left at the temple gates. Sometimes a Dat Guut (Cutting Birth) ritual must be performed, but this is dangerous. It can only be done if the person has the right *kata* (magic formulae) to protect themselves from Puu Thaen's power and anger when the daat Guut is made."

As implied in the above narrative, the medical and ecological practices of *Muang* experts require both special knowledge and strength. The *daat guut* ritual, for example, requires the maw muang to protect himself from the anger of *paw guut*. As such, Muang experts claim special access to their own stream of biotechnical efficacy. For maw muang, their special access to biotechnical efficacy is understood primarily through their relationship to the triple gem of Buddhism. Ordination and success as a Buddhist monk is an almost universal prerequisite for becoming a maw muang in Mae Chaem, and the power of maw muang to affect life is closely tied their understanding of Buddhism and their time spent in the monastery. Time spent as a monk affords the aspiring maw muang with an education in specialist medical knowledge, often recorded in palm leaf texts stored in temple libraries. It also allows claims to the moral authority, and efficacious spiritual

power (*baramii*) that go along with practice of Buddhist precepts and deeply cultivated insights into the Buddha's teachings.

The practice of personal ritual power by *maw Muang*, understood as *khwaam baramii*, is as central to the efficacious practice of *maw Muang* as it is to the practice and teachings of Buddhist monks. Regardless of the strength of herbs or *kata*, the effectiveness of a Maw Muang's medicines and incantations is still dependent largely upon the *baramii* (efficacious power) that he can manifest through them. The largest and oldest pharmacy (established in the 1960's) in Mae Chaem's district centre is run by a respected *maw Muang* who spent time several years as a monk as a young man. While in the monastery he cultivated the *baramii* that he now maintains through ascetic and moral practices as a lay person. Many of his customers considered pharmaceutical medicines bought from his shop to be more effective than those bought elsewhere because purchasing medicines through a *maw Muang* allowed customers to benefit from both the efficacious power of his *khwaam baramii* and the patented formulae of the latest multinational prescription.

Beyond the cultivation of *baramii* and maintenance of a moral high ground, association with the temple also plays an essential role in the development of a *maw Muang's* technical knowledge. Within the monastery, the apprentice *maw Muang* can learn, through study of temple texts and through tutelage to older, more knowledgeable monks, expert knowledge of diagnosis techniques and medicinal recipes including the preparation and combination of herbal, mineral, and zoological medicines gathered from fields, forests, and gardens, and administering them through pills, teas, ointments, and medicated steam baths. Within Mae Chaem's monasteries the nascent *maw Muang* can

also access specialized ritual knowledge of how to interact with powerful spiritual beings and intervene with them on behalf of clients, as well as how to recall the *khwan* or spiritual essence of the body, and how to use powerful charms and incantations (*kata*) for protection and curing. In many cases this knowledge is unique to *maw Muang* (i.e. it is outside the canon of Buddhist scriptures), but in many cases the recitation of passages from the Pali scriptures themselves also lends power to the life affecting practices of the *maw Muang*.

While *maw Muang* commonly engage sources of power found in popular Thai Buddhism, they also benefit from a far broader and more flexible application of that power than would be possible within a purely Buddhist ecology of biotechnical action. Through *maw Muang*, extensive knowledge of herbal remedies, the fundamentally mechanistic use of magical *kata* and ritual formulae, as well as knowledge of offerings and interactions with powerful spirits are all brought into play alongside more orthodox Buddhist sources in order to benefit and affect bodies and lands. Many *maw Muang* have also brought the popularity of chemical medicines into their realm of expertise, often recommending the purchase of remedies from a pharmacy at the same time as offering ritual or herbal interventions. As such, *Muang* experts embrace more worldly, and morally ambiguous, sources of power than do Buddhist monks who remain within the ordained *sangha*. While local monks are bound by an ascetic renunciation of worldly involvement that, at least officially, limits their participation in the day to day affairs of the village, *maw Muang* are not. The trust afforded a *maw Muang* who has a reputation as a respected former monk provides a moral authority that can be critical to a *maw Muang* who needs to maintain the good will of clients and fellow villagers while walking

the morally ambiguous territory of ritual and magical power. As such, maw Muang complement and extend the power of Buddhism beyond the monastery and into village and family domains while simultaneously drawing on alternate streams of authority.

Maw muang seem to be especially open to non-Buddhist alliances where they enable a strengthening of personal authority and prestige. Although officially illegal, at least some maw muang administer injections and, as mentioned above, may recommend industrially produced pharmaceuticals. But such alliances with alternate streams of biotechnical authority are selective and strategic. While maw tamyeh may mention participation in a hospital run workshops as a useful currency to reinforce their own authority, they are also usually quick to point out that only some of the ideas and practices suggested by the hospital are useful. One Karen maw tamyeh recognized the importance of cutting the birth chord in a sanitary manner, and had been taught in a hospital workshop that she participated in how to clean and re-use a metal scalpel. However, she maintained that it is more safe, convenient and effective to use and dispose of a freshly splintered piece of bamboo, as she had been taught by older maw tamyeh in her village, than to reuse and try to keep clean a metal knife.

As women, maw tamyeh are excluded from the more institutionalized and formal monastic training and expertise of maw muang, but they are also far less dependent on the authority structures of Thai Buddhism. This is not to say that maw tamyeh are not often Buddhist, but simply that Buddhism has very little to do with being, or acting as, a maw tamyeh. This is in stark contrast to the importance of Buddhism in being and acting as a maw muang.

Maw tamyeh, like maw muang, hold significant resources of herbal, ritual and physiological knowledge, but the practices of maw tamyeh are more independently construed. Becoming a maw tamyeh does not involve the same formalized or institutionalized steps followed by male maw muang. For maw tamyeh training generally involves apprenticeship to an older maw tamyeh. Where maw tamyeh go beyond the material mechanics of birthing, they are much more likely to be allied with knowledge of spirits than with knowledge of Buddhism. Like maw muang, maw tamyeh also frequently ally themselves with more recently introduced forms of biotechnology, particularly those supported by foreign NGOs and the national Thai medical system. One elder (Mae Ui) *maw tamyeh* from near Baan Gaa (Paw Naan Niew's village) recounts:

“...A long time ago... I had helped many many children be born already... the government came to me and invited me to a training meeting at Chiang Khung hospital [in Mae Chaem's district centre]. There were many maw tamyeh there, the room was full. The meeting went for five days. We were taught how to clean things with boiling water and about all of the things that the hospital can do for babies. On the fifth day there was an examination and I finished first in the class. Because of my high standing they gave me and two other maw tamyeh a bag...”

Mae Ui retreated into the dark of her house and returned a few minutes later with a dusty rectangular case of worn black leather with a sturdy copper coloured zipper running around its top edge. In the middle of its face, partly obscured by dust, was a faded logo: the curved branches and mother and child figure of the United Nation's World Health Organization. Mae Ui opened the case and proudly pulled out a set of shining steel pans, a cleaning brush, and a pair of tongs. She said that there used to be a special knife for cutting the birth chord, but that was lost long ago. She took the brush and showed how she would scrub her hands and nails with it, how she would sterilize cloth and utensils

with boiling water in the shining steel pans and then lift them carefully out with the metal tongs. These were material objects that offered a tangible endorsement for her skills from an alternate stream of biotechnical authority associated with the ‘modernity’ of the Thai nation and of foreign NGOs.

Both maw muang and maw tamyeh continue to play strong roles in the local health practices of Mae Chaem. However, while over the past fifty years the distinct expertise of both maw muang and maw tamyeh has remained strong within the biotechnical domain of human health and wellness, it seems to have become less prominent within the domains of land use and agricultural application. As noted above, maw tamyeh maintain a very narrow domain of expertise that focuses exclusively on child birth. As such, maw tamyeh do not seem to have ever applied their specialized knowledge outside of this limited, but critical, health domain.

Maw muang, however, apply their knowledge and expertise not only to a wide range of health challenges, including those of children, but also (although less frequently) to issues of land use, business success and household relations. But this non-health role of the maw muang, especially in treating and resolving land use challenges such as poor rice growth or the threat of insects and animals eating the harvest, seems to have significantly diminished over the past two or three decades. In land use interviews several parents and farmers recalled asking maw muang to assist with insect problems or poor growth in their fields. The most commonly mentioned muang intervention involves the adaptation of a ritual of offering commonly made in front of houses or shops to the agricultural context. This special offering, referred to as *tau tung sii* (four cornered offering), involves the

construction of a pole with a small central offering platform surrounded by four other offering platforms dedicated to the four cardinal directions.

In the agricultural application, the crop is encouraged and protected through the construction of the offering pole in the rice field. With the offering of small *satuang* at the ritual centre as well as the four corners, the help of the guardians of the four directions is solicited in watching over the field. Only one farmer reported having used the expertise of a maw muang and the tau tung sii in their fields in the past decade. The current predominance of pesticide shops and advertisements, and the requirements of intensive cash cropping, seem to have persuaded most parents and farmers in Mae Chaem that their fields and livelihoods are better served by agrochemicals and fertilizers than by the herbs, bamboo flags and banana stem offerings of the maw muang.

One of the few maw Muang in the valley who still performs land use rituals to encourage growth or get rid of pests in fields is Paw Tao. When we introduced ourselves and our research to Paw Tao he identified himself not as a maw muang, but as a sayasat: a morally ambiguous term roughly equivalent to ‘sorcerer’ and often used to refer to a person willing to use arcane knowledge and personal power to cause harm as well as to help and lend aid.

Paw Tao had only spent a year at the temple as a novice (not a monk) as a young man, but had ordained as a monk for the rainy season (a three month period) at the age of fifty-eight. Rather than learning as a monk, he had learnt his kata and other rituals directly from other ritual experts and maw muang and through studying books of ritual instruction purchased in Chiang Mai. His self-referential use of the term sayasat points out the fine line between practicing as a maw muang and the morally ambiguous power

of *sayasat*. As a *sayasat*, he had chosen to specialize in non-health related matters, including land use and business rituals, and the making of protective charms. Despite this, Paw Tao emphasized that his practices were *pujaa* (prayers) to the lord Buddha and other heavenly beings, not to malevolent spirits. He explained that now he is only rarely called upon to make offerings in people's fields, but that in the past it was common:

Now people don't use the old traditions in the fields. They use *yaa chemi* [agro-chemicals or chemical medicines]. They *chit bodo* [vaccinate fields with a bottle]. Chemicals are much faster than prayers. That's why people like them. But now, since so many die and get sick because of *yaa chemi*, maybe they will come back to the old traditions.

Mostly it is drug addicts, *yaa fin* (opium), *yaa baa* (methamphetamine), that take wage labour spraying pesticides as they don't care about their health and want to make the extra money [so that they can buy drugs]. There are many kinds of sickness now that we didn't have in the past. Maybe this is because of the chemicals we spray on our food?

In the past we would weed our rice fields ourselves, friends would help, everybody with their hands in the ground. Now we put our hands in our pockets so we can pay for weed killer (*yaa kaa yaa*).

Now there are many more problems with weeds and insects in the fields than before. Maybe this is because of the cars and seed that come into the valley now. They carry soil from outside along with them. Maybe it is because the weather is changing. And some people think it is because we don't do *puujaa* (prayers) in the fields. I don't know the answer, but the younger generation doesn't have the belief anymore. Using chemicals is faster and more comfortable for them.

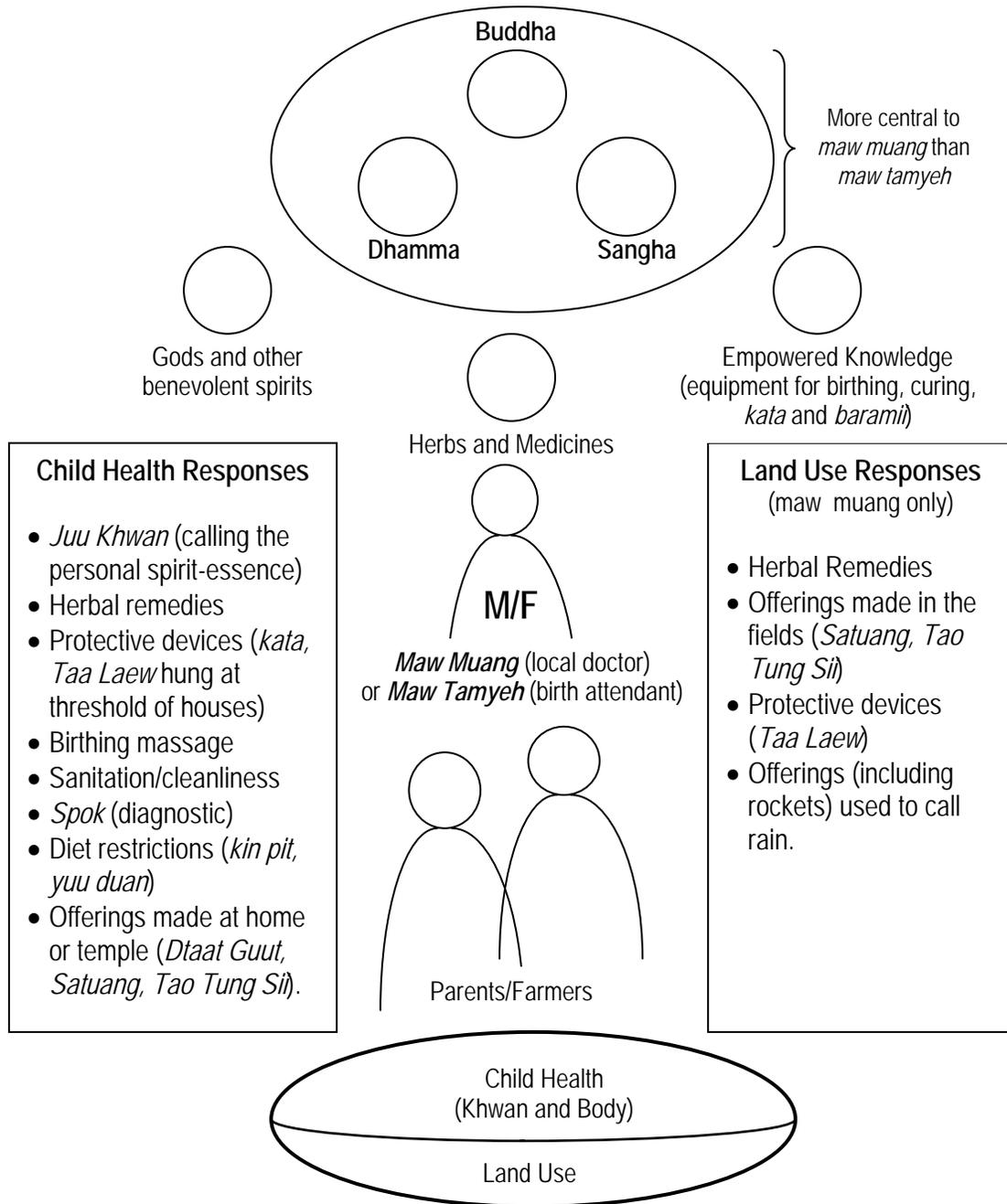
9.4 An Actor-Network Model of Muang Biotechnology

Maw muang, or alternately *maw tamyeh*, are representatives of a rich biotechnical tradition with what is likely a very long history in the valleys of northern Thailand. From an actor-network perspective they are obligatory passage points (OPP) through which local parents and farmers can access broader networks of Muang knowledge, technology, and practice. Figure 3 is an attempt to diagram the core biotechnical relations implicit in the actor networks of *maw muang* and *maw tamyeh*.

In Figure 9.1, the *maw muang* and *maw tamyeh* are both positioned beneath the Buddhist triple gem of Buddha, sangha and dhamma, but it is only the *maw muang* who is actively connected to, or dependent upon these supremely religious nodes. Below the triple gem are three other alliances that both the *maw muang* and the *maw tamyeh* frequently access: powerful gods and benevolent spirits, the strength of herbs and other medicines, and the knowledge, skills, and equipment of the *maw muang* and *maw tamyeh*. Like the WHO midwifery kit that Mae Ui Jang produced, these can include the cultural materials of other biotechnical streams. In both the case of *maw muang* and *maw tamyeh*, the special knowledge, skills, and equipment of the expert are further empowered by the personal *baramii* of the practitioner. Below the *Muang* expert is the primary agent (parent-farmers) and below them the subjects of child health and land use.

In the box to the left are the numerous rituals, medicines, and practices used by *Muang* experts to address child health concerns. To the right are the rituals and applications used by *maw muang* to deal with ecological concerns in the fields. At the bottom of Figure 9.1, are the ecological causes or determinants of child health and land use that are recognized within the *Muang* stream. Below the *Muang* expert is the primary agent (parent-farmers) and below them the subjects of child health and land use. In the box to the left are the numerous rituals, medicines, and practices used by *Muang* experts to address child health concerns. To the right are the rituals and applications used by *maw muang* to deal with ecological concerns in the fields. At the bottom of the figure are the ecological causes or determinants of child health and land use that are recognized within the *Muang* stream.

Figure 9.1: An Actor-Network of *Muang* Biotechnology



| Pathogens and Poisons (<i>Rok</i>) | Food and Nutrition | <i>Khwan</i> (Spiritual Essence) | Accidents and 'luck' (<i>chok</i>) | Bodily Processes (child birth, aging, etc.) and Fate |
|--------------------------------------|--|----------------------------------|---|--|
| <i>Sayasat</i> (malevolent sorcery) | <i>Pii</i> (includes ancestral spirits, domestic guardian spirits and malevolent spirits often associated with the landscape or with violent deaths) | | <i>Paw Guut Mae Guut</i> (Spirit Parents) | |
| | <i>Tham Phit</i> (social or ritual mistakes) | | <i>Kam</i> (Karma based on merit) | |

9.5 Muang Biopolitics: Access and Advocacy

Maw tamyeh and Maw muang both represent a single stream of biotechnical thought and action that is both widespread and accessible to parents and farmers in Mae Chaem. The authority of Muang experts relies upon claims to a long local tradition of *Muang* biotechnical practices, as well as linkages to other streams (Buddhist, biomedical) where these can be presented as lending support. The biotechnologies of the Muang stream draw upon diverse networks, calling on herbs, spirits, magical formulae, pharmaceutical medicines, and NGO training opportunities, all presented with the goal of reinforcing the validity and authority of the *Muang* expert as a legitimate and moral practitioner of efficacious biotechnology.

At the conclusion of our interview with the elderly Maw Tamyeh quoted earlier in this chapter, we asked what kinds of payment she received from people in exchange for her services. She always received some kind of payment. When she first began as a Maw Tamyeh (in the early 1960's), she was often given a *dam hua* (payment of respect) that included flowers, popped rice, and, if the family had no money, lengths of cloth that had been woven by the new mother. If the family was wealthier the payment might include fifty baht. However, she insisted that she never did it for the money, but did it to *tam bun* (make merit) by helping so that the children she delivered would not die. Mae Ui smiled broadly as she talked about her life's work saying,

“I have a happy heart (*suuk jai*) because I was able to make merit and help many people, many children. Because I did that, the spirits (*pii*) now help me and make things easy for me. No matter what I plant in my garden, or in my fields, it grows fast, big and sweet.”

The prominence of the Muang stream and its accompanying understandings of life and illness are common throughout the Mae Chaem valley, though the majority of maw muang are ethnic Thai and live in the more populous valley bottom. Like Buddhism, the muang stream offers its own unique bio-ontology, its own self-referential system of problem identification, explanation, and resolution. As such, the stream forms an alternate actor-network, offering an alternate form of biopower, within the context of everyday life in Mae Chaem. As with the other biotechnical actor-networks of Mae Chaem, its representatives, especially the maw muang and maw tamyeh themselves, bring their resources to bear on the health of local families and fields. At the same time, they also seek to maintain and expand the enrollment of others within the Muang stream. This again constitutes a form of social advertising. As with the Buddhist stream already discussed, to the extent that the actants within Mae Chaem's Muang actor-network (including maw Muang and maw tamyeh, but also their stories of illness and cure, and their biotechnologies) can attract the hearts and minds of Mae Chaem's parents and farmers, then the Muang stream will be better able to maintain itself and further define understandings and approaches to illness and land use. To be sure, there are numerous similarities and connections between the Buddhist and Muang streams: the Buddhist triple gem, and the role of Buddhism in the training maw muang. As well, there is the common perception that the Muang stream, like Buddhism, is giving way to more market oriented approaches to life.

Jiaw Song: The Spirit Stream

10.0 The Spirit Stream

Beyond the commonly seen inhabitants of Mae Chaem's material ecology, parents and farmers frequently understand the valley's villages, fields, and forests to be full of other beings that, while generally invisible, exert a tremendous influence on local lives and lands. The houses, temples, crossroads, trees, streams, and fields of Mae Chaem are populated material communities of people, plants, stones, and animals, but also by vast populations of *pii* (spirits) including ancestor spirits (*pii buu yaa*), ghosts of the dead, and unpredictable spirits of the environment who may be helpful, harmful, or indifferent to human interests. These invisible communities frequently engage local parents and farmers in significant and physically affective social relations. For many, both good health and good fortune are understood to depend on respectful relations with these invisible *pii*, often mediated through the offering of food, whisky, and other items, as well as through the assistance of expert spirit mediums who provide an immediate connection to authoritative knowledge regarding the spirit world. This chapter describes the spirit traditions of Mae Chaem as a distinct stream of child health and land use practice where expertise is represented by both spirit mediums and the respected spirits themselves.

10.1 *Jiaw Thii*: Lords of Place

Each morning, immediately after opening the doors to her shop and dusting off a glass case containing various styles and colours of mobile phone, Pon quickly lights a

cluster of incense sticks and slips off her plastic flip-flops. She stands in front of a faded blue spirit house, slightly bigger than what a sparrow might occupy in Canada, and ornately cast from concrete to resemble a tiny temple. The miniature structure sits on a post at eye level and is squeezed onto the sidewalk in front of the little shop. Pon presses her hands together into a *wai*, thumbs tucked in towards the palms, imitating the shape of a new lotus bud. The long sticks of incense jut straight up from her index fingers, burning embers pointing up between her joined palms and ash falling onto the red tile floor. Pon quickly raises her cupped hands, pressing her painted thumbnails to the middle of her forehead, still cradling the burning incense, her eyes closed, her lips moving rapidly with a private morning prayer. Jasmine scented smoke swirls up as she bends her knees and bows her head respectful. She opens her eyes, straightens, and plants the cluster of incense in a small metal bowl filled with sand and sitting in what would be the courtyard of the tiny house.

Pon smiles at me as she notices me watching her. I smile back, feeling like an anthropological voyeur as I sit and sip a steaming cup of Nescafe purchased from the sweets shop next door. It is as close to a morning coffee as I can find in Mae Chaem. Pon's incense sticks smoulder amongst a forest of charred wooden stumps: all the remains of past morning rituals. The steam of my Nescafe mixes with fragrant blue curls of incense smoke before joining the cool morning haze that shrouds the district centre's main street. The loud speaker at Chiang Kung primary school, just a block away, crackles to life as it begins to blare out the first notes of the Thai national anthem. The district centre wakes slowly with the roar of Honda bikes and the rumbling diesel stink of pick-

up trucks loaded high with pale green cabbages plucked from hillside fields and now speeding towards markets in Chiang Mai, Bangkok, and abroad.

The small ritual of placing offerings respectfully in front of a tiny but ornate, and in Mae Chaem often dilapidated, house is repeated almost every morning in front of almost every business and home in Mae Chaem. Spirit houses can be seen everywhere in the district centre, and are not infrequently seen along the roads and in the fields radiating out from it. For poorer households, or out in the fields, a spirit house may be made of recycled boards and tin, perhaps with a light wash of some brightly coloured, but now peeling paint. But in front of more substantial homes, or at major buildings such as the hospital, bank, and important government buildings, the little houses are elaborate temple-like affairs with curved concrete roofs, tiled in glossy red and filled with gleaming glass in gold and blue. Inside many spirit houses are tiny ceramic figures frozen permanently in prayerful poses, as well as all kinds of miniature animals, especially auspicious horses and elephants. Besides the offerings of burnt incense and little figures, the miniature court yards are often littered with the melted remains of yellow or white candles, sun wilted garlands of jasmine and marigold, glasses of clear whiskey, orange Fanta™, or plates of now over-ripe fruit and once fresh desserts and delicacies, all depending on the tastes of the resident *jiaw thii*. Once *jiaw thii* has feasted on the spiritual essence of the offerings, the remains are left for hungry chickens, lizards, insects, and the occasional cat to sample at their leisure.

10.2 Spirit Bioecology: the Causation of Problems

Spirit houses are common throughout central and northern Thailand. In Mae Chaem they, along with their attendant offerings, are signposts pointing towards Mae Chaem's invisible spirit ecology and its relationships with the human world. Each tiny house is regarded as both a shrine to and a residence for protective spirits who reside at particular locations and, with a little cajoling, may protect the health of families and ensure the good fortune of fields and businesses within their domain. They may safeguard the health and wealth of families who treat them well, bringing money and customers into shops and store fronts, or, if they are unhappy with their human neighbours, may cause chronic illnesses, accidents, and economic disasters for those nearby. As such, each spirit house marks a node of relationship that binds humans and spirits together within relationships of reciprocity. They are both a material focus for reciprocity between human and spirit domains, and an acknowledgement of the existence and importance of the spirit domain within human affairs.

Beyond houses and businesses, spirit houses can be found at other locations critical to day to day life in Mae Chaem: adjacent to irrigation works, at the side of important or dangerous intersections, in rice fields, next to sacred springs or caves, and at the top of important mountain such as Doi Inthanon to the east of Mae Chaem. The *pii aaraak* (guardian spirits) that (hopefully) protect houses and businesses in Mae Chaem are spirits of the environment that have been somewhat domesticated through the establishment of a spirit house and provision of proper offerings. They are respectfully called *jiaw thii*: lords of place. Some especially large spirit houses provide residence for especially powerful

jiaw thii whose domain includes the collective space of a neighbourhood or village, and who holds at least partial dominion over the lesser spirits who reside there.

Jiaw thii are usually invisible agents able to exert very significant power over the lives and lands that come under their domain and *Pii aaraak* (guardian spirits) are just one of the many different kinds of unseen beings that inhabit the communities, fields and forests of Mae Chaem. Although spirit houses and their attendant offerings can be seen throughout the valley, they still provide an indication, as well as room and board, for just a fraction of the invisible population of Mae Chaem. There are also many non-domesticated spirits (who may also be referred to as *jiaw thii*) that dwell in the forests, rivers, streams, springs, fields, and ancient trees of the valley, or in the vicinity of cross roads, temples, shops, house compounds and market areas. All of these ‘wild’ *pii* tend to be much less unpredictable than their domestic counterparts. Wild *jiaw thii* have the power to make a rice crop grow in abundance or to cause it to be eaten by birds and rats. They may cause children and sometimes adults to become ill with high fevers and sickness, or cause lethal car and motorcycle crashes on the roads. Without proper respect and offerings, any spirit can pose a danger to the lives and livelihood of humans. Young children, because of their often soft and fragile *khwan*, are especially common victims of spirit attack.

During one early trip to Mae Hae Tai, despite our best efforts, my research team and I were unable to make it through one particularly muddy stretch of road. It had rained heavily the day before and we could tell from the size of the ruts and the depth of the puddles that several vehicles had been stuck at the location before us. We stopped our pick-up truck and decided that it was a good time to have lunch and then turn back to the

district centre. We were deep in the forest, far from any settlement, and before we spread out our mats and sat down to a meal of glutinous rice and spicy fried pork, Laan took some of the food over to a clean place at the side of the road and left it there. In the absence of spirit houses, we were within the domain of wild, undomesticated forest spirits. Laan considered it dangerous to stop for lunch here without offering some of our meal to the resident *jiaaw thii*.

In addition to the wild and domestic *Jiaw Thii*, there are also the less powerful *Pii Buu Yaa* or familial ancestor spirits who may reside on the top ridge post of family houses, or in the central spirit house of a village or neighbourhood. Most dangerous of all are the hungry ghosts of those who have died violent or sudden deaths and remain to wreak havoc near the place of their demise.

10.2.1 Spirits and their Mediums

Many interactions with spirits, especially the day to day offering of food or incense at spirit houses, take place within the everyday domestic sphere. They do not require the involvement of a specialized spirit expert. However, when events go beyond the ordinary, particularly in the case of unexplained illness or trouble, the ability of spirits to affect life in Mae Chaem requires recourse to a more powerful form of spirit biotechnology. Luckily for the residents of Mae Chaem, some especially powerful spirits are also especially benevolent. They take a particular interest in human affairs and, through a human medium, act as intermediaries and peace-makers between visible and invisible worlds. Through their human mediums these powerful spirits are able to receive

offerings, provide advice and services, and act as a conduit for solving problems between the human and spirit communities of the valley.

These powerful spirits, a kind of *jiaw thii*, are called *jiaw song* (noble riders) and their mediums are properly referred to as *maa khii* (riding horses). In everyday conversation the identity and role of the human medium is subsumed by the superior identity of the spirit and the pair are simply referred to as a *jiaw song*. In Mae Chaem, the *maa kii* is always either an elderly female, or transgendered male (*khatui*). She is often required by the spirit to consider herself non-Buddhist. As such, she is separated from the male Buddhist order by both her gender and her relationships.

Raywat, one of my co-researchers, was related through his wife's family to the matriarch of a prominent Mae Chaem family who was also one of the most experienced *jiaw song* in the valley. Raywat and his wife had a young son, Joseph, who was frequently ill. While Raywat was Catholic, and preferred to take his son to doctors in the city, his wife and mother-in-law had given up on hospitals and instead regularly consulted the *jiaw song* regarding the boy's health.

In 2003, Mae Naan was seventy five years old and had been practicing as a *maa kii* for twenty-two years. Prior to becoming a medium, she had suffered from chronic pain for many years. It could not be resolved through any kind of treatment though she tried many hospitals and many kinds of doctors. Eventually she went to see a well known *jiaw song* from outside the valley. That *jiaw song* was able to tell her that the pain and suffering she experienced was caused by a powerful spirit who wanted her to become his medium. Although she had no desire to become a medium she was told that the spirit would continue to make her ill unless she agreed and began practising and helping

people. She discussed the matter with her husband and family and decided that she would agree if it meant she would not have to suffer any longer. She spent several weeks working with the more senior *jiaw song* to learn how to accept the spirit and her chronic pain disappeared. The spirit, whose name was Paw Jiaw Gomja, was happy that she had finally agreed to cooperate. Paw Jiaw Gomja instructed Mae Naan on the construction of a spirit altar in her home. People began coming to her with offerings for Paw Jiaw Gomja and, during deep trance states which Mae Naan remembers nothing of, Paw Jiaw Gomja began offering services and advice.

Mae Naan and Paw Jiaw Gomja are one of the oldest, but certainly not the only spirit-medium pair in the valley. While spirit mediumship likely has deep historical roots in northern Thailand, Morris (2000) suggests that spirit mediumship in Chiang Mai city has grown dramatically in popularity since the 1960's. It is likely that this is also true of spirit mediumship in the Mae Chaem valley. In the child health narratives of parents and farmers in the valley the first mention of reliance on a *jiaw song* for assisting with a child health problem dates from the late 1970's, about the time that Mae Naan became a *maa kii* for Paw Jiaw Gomja. Recourse to spirit mediums for matters of child health seems to have remained a relatively rare occurrence: in the past twenty years of remembrances, only a few reported child health incidents involved reliance on *jiaw song*. However, the ongoing popularity of the spirit stream in the valley is evidenced both by the time and effort invested by Mae Chaem's humans in the construction of new spirit houses, and the interest of Mae Chaem's spirits in manifesting themselves through new spirit mediums⁷⁰.

Returning from a morning interview late in the dry season, Raywat, Laan, and I came across the installation ceremony of a *jiaw song* in a village adjacent to the main

north-south road in the valley. The local *jiaw thii* had never taken on a spirit medium before but the illness of a local woman had recently been identified as the result of the *jiaw song*'s desire for her to become a *maa kii*. At the same time, a successful local family had decided to replace the spirit's old house with a huge new shrine built from expensive golden teak timbers. As it was the end of the dry season and the rains had not yet come there was little work to be done in the fields. The side of the road was crowded with people, mostly dressed in white, dancing, drinking whiskey and laughing at the side of the road. The newly built teak pavilion was set on posts seven feet above the ground and was big enough for several people to sit inside it. The name of the possessing spirit was *Jiaw Song Jamthewi⁷¹i* and the new teak pavilion was her new home. *Jiaw Song Jamthewii* is a female spirit associated with an important spring whose tributary runs through the village before reaching the Mae Chaem river. She was also the head spirit of the *baan* (village or neighborhood). Today she was being moved to her new home and her presence was manifest through her spirit medium, one of three women sitting inside the new shrine.

We asked some of the participants why the new shrine, much larger than most spirit houses (even those representing larger villages or neighbourhoods), had been built. An old woman participating in the festivities explained that while the old spirit house was fine, a neighbor had plans to build a large new house for his family next door. The house was to be so tall that the water from their shoes would have splashed down on *Jiaw Song Jamthewii*'s old roof. Instead of building a smaller house for their family, the wealthy couple had chosen to build a much bigger house for *Jiaw Song Jamthewii*. As such, they had paid for the new building and were paying for the installation ceremony.

The women sitting on either side of the new *jiaw* song were more senior spirit mediums from elsewhere in the valley. In front of them was a metal plate containing the freshly boiled head of a large pig surrounded by plenty of sticky rice and whisky. Below and in front of the house was the assembled crowd, either sitting in the shade watching, or swaying in an uneven *ramwong* (dance) in front of the new shrine. A recording of traditional northern Thai music blasted from a small cassette player placed beside the pig's head and was joined by sharp jangling symbols and deep rumbling hand gongs held by some of the dancers. Hundreds of jasmine incense sticks had been stuck into the ground below the shrine. Their fragrant smoke blended with the astringent smell of still green sawdust from the newly cut timbers.

Not having any other interviews scheduled that day, Raywat, Laan and I joined in on the festivities. Raywat and I were led into the back of the house that was serving as the kitchen for the event where we were greeted by a circle of younger men, all thoroughly drunk, who offered us more whisky and fresh pork cracklings still hot from the oil of a large wok. After a few shots of local whiskey we excused ourselves as politely as possible and went back outside where the *jiaw* song was now receiving visitors and tying white strings of blessing onto the wrists of participants. The shrine was so high that many of the older people had difficulty climbing up to greet *jiaw* song and her new medium. A few braved the narrow steps and were helped by the not-so steady hands of drunken celebrants.

While the shrine was very impressive, I found myself wondering if *Jiaw Song Jamthewii* liked it as well as her old one. The old shrine, as small as it was, would have had the thick, rich smell of care and age-old incense lingering in its moist wooden walls.

A thousand early morning offerings would have slowly penetrated the dark teak timbers, saturating them with prayers and requests. Memories would have been written deep in the oily grain of the wood. An old man, wizened and grey, smiled down at me as I tried to steady his arm while he made his way down from a visit to the jiaow song. His teeth were worn down to a single flat row, eroded away by a million grains of rice, and stained a deep red-black by a lifetime of chewing betel nut and fermented tea leaves.

Before leaving the celebration, Laan and I climb the narrow steps to the wooden platform to pay our respects to the Jiaow Song. Raywat, mindful of his Catholic beliefs, remains below and waits for us next to his motorbike. I climb up to the shrine and make a respectful wai to the three women seated before me. One of the old women smiles at my efforts, but the new *maa kii*, swaying in her trance, shows no surprise as she reaches for my thick Caucasian wrist. She grabs a white cotton string from the plate with the pig's head and ties it to my wrist with a series of three knots. With each knot she breathes out a long, steady exhalation of air intended to blow strength, happiness and good fortune up my forearms and into my heart. Along with these come a sense of the union between spirit and human, Jiaow Song and medium.

10.3 Spirit Biotechnology: the Solving of Problems

Spirits in Mae Jaem are flexible agents that respond to human action. They can be cajoled, placated and enticed, but in order to do so effectively one must know what the spirit wants. This is the main service of the jiaow song: the jiaow song communicates with the spirits on behalf of the living. As such, the jiaow song is primarily a diagnostician and intermediary, providing a conduit for direct verbal communication between the visible and invisible worlds of social relation. The primary cure that is offered is information and

advice from a benevolent spirit being with substantial experience, political clout and social standing in the spirit world. Occasionally, the *jiaw* song also manifests curing power based on the *barami* of the possessing spirit (which, as in the case of *jiaw* song *Jamthewii* may be female, but is more commonly male). The woman who serves as the medium does not claim inherent power unto herself. More commonly, the diagnosis made by the *jiaw* song will also involve prescription of therapeutic actions or rituals. As such, after seeing a *jiaw* song, a ill person may be sent to a *maw muang*, or may be given the specifications of offerings that need to be left at particular places or times in order to recover. For example, after identifying that a particular illness is caused by a *sayasat* (sorcerer) from another village, or by a local spirit, the *jiaw* song may indicate that to remove the illness the client must go to a *maw muang* for a particular ritual cure, be treated with particular herbs, or an offering left outside the temple walls on a particular day. Beyond the realm of health and biotechnology, the *jiaw* song may also employ his or her knowledge and influence to locate lost objects, interpret the reasons behind unfortunate events, improve one's luck, and even, occasionally, foretell the future.

Interestingly, the capabilities of *jiaw* song in Mae Chaem do not seem to include the less social worlds of land use and agriculture. Spirits of fields or waterways certainly may exert powerful influences over the success and failure of crops, and offerings may be made to them, but the machinations of these spirits of the environment were beyond the experience of any of the *jiaw* song we interviewed in Mae Chaem. Instead, the *Jiaw Song's* domain of expertise is understood to stop at the domestic. It does not extend into the fields. While *Jiaw Song* may be consulted regularly regarding health concerns, family disputes, business matters, and lost objects, ecological issues are outside the jurisdiction

of the paired spirit-medium. Where relations with spirits are implicated in the success of fields, farmers either deal with the issue either through the domestic domain, or through the biotechnical expertise of *maw muang*.

An actual consultation with a *Jiaw Song* involves the offering of a small gift of money accompanied by ritual items including candles, flowers, whisky and food. Consultations are generally held in the home of the *maa kii* and usually involve a small gathering of people, usually women, asking questions in succession with the *Jiaw Song* replying to each in turn. *Mae Naan*, the *jiaw song* mentioned earlier, required an offering of twelve baht for each question answered and 332 baht other healing practices such as *kata*. The spirit would not enter her on Tuesdays or *wan phra* (Buddhist temple days). After collecting the offerings in a dish, the spirit medium places these on an altar dedicated to her possessing spirit and located high on a wall of her home. While altars with small statues of the Buddha or respected monks are common to almost every Thai household, spirit altars rarely include Buddhist images, but are dominated by statues and items generally associated with Brahmanism. With the placement of offerings on the spirit altar, the arrival of the spirit is marked by the swaying or shaking of the medium and the changed manners and voice of the *jiaw song*.

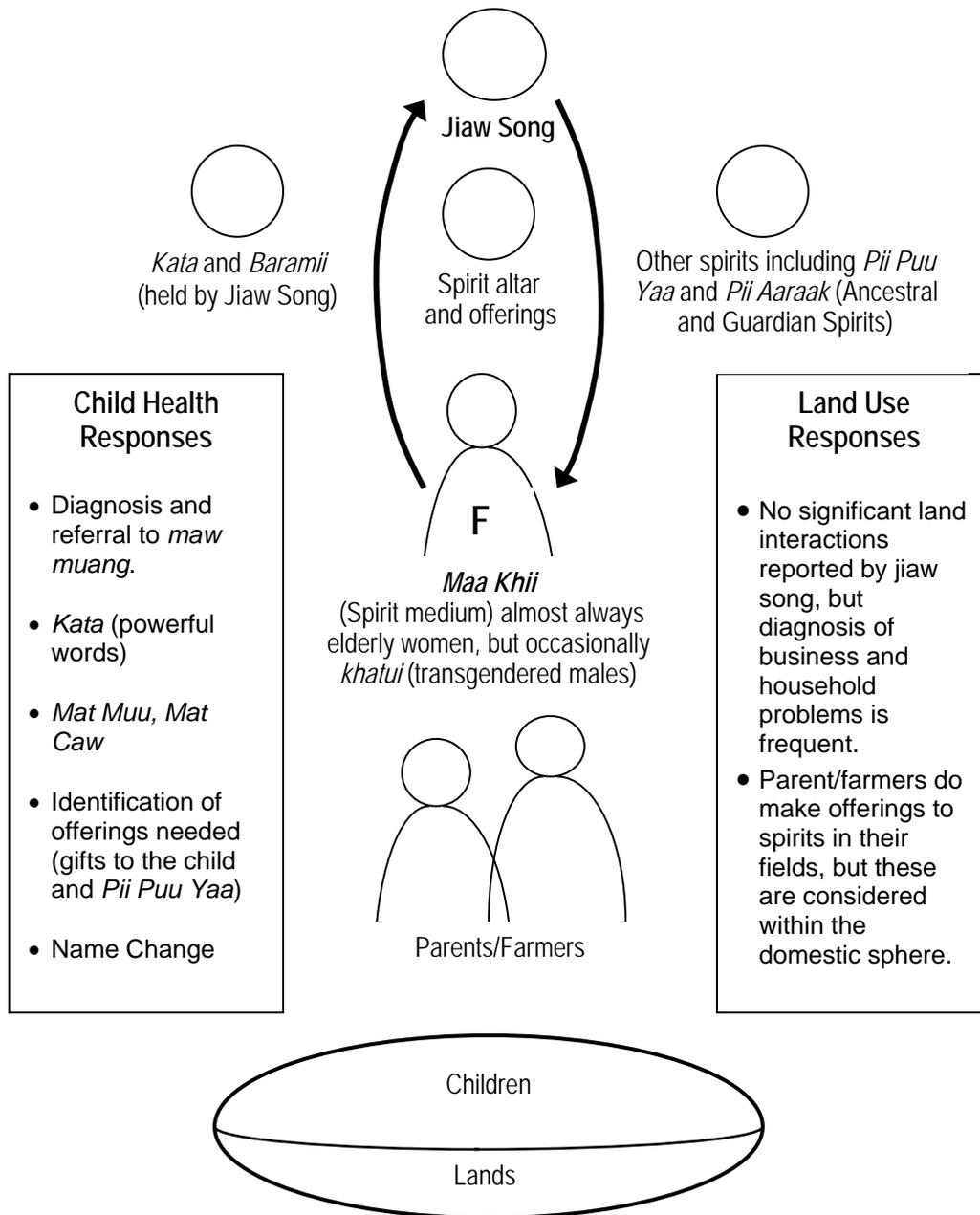
One of the most common child health concerns that *jiaw song* deal with is the issue of *khii yeh* (crying a lot), where a child cries inconsolably to the distress of the baby's parents and family. Within the spirit tradition, this is often understood to be due to the young child being the reincarnation of an ancestor and the inability of the parents to understand what the child-ancestor wants in order to provide for it. The *jiaw song* is able to identify what ancestral spirit (*pii buu yaa*) has been reborn in the child, and what the

child-ancestor is crying for: the person may miss being called by his or her old name, may be hungry for particular foods, or may miss his or her old possessions. The *jiaw song* is able to communicate who the reborn person is (or was), what offerings, food or gifts they may desire, and how the current parents can treat the reborn spirit of the child appropriately so that the child-ancestor can be happy in their new place rather than disturbing the household with crying.

10.4 An Actor-Network of Spirit Biotechnology

In terms of actor network theory, the *jiaw song-maa kii* union forms another obligatory passage point through which parents can access biologically efficacious actions. These actions are fundamentally based upon the direct communication between human and spirit world that the *jiaw song* can offer. Through unique relationships, offerings and the spirit altar, the *jiaw song* brings a powerful network of spirit relations to bear on the problems of local villagers. Rather than guessing at the fickle dispositions of powerful, but unseen actors in the spirit world, the *jiaw song* is understood to be able to bridge this world and the next in order to provide a clear path for communication. Through the knowledge and assistance of the *jiaw song* local parent-farmers are able to better understand, and so more effectively interact with, the invisible spirit relationships of the valley. As illustrated in Figure 4 above, through the body of the medium, the spirit is also able to bring its own efficacious power (*baramii*) into play through the use of *kata* and the transference of blessings and good wishes through the tying of strings to wrists and necks (*mat muu, mat caw*). In dealing with health concerns, the actor-network of the *jiaw song* claims to be most effective where the root causes of illness are not biological,

Figure 10.1: An Actor-Network of Spirit Biotechnology



| Pathogens and Poisons (<i>Rok</i>) | Food and Nutrition | <i>Khwan</i> (Spiritual Essence) | Accidents and 'luck' (<i>Chok</i>) | Bodily Processes and Fate |
|--------------------------------------|--|----------------------------------|---|---------------------------|
| <i>Sayasat</i> (malevolent sorcery) | <i>Pii</i> (includes ancestral spirits, domestic guardian spirits and malevolent spirits often associated with the landscape or with violent deaths) | | <i>Paw Guut Mae Guut</i> (Spirit Parents) | |
| | <i>Tham Phit</i> (disrespect including social or ritual mistakes, inappropriate names and offerings) | | | |

but social. In these cases, the other worldly knowledge of the jiaow song allows humans to tailor their actions and offerings to the particular spirit desires and appetites indicated by the jiaow song. Alternately, the jiaow song may indicate other causes of illness and frequently advises their clients to go to a hospital doctor (*maw payabaan*) or *maw Muang*.

10.5 Spirit Biopolitics: Access and Advocacy

The biotechnology of spirit mediums in Mae Chaem is fundamentally one of social relationships. Spirit mediums can be found throughout the valley, some more reputable than others, and spirit biotechnologies are generally widely available to farmers and parents in the valley. At a day to day level, the making of offerings at a domestic spirit house is an attempt to enrol the support of local spirits in the efforts of the home's human occupants. At a more specialized and expert level, the authority and reputation of the jiaow song both attracts human clients and strengthens claims to efficacy in the spirit world. In building authority and reputation the training of the jiaow song is subordinant to the ability to interpret and make understandable the unseen and uncanny domain of spirit interactions. The social context of spirit medium consultations, often involving plenty of music, dancing, and liberal amounts of whiskey, go a long way towards advertising an enjoyable and locally connected response to health challenges.

The question of why jiaow song, of all of the biotechnical experts in the valley, do not have a discernable role in the remediation of land use problems is an interesting one. The power of spirits (of the fields, irrigation canals, etc.) is certainly considered to be of consequence to agriculture, but interactions with them are left to the domestic realm, with

occasional recourse to Buddhist monks and maw muang. Attendance at spirit medium consultations is generally female, as is the medium herself, and it is possible that the focus on the social and domestic rather than on the ecological and agricultural is related to this.

Selling Cures: Medicines, Pesticides, and Multinationals

11.0 The Market Stream

Sua Mo Hom are short sleeved, wide cut, collarless shirts sewn from a deep indigo died cotton cloth. The distinctive blue of the sua mo hom forms part of the stereotypical garb of northern Thai farmers and workers. Worn at festivals, funerals and parades, sua mo hom are a quintessential symbol of rural unity, offering a definite, but still acceptable nod to the rural socialist revolutionary movements of the 1970's. In Mae Chaem, the shirts are worn with pride by many older farmers, the indigo cloth often bleached by years of sun and sweat until it fades into white at the shoulders and back. In the Loy Kratong parade described in chapter one, the entire adult population of Baan Sanong wore their sua mo hom in a display of tradition, rural unity and identity.

While the sua mo hom are popularly associated with farm work, it is now rare to see younger farmers wearing them. Over the past decade the uniform of the Mae Chaem farmer has changed. At the time of fieldwork, the usual dress worn to the fields by most young farmers, men and women, combined hard wearing pants, running shoes or flip flops, a woven cotton face scarf or wrap, a long sleeved cotton shirt or light nylon jacket embroidered or printed with large insignias. These shirts and jackets are also intended, at least by their distributors, as signs of allegiance, though not allegiance to rural peoples or the Thai farmer's movement. The shirts are mass produced merchandise provided by pesticide and agrochemical sales people as gifts, or given as prizes to farmers for being good customers and buying certain amounts of particular brands of chemical or fertilizer. The insignias have names like Syngenta, Cargill, and Monsanto

emblazoned at the breast and proclaim an allegiance, true or not, to a particular corporation and brand. As any farmer in Mae Chaem is likely to indicate, harvesting rice or cash crops is hard work and it is equally hard on one's clothing. The wearing of clothing marked with company insignias likely has more to do with individual farmers not wanting to spoil nicer clothes, than with any conscious allegiance to the companies represented. However, the clothes themselves indicate a connection between farmers and companies, and the wearing of them, particularly as a replacement of the older *sua mo hom*, helps to increase the presence of multinational biotechnical corporation within both the physical and mental ecologies of the valley.

11.1 Drug Stores, Pesticide Shops, and Selling Cures

The buying and selling of land use and child health cures has a long history in the Mae Chaem valley, and through it the commodities sold to improve the health of people have been linked to the commodities sold to improve the productivity of fields. Long before roads were built into the valley, opium became the first real cash crop for the valley, and was an important and frequently used medicine as well (Geddes 1976). Other medicines were brought into the valley as important, valuable and light weight commodities that were brought in by traders in exchange for opium produced by Mae Chaem parents and farmers. Older parents in the district centre recalled the excitement created by medicine sellers who would come to the valley by elephant. Even in the earliest years captured in the parent and farmer histories, long before the arrival of roads, reliance on market purchased medicines, particularly anti-worm medicines, were commonly reported as strategies used by parents to resolve child health problems.

As early as the 1960's, other medicine sellers would come into the valley and attract people by setting up a film screen and projector and showing movies at night time. During out

time in Mae Chaem a modern version of the travelling medicine seller arrived in Baan Sanong and set up an evening of films in the open courtyard of the local temple. As night fell, children, parents and teens from Baan Sanong and the neighbourhoods around assembled to watch the classic Thai films and Chinese martial arts thrillers projected on the huge screen, speakers crackling. Along with everyone else, I sat with family and friends on mats spread on the ground, marvelling at the new shining new truck and projection unit that had brought the production to town. Introductions and intermission talks were provided by a representative of the 'Golden Cup' medicine company and packets of acetaminophen tablets, along with an assortment of other medicines, including traditional *yaa hom*⁷² ointment was sold in glossy packets for the equivalent of a few dollars each. Chris Lyttleton (2000) mentions a similar strategy taken by medicine sellers in northeast Thailand, enlisting the appeal of modern cinema from India, Japan, and the United States, to help sell their products:

For many years movies have been taken from village to village with a portable movie screen erected in the temple grounds. Drug companies also sponsor movies ...they are halted in mid-story until the salesman has sold the requisite quota of products. (Lyttleton 2000: 106)

In addition to the selling of medicines as pills and ointments, prior to the establishment of national health care services, and for some time after, other health practices were also for sale. Private 'unlicensed' doctors (*maw tuan*), sometimes referred to as injection doctors (Cunningham 1979, Weisberg 1984 b), would visit the villages of the valley and offer to give medicines with needles for a small fee. *Maw Tuan* brought an unregulated form of 'modernity' into the mix of health care practices available in Mae Chaem, and one that, at least in Mae Chaem, was also connected to agricultural technologies. One of early merchant and unlicensed 'doctor' by the name of Montri

began visiting the valley in the early 1960's and later settled near the district centre and played an important role in the history of market biotechnologies in the valley. In addition to selling medicines and *chit* (needle injections) Montri also brought newly available chemical fertilizers and pesticides to sell and trade. According to the parent and farmer histories, after the enforcement of opium laws in the valley, he was one of the first to provide seeds, pesticides and other chemicals on credit to farmers in exchange for cash crops such as soybeans which he would transport to market down the Mae Chaem river or take to market by cart. Over the years, Montri became a wealthy and important merchant in the valley, combining his practice as a 'private' doctor, with the buying of cash crops and the selling of pesticides, seed hybrids, and other biotechnical products to improve the health and productivity of fields and people. Montri operated a shop near on the Doi Inthanon road for almost thirty years and closed his shop in the early 1990's in the face of competition from several larger shops selling pesticides and fertilizers that opened nearby. While maw tuan like Montri practiced over a long period of time, reliance on private health clinics is rare in Mae Chaem and generally requires travel to Chiang Mai city or other centres.

As discussed in chapter four, these larger pesticide shops are now located on either side of the main Doi Inthanon road and are the first to welcome those arriving into the district centre. Both of the largest shops have a central building with brightly coloured displays of pesticides, agrochemicals, and long rows of the spray equipment needed to apply them. Surrounding the central shops are large paved compounds with vehicle scales at one end for weighing trucks loaded with cash crops, and storehouses for keeping cash crops at harvest time, sacks of seeds at planting, and various bags, bottles and barrels containing pesticides, herbicides, and other

chemical compounds all year round. At planting and harvest time these shops are extremely busy with trucks loaded with produce coming and going. At other times of year, particularly as the rice is being grown, they are much quieter.

Since the 1997 financial crisis, large corporations have come to Mae Chaem in another role, beyond sellers of biotechnical cures for land use problems. In the mid-1990's soybean became less economical to grow as a cash crop due to the higher costs of chemical inputs and because of low prices on international markets. At about the same time, one of Thailand's largest agro-companies, CP, began offering agricultural contracts to farmers in Mae Chaem who agree to grow seed corn on their land according to a prescribed set of terms, including the application of fertilizers and other chemicals, at particular rates and at particular times in the growing cycle. As part of the contract, the farmer agrees to use agro-chemicals approved by CP and purchased through the local CP extension agent. The farmer also agrees to sell the crops grown at a set price to CP. The company extension agents in Mae Chaem at the time of field work were all young, university educated men who were responsible for providing advice to contracted farmers, but also for monitoring farming practices to ensure compliance with chemical applications by farmers, and monitoring crops to anticipate the likely levels of acceptable product. CP uses the feed corn to raise livestock, particularly poultry, for sale throughout Thailand and beyond. The farmer gets access to credit for the agro-chemicals used and receives a guaranteed price that can be relied on at harvest time. The provision of a guaranteed price is particularly attractive to farmers in Mae Chaem who have incurred losses on successful crops because of fluctuations in the price of coffee, soy, tobacco, cabbage, shallot, and other popular cash crops in the valley.

Following the provision of agricultural contracts from CP, other agro-corporations including BJC (1998), and later Frito-Lays (1999), also began offering farming contracts for growing potatoes in the valley. The potatoes are used by the companies to supply the growing Thai and international appetite for potato chips. Through farming contracts, the agro-corporations work to enrol local farmers and bind them to relationships that formally combine the selling of pesticides with the buying of cash crops, and include financial penalties for failing to grow crops in the manner prescribed by the agro-corporation. This approach has had mixed success in the valley. Farmers frequently complain that when the price of a crop is low, the company finds reasons to not accept produce for the guaranteed price unless it conforms to a corporate ideal of perfection. Feed corn that is too moist or potatoes that are too large or too small for the company's machines are rejected. Likewise, the agro-corporations complain that when market prices are high, the farmers hold back produce from their fields so that they can sell outside of the contract price and for higher profit.

Beyond the large agricultural shops and contract farming agreements, smaller agro-chemical sellers can also be found in the district centre, including at the main market located next to the river. Similar to other markets in any Thai town, the Mae Chaem market serves as a commercial, transportation, and social hub. Parents and farmers from across southern Mae Chaem come the district centre to sell produce, attend to business at the various government offices, and to buy what they need, including biotechnical solutions for both child health and land use problems. The main market is a huge tin and wood building cobbled together to form a shelter from both hot sun and monsoon rains for the dozens of stalls selling thousands of products: tables full of fruit,

vegetables from the valley and beyond, canned goods, clothes, candies, freshly butchered meat, dried fish, sleeping mats, tools, and almost anything else that can be imagined. Many of the small stalls in the main market sell one brand or another of pesticide, often in dark glass bottles designed to maintain the potency of the chemicals inside. On other shelves sit other products: tooth paste, children's shoes, packaged cookies, little packets of aspirin. Basic medicines are also available at several of the stalls. Looking closely at the labels, one can see that the distinctive logo of the Bayer aspirin label displayed near the front of a shop is the very same logo depicted on many of the pesticide bottles near the back. Despite the thousands of seemingly unrelated products available for purchase at the market, some unexpectedly bridge the domains of child health and land use through the companies that produce them.

Another connection between biotechnologies of medicine and land use exists in the taking of *yaa* to augment the ability of farmers to work in the fields. Lyttleton (1996), and Whittaker (2001) both note the common selling of inexpensive packets of pills by village medicine sellers in north-eastern Thailand for a variety of ills, many of which had very high levels of amphetamine type stimulants and sedatives. During harvest and rice planting in Mae Chaem, a variety of stimulating medicines, including fermented tea leaves, high caffeine energy drinks like Red Bull, and pills purchased from medicine sellers are used to dull the aches of harvesting cash crops and rice, and provide energy for long days in the field. In relation to a village in northeast Thailand, Lyttleton notes:

...pressure from the local hospital to ban these drugs has made them harder to obtain but one local store still sells them discreetly. The inclusion of addictive substances, amphetamines and sedatives, has made them an immediate and regular aid for many villagers, particularly during the arduous rice-planting months when the number of people who take the time

to visit either the government health facilities or the private clinics drops dramatically. (1996: 39).

Surrounding the Mae Chaem market are other more specialized shops, one of them, on a corner not far from the Mae Chaem hospital, is the largest, oldest, and most popular drug store in Mae Chaem. Entering this shop from the street on a hot day, one enters the sliding glass doors of an air conditioned oasis. Large advertisements for vitamin drinks and red bull, next to a large drink cooler, welcome new arrivals. Inside the shop, there is little room to move as the aisles are stacked with diapers, infant formula, and large reflective glass cases filled with various modern pharmaceutical drugs (yaa prachabaan) and traditional patent medicines (yaa boran) imported from elsewhere in Thailand and from across the border in Burma. Product names and displays are everywhere, but contained to the inside of the shop. In Mae Chaem advertising pharmaceutical medicines is much more discreet than advertisement of agrochemicals, but is nonetheless important. As Lyttleton notes:

Many drugstores throughout Thailand readily sell most types of pharmaceuticals across the counter. Consequently, Thailand has one of the highest pharmaceutical drug consumption rates per capita in the world. This is abetted by persistent and successful advertising by the large drug companies. (1996:29).

The medicine shop is run by Khun Naan, an older man in his mid-60's who greets us with a dignified smile and a bow of his head as we enter. Interestingly, one corner of the pharmacy offers saffron coloured buckets bundled with cloth and incense to be purchased as offerings to monks at the monastery.

According to Khun Naan, his shop has been selling medicines longer than anyone in Mae Chaem. In explaining why people come to see him rather than purchase

medicines through the nearby Mae Chaem hospital, Khun Naan indicates that people know that they can trust him because he has been there for so long, and because Khun Naan is also a former high ranking monk, a respected maw muang, and former ‘unlicensed’ injection doctor. Khun Naan explains that people come to him because of his reputation and that because he can sell them medicines that are modern, but also have the benefit of being given by a person with *baramii* accrued through time as a monk and expertise as a maw muang. Khun Naan learnt how to give injections, and how to perform the rituals of a maw muang, from reading both traditional texts and medical text books that he had access to in the monastery. When he left the monastery he opened his shop and began selling his services and his medicines. Since then, he has kept learning about medicines and cures through practice and experience, but also through training that is sometimes provided by the salesmen from the pharmaceutical corporations (*borisat yaa prachabaan*) who supply his medicines. The traditional patent medicines that he sells form only a small portion of his shop, and these he buys himself from a supplier in Chiang Mai city. Khun Naan points to a framed license and picture at the front door of the shop and explains that the government now requires every licensed pharmacy to be supervised by a trained nurse, doctor, or pharmacist. Khun Naan indicated that he does not have the qualifications for this and so for several year he had a nurse from the Mae Chaem hospital working as a consultant to fulfill government regulations. One of his daughters had recently graduated from pharmacy at a school in Bangkok so she was now the official supervisor of the shop. When asked regarding the saffron coloured buckets and other temple offerings also sold at his shop, Khun Naan indicated that those who are

sick make more offerings to the monks, sometimes to make merit, sometimes because the Jiaw Song (spirit-spirit medium) tell them to.

As we interviewed Khun Naan, several people entered the shop, most with a small sheet of paper from the hospital or clinic indicating what medicines they need, but other times with complaints of symptoms and looking for advice. Interactions were brief, money was exchanged, numbers were written down in a ledger, and a variety of pills and ointments were dispensed. Near the conclusion of our interview, a young woman came in with a five year old boy behind her. They were from a village in the hills and were in the district centre for the morning market. Her son was complaining of a stomach ache (buat tong). Khun Naan nods, opens a glass case behind him, and reaches for a small box containing packets powdered pharmaceutical medicine to be mixed with water. For the cost of ten baht (about fifty Canadian cents) Khun Naan sells the mother the powder, stirs it with a nearby spoon into a small glass of water, and using his finger to point into the water, says a quiet incantation of *kata* to help the boy with his stomach ache. Khun Naan then passes the glass of water, now fortified with both modern pharmaceutical science, and the *kata* of a maw muang, to the young boy who obeys his mother and drinks it all. The child seems happier, the mother thanks Khun Naan with a quick wai, and ushers the child out of the shop and into the street. The interaction, from introduction through diagnosis, purchase and cure, takes approximately two minutes. The convenience and quickness of the market stream is maintained. We leave the shop, thanking Khun Naan for his time, he nods and smiles in response, unlocking his cash box, placing the money in, and writing his most recent sale into his ledger.

11.2 Market Bioecology: the Causation of Problems

Based on accounts of medicine sellers in the valley, and the claims of the products they sell, these range from common childhood illnesses such as colds or headaches, through vitamin deficiencies, and environmental concerns such as parasitic worms and rashes. Within the domain of land use, the problems are different, but also conform to notions of nutritional deficiency (fertilizers), genetics (improved seed varieties), and parasitic diseases or pests (herbicides, insecticides, and fungicides). More abstract causes of illness in fields or children, such as karma or spirit attack, are left for other experts to diagnose and deal with. In explaining why they use the market stream, parents and farmers commonly site the quick and convenient resolution of immediate problems: relieving pain, killing worms, giving energy to the body.

As such, it is not surprising that based on interviews with medicine sellers and pesticide shops, the focus of most market stream biotechnical practices is not on the identification or diagnosis of illnesses or agricultural challenges, but on the selling of cures for them. The market approach to is fundamentally involved in the selling of commodities and, less frequently, services that are designed to affect the health of children and of lands. As illustrated by the biotechnical flexibility of experts like Khun Naan and Montri, the selling of cures (for land or health) can draw upon alliances with other biotechnical streams. But, while the commodities and services of the market stream may be connected to alternate streams, as in Khun Naan's use of *kata*, the buying and selling of cures through the shops of the valley is dominated by the materialism of pharmaceutical and chemical science as represented by multinational biotech corporations. While the causal forces of health and illness in fields and in children, are

generally construed as physical ones by experts associated with the market stream, alternate perspectives are possible depending on the relationships between medicine seller and client (Weisberg 1984b). The physical commodities of chemical and medicinal compounds are claimed to act upon physical causes of illness.

As noted elsewhere, and explored in more detail in the concluding chapters, one of the interesting relationships present within the market stream, is that the commodities sold to improve the health of fields are broadly understood by parents and farmers in Mae Chaem to cause problems in the health of people and children in particular. During seasons where cash crops, rather than rice, are growing in the fields, the acrid smell of agro-chemicals is noticeable throughout the district centre and used pesticide containers can be seen in many of the canals and water ditches. Headaches, nausea, and rashes are common complaints of farmers and children at this time of year and many parents and farmers noted the irony that they go to the store for *yaa* (biotechnology) to cure the headaches that are caused by the *yaa* (biotechnology) that they spray on their fields, and that the same multinational corporations make, and profit from, the *yaa* that cures the headaches and the *yaa* that causes them.

11.3 Market Biotechnology: the Solving of Problems

Entering into the large pesticide and agricultural shops that face the main road into the district centre, the variety of products available for sale is bewildering. On my first visit, the sharp, astringent smell of the place that made me very conscious of what I was breathing into my lungs and potentially bringing home to my family. Large signs and advertisements in Thai dangled from the ceiling and explained that if I bought enough of a particular brand of chemical I

would receive prizes: shirts, TV's, refrigerators, even a new truck, depending on how much I bought. The various pesticides, herbicides, and other products are sold under various brand names written in bold and colourful Thai or English letters. Brand names, like Goal2E, Round-up or Glamaxon, are familiar from the advertisements both in the store, and papering the road side outside. On the labels these names are followed in smaller print by long strings of numbers and syllables, the international markings of arcane chemical science: diphenyl ether (oxyfluorfen) 2-chloro, trifluoro-p-totyl 3-ethoxyl-4. Elsewhere on the labels are pictographs indicating in another international language that the contents of the bottle are powerful and dangerous, and should be applied wearing a visor, gloves and mask. My co-researchers chuckle at this and comment that nobody uses these. Lower down on the labels, written in English, are other words that I find more familiar: DOW Agrosiences, Syngenta, Monsanto, and Bayer. The most popular and least expensive of the chemicals, Metalaxyl and Paraquat, are sold in large metal tanks as well as plastic containers, and some of these indicate that they are produced domestically by companies with Thai names in the chemical factories and industrial estates that cluster in and around Bangkok. In the store itself, beside the chemicals themselves, the expensive backpack spraying equipment used to apply the chemicals is displayed prominently. There are no masks, gloves, or visors to be seen.

There were no other customers in the shop and the thin woman behind the counter wrote numbers in a ledger until we asked if we could interview her. She agreed and began by explaining that was not an expert on the chemicals, but that many of the farmers from the district and surrounding hills ask her for advice when they come to the shop for chemicals to improve their crops or cure problems in their fields. She explained that several times a year, especially at planting time, marketers from the big chemical companies (*borisat*) would come and offer group

training and seminars to valley farmers. These were taught next to the shop, lasted several hours, and included watching promotional videos, instructions on how to apply products for maximum effect, and incentives to buy particular brands of agrochemical. She explained that many farmers were reluctant to come to these so the companies often raffled off a TV or other desired item to a group of farmers who would agree to take part in the training sessions for their products. Other times the marketers and trainers went out and would sell directly to the farmers where they worked in the fields. During the parent and farmer interview process, these advertising efforts by companies to get farmers to use their products were confirmed.

As illustrated by the Bayer corporation symbols present on both medicine bottles and pesticide advertisements in Mae Chaem shops, pharmaceutical drugs used to affect the health of children and agrochemical products used to affect the health of fields often come from the same multinational source. They are not only often produced by the same multinational companies and advertised under the same brand names, but also constitute fundamentally similar strategies for affecting life. In particular, both agrochemicals and pharmaceuticals rely upon the powers of materialist bioscientific research, national safety regulations, and standardized production of chemical compounds. The merits of these are promoted extensively through the medium of advertising and are brought to bear on local lives and local fields by parent-farmers who purchase and consume the products with the advice of local drug and pesticide merchants.

11.4 An Actor-Network of Market Biotechnology

Understood in terms of actor network theory, the market stream involved pesticide salespeople and shop owners as obligatory passage points through which parents and

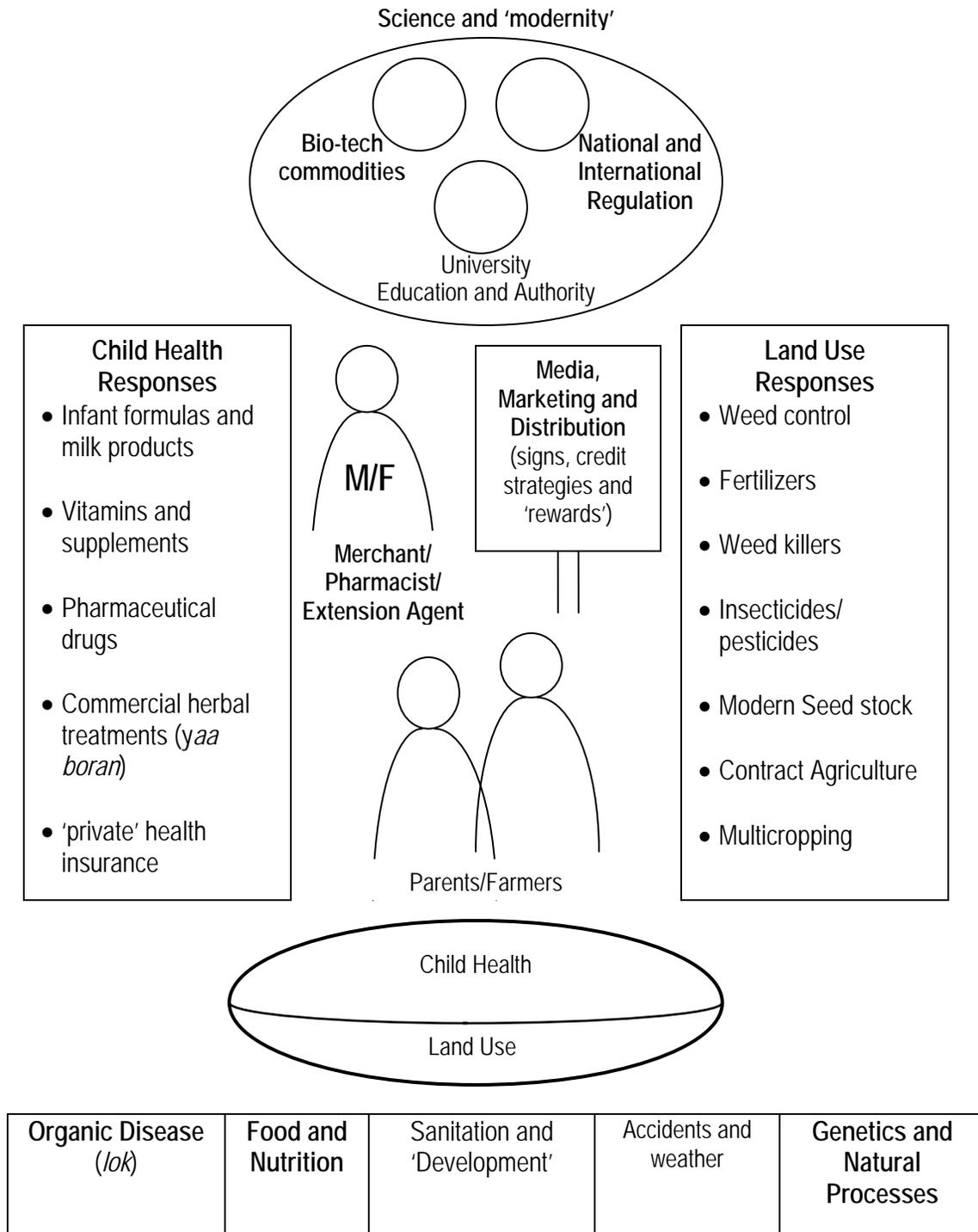
farmers can access biologically efficacious technology through mass produced medicines and agro-chemicals that are often rooted in global networks of multinational corporations, laboratories, and chemical manufacturing plants. In rural Mae Chaem, the market stream is represented by both its human biotechnical experts (pesticide and medicine sellers) and the advertisements and media distributed by its sales people. The market stream offers a way of addressing both child health and land use problems that is portrayed as fast acting and easily accessed, for a price. The market stream also offers the aesthetic appeals of scientific modernity represented by multinational corporations, national and international regulation, and the authority of university educated specialists such as pharmacists and agro-corporation extension representatives.

As illustrated in figure 11.1, the market stream involves a suite of child health and land use applications that include commercial medicines and agrochemicals, new kinds of seeds, practices, and economic processes such as private insurance and credit strategies.

11.5 Market Biopolitics: Access and Advocacy

Through pesticide and agro-chemical advertising, multinational companies and their products insert themselves within the landscape of the valley with signs tacked to trees and posted in fields, and roadsides sprayed with herbicides so that passers-by can see by the dead vegetation how effective the advertised product is. Other marketing schemes offer the chance to win free soap, free socks, free TVs, even free trucks, to farmers who buy and use enough of their brand of chemicals. Advocacy of market biotechnologies through advertising in the fields, along roadsides, and in shops, as well as through marketing of credit and insurance, are all devices designed to attract and enrol parents and farmers within the market stream.

Figure 11.1: An Actor-Network of Market Biotechnology



According to the Thai ministry of public health (MoPH 2000), disparities in access to 'quality' biomedical services are common in Thailand, and are particularly significant between rural and urban populations and are one reason of the reasons for a much higher level of self-medication through the market stream in more rural areas. For multinational companies who produce both pesticides and drugs, marketing in rural areas seems to be an effective strategy for enrolling local parent-farmers within market defined definitions of what life is and what products affect it. Enrolling parents and farmers within the market stream means not only customers for pesticide and agro-chemical products, but also the potential that those same parent-farmers will turn to pharmaceutical drugs when their children get sick. Cohen (1989) notes that almost 50 per cent of health expenditures in rural Thai households are for the purchase of drugs. Interestingly, while the issue of cost was a predominant theme in parent and farmer discussion of market access to pesticides and agro-chemicals, it did not figure prominently in narratives regarding child health choices. This is likely because medicines for most child health concerns are also easily available through the Mae Chaem hospital and the national Thai health care system. As such, choices to use the market stream seem to have less to do with economics, and more to do with ease of access, availability, and convenience.

Injecting Medicines: Hospitals, NGOs and the Modern Nation-State

12.0 The National Stream

This chapter deals with land use and child health practices in the Mae Chaem valley that draw on the structures and institutions of the modern Thai state, including national health care services, agricultural extension, and the programs of the various non-governmental organizations (NGOs) that have been active, and continue to be active, under the aegis of the Thai state. In Mae Chaem, and within the domain of child health, the national stream is most obviously represented by the doctors, nurses, and infrastructure of the Mae Chaem hospital, and by the network of public health clinics (*anamai*) located in many of the larger villages. Within the domain of land use, the national stream is represented largely by the advocacy and extension activities of the *kaset amphur*, or district agriculture specialists, and the work of the Mae Chaem Farmers Cooperative. Less obvious interventions of the national stream designed to influence the lives of children and land include the development of underlying public health and agricultural infrastructure of Mae Chaem: water supply and distribution systems, roads and communications, sewage treatment and waste disposal.

Particularly in the 1950's, 60's and 70's, but continuing to the present in more remote areas like Mae Hae Tai, the presence of the Thai state in the remote valleys of upland northern Thailand has been incomplete at best. The development of rural clinics and hospitals, along with schools, roads, and communications, play a key role in efforts by the Thai state to 'develop' rural areas, and in the process develop a cohesive and

integrated Thai identity and history incorporating rural areas within the modern Thai nation (Keyes 1987, Keyes and Tanabe 2002). As indicated in the case studies provided in chapter five, prior to the late 1960's access to national health services was extremely limited even in the Mae Chaem district centre. In areas such as Mae Hae Tai, this isolation from national health services continued into the 1980's when an *anamai* was built. A similar pattern existed with the arrival of government and NGO agricultural extension programs. Agricultural services and technology were offered relatively early in the mainly Thai valley bottoms, but did not extend meaningfully into the mountains of Mae Chaem until much later.

As described in chapter 4, the Mae Chaem valley is a small, flat bottomed fluvial plain bordered to the east and west by steeply rising hills and mountains. Until the 1980's the highest structures in the valley bottom were either the tall green spires of ancient trees that signified the domain of respected forest spirits, or the delicate golden tiered spires that rise from the crest of the red tiled temple roofs that signify the domain of venerated monks. The ancient mass of huge Boddhi trees and the glittering gold of Buddhist temples still spring up from forest floors and temples courtyards, but now, viewed from the hills, the valley is punctuated by one soaring exclamation mark that rises high above any temple or tree, so high that it competes instead with the mountains themselves. The exclamation mark is built from lightweight red and white painted metal rods and is anchored with long cables of spun steel that spread out over the rooftops east of the main market. It is the *axis mundi* of modernity in the valley, built so that radio and TV signals, and now cell phone coverage, extend deep into the surrounding hills, connecting places

with no wires or roads to the nervous system of the Thai state through media and communication.

Coming into the valley along the Doi Inthanon road, or back from Mae Hae Tai or other more remote communities, I often notice fellow passengers checking cell phones as soon as the tip of the red and white needle becomes visible over the tops of the surrounding hills. Some look for voice and text messages, others make quick calls to say that they will be home soon. As long as you can see the top of the tower you can get cell phone reception. Thanks to the transmission capabilities of the soaring metal frame, the Thai anthem can be heard at 8:00 in the morning and 6:00 at night on almost any radio or TV in Mae Chaem, and the staff of the *anamai* located in the more remote communities of Mae Chaem rely on communications with the hospital for more difficult problems.

At the base of this central pillar of modernity sits the sprawling compound of the Mae Chaem Public Hospital. The hospital and its compound, stand separate and slightly imposing. They place official Thai government custom at the centre of more marginal Muang and Pghakinyaw identities in Mae Chaem. White starched nurses uniforms and sports shirts on Fridays, the Thai flag flying proudly, rows of waiting benches in the open air reception area preceded by rows of motorcycles in the parking lot. Beyond the parking lot lies a series of white steps that end in a reception booth. A hallway for staff can be seen on one side and a large open air waiting room to the right.

12.1 Hospitals, *Anamai* (Clinics), and Agricultural Extension in Mae Chaem

In the waiting room of the Mae Chaem hospital, Thai officialdom is contrasted with a waiting room that is filled with Karen, northern Thai and occasionally Hmong

families, their ethnicity and economic status displayed by the weave of their clothing. The hospital is one of the few spaces in Mae Chaem, aside from the central market, where concentrations of ethnic minorities are obvious and one has confirmation that Mae Chaem is a multi-ethnic district. The stratification of medical power is remarkable. All of the three doctors and almost all of the twenty eight nurses are from other parts of Thailand, many of them with Bangkok or central Thai accents and university educations. By contrast, villagers in the district centre frequently speak of the Mae Chaem hospital with reference to long wait times, rude nurses, and old equipment.

In order to make it past the waiting room, my research team provided a letter of request to the hospital's head administrator. Several weeks after we submitted that letter, we received a reply from the administrator that we were welcome to return for a tour of the hospital. One of the head nurses gave us a tour of the facility and introduced us to staff. Just beyond the waiting room, she takes us past a series of small examination rooms used by the doctor on call to receive patients. We are taken upstairs from the waiting room and shown around a busy open ward. The beds are almost all full and organized according to specialty with several children and their family members occupying the paediatric beds along the far wall. The ward is bright and clean, but noisy. Beyond the open ward is a hallway lined with private hallways for those who wish to pay an extra charge.

On our way out of the ward, and into a more formal meeting with the head nurse, we stop to chat with a young mother sitting beside one of the hospital beds. A frail looking four year old child with a smile on his face lay on the white sheets with a IV in his arm. The child's mother indicated that the child had been sick and vomiting all night.

She had gone to get medicines at the *anamai* near her house, but they told her to take the child to the hospital instead. She came with her sister and waited downstairs for only a few minutes before the doctor saw them and admitted them. The head nurse, looking at the boy's chart on the end of the bed, said that the child was dehydrated and that the IV was to help. The mother agreed that the IV was working well. We thanked the mother and wished her luck before joining the head nurse in an air conditioned room reserved for staff meetings, the Thai flag and a large

According to the parent and farmer histories, the very first public health office in the valley, staffed by a single midwife who also did vaccinations, was opened in 1957, near the location of the current government buildings. It was. Later, in 1964, a malaria unit was set up for screening, preventing, and treating the disease. It was from the malaria unit that DDT was first made available to farmers for use in their fields, as well as in their homes. Later in the 1960's the first Anamai was built in Baan Paa Dtaet near the district centre, and its first project was advocating the building of toilets and latrines to improve sanitation. The Mae Chaem hospital itself was opened in 1974.

While opium was the original cash crop of the valley, the first cash crop advocated by the national government in Mae Chaem was tobacco. A tobacco curing station was established just outside the district centre in approximately 1962. It was through tobacco production as an alternative to opium that chemical pesticides and fertilizers were first advocated in the valley. By the late 1960s government development agents had also introduced soy bean, again as an alternative to opium, and new farming areas (Lompong) were opened up for other cash crops including potato, soy, and peanut. The Mae Chaem Watershed Network was established for the development of the valley

in the late 1970's, and other US AID funded programs began activities in the early 1980's.

Involvement of NGOs in the lowlands of Mae Chaem remained minimal through the 1980's and 90's. The lowlands were instead integrated within national Thai development initiatives including the establishment of an agricultural coop in the early 1980's, and the introduction of an increasing variety of cash crops, including feed corn, into the area. By the early 1980's, fertilizers and pesticides were widely available throughout the valley, and were made more accessible through the credit opportunities sponsored through the Mae Chaem Farmer's co-op.

Farmers in Mae Hae Tai reported first planting opium in the middle 1950's. However, opium cultivation was said to have been short lived and stopped in the early 1960's as a result of pressure from the both the army and the Christian church. The first reported involvement of NGOs was in 1978 and involved the introduction of new rice varieties by the Mae Chaem Watershed Network. However, they grew very poorly in the upland soil and were abandoned. In 1983, a major development was undertaken in Mae Hae Tai by USAID, in cooperation with the Thai Land Department. Bulldozers and heavy earth moving equipment were brought in, and villagers were hired by the NGO and the government to build an extensive set of rice terraces on the hill side above the village. According to the extension agents of the 1990's, though well intentioned, the development experts of the 1980's did not considered the amount of water required by the terraces, nor the consequences of burying the fertile top soil in the process of their construction. As a result, despite the great expense of their construction, they never became permanent fields. Instead, they were abandoned and returned to the traditional

swidden cycle, though Mae Hae Tai farmers indicated that the productivity of that hill side was much lower than other swidden areas.

By the mid-1990's CARE Thailand began sponsoring revolving loans in the village. In 1997, a lack of rain meant that the rice did not germinate properly. This was the same year that some families began intensifying use of the swidden fields in order to grow cash crops and rice in permanent rotation, or with a very short fallow. CARE also provided a small budget of 18,000 bt (a little more than a thousand Canadian dollars) to Mae Hae Tai as a nature conservation fund. In 1999, in response to a year of poor harvests, the government, through the Kaset Amphur provided fifty bags of fertilizer for improving the village's rice harvest.

12.2 National Bioecology: the Causation of Problems

The arrival of national Thai health service brings with it particular constellations of technology, social power, and affiliation that are designed to address the problems of child health and agricultural development. Since the 1950's the national stream has been one of the most active in terms of identifying problems in the valley. In terms of both child health and land use, problems are generally defined in relation to problems of the physical body. At the Baan Paa Dtaet anamai, near the district centre, the white and pastel blue walls of the clinic held a familiar assortment of biometric equipment: devices for weighing children and adults, and for measuring temperatures and blood pressure surround the desk of Khun Tip, a young public health nurse with a four year collage degree. There is an antiseptic smell to the place and Khun Tip wears a slightly smudged white uniform shirt. A picture of the royal family hangs on the wall opposite a wall

mounted TV showing an American made documentary on WW2 dubbed in Thai.

Outside the office, several colourful posters advocate exercise, nutrition, and awareness of mosquitos as vectors for haemorrhagic fever (*kai luat ok*).

Khun Tip has a short line up of people who have come to see him. He looks briefly at a rash on the wrist of a farmer from higher up in the hills. Every patient coming in has their blood pressure taken, a form filled out, and medicine provided. Khun Tip tells the farmer that his rash is from the pesticides he is using. He gives the farmer some pills and an ointment. Responding to our questions while he wraps gauze around the farmer's wrist, Tip tells us that on an average day he mostly takes care of fevers and colds (*pen kai pen wat*), accidents and cuts, and helps with birth control planning. For young children, he usually gets approached by parents for help with children that have diarrhoea (*tong sia*), conjunctivitis (*tda daeng*) or the flu (*kai wat yai*). He also provides vaccinations, vitamins, and talks to parents about how to keep children healthy through good nutrition, including the importance of breast feeding. If children are very sick then he sends the parents to the Mae Chaem hospital. When asked if he ever refers parents to maw Muang or other practitioners in the valley, he shakes his head and says he recommends, "only science". He says that he has many problems with some of the maw tamyeh (traditional birth attendants) in the village, especially the one who don't want the children to get needles and vaccines.

12.3 National Biotechnology: the Solving of Problems

In both the mountains and the valley, the various services of the national stream are intimately tied to the closely allied stream of market biotechnology, but also to broader notions

of modernity within the Thai state. Both the market stream and the national stream advocate similar medicines and agro chemicals, and rely upon similar notions of university trained expertise and national regulation. At the Mae Chaem Hospital, a maw Muang is employed as part of a traditional medicine program advocated by the state, but his position is considered to be far below that of the doctors and nurses. As noted by Khun Tip, the approach taken to solving problems at the everyday level is, “only science”.

Through much of the past century the Thai state, and particularly the Thai monarchy, have actively advocated and supported the delivery of ‘modern’ biomedical health services. Prince Mahidol, the son of King Rama V and the father of the current king, studied public health and medicine at Harvard and is often cited as the ‘father’ of public health and modern biomedicine in Thailand (Debhnom 1987). With the support of the monarchy, American foundations such as the Ford Foundation and the Rockefeller Foundation played key roles in the introduction of biomedicine to the nation as a whole, and to rural areas in particular. The association of royalty, wealth, and international modern science has played a key role in the development of a national Thai approach to provision of biomedicine:

The history of the Thai medical profession closely parallels the development of medical professions in the West: elitist (in terms of class and status), capitalist, drug oriented, urban centred, and assertive of its dominance over other health practitioners by means of subordination or exclusion (Cohen 1989: 165).

National and international support for the ‘modernization’ of land use in Mae Chaem has followed a similar path, has also involved heavy influence from the Rockefeller and Ford foundations, as well as other development agencies, and has involved several related efforts by government and NGO workers. These land use interventions began with the suppression of the opium economy through the 1960’s in Mae Chaem’s lowlands and in the hills, but have also involved advocacy of ‘modern’ agriculture involving cash

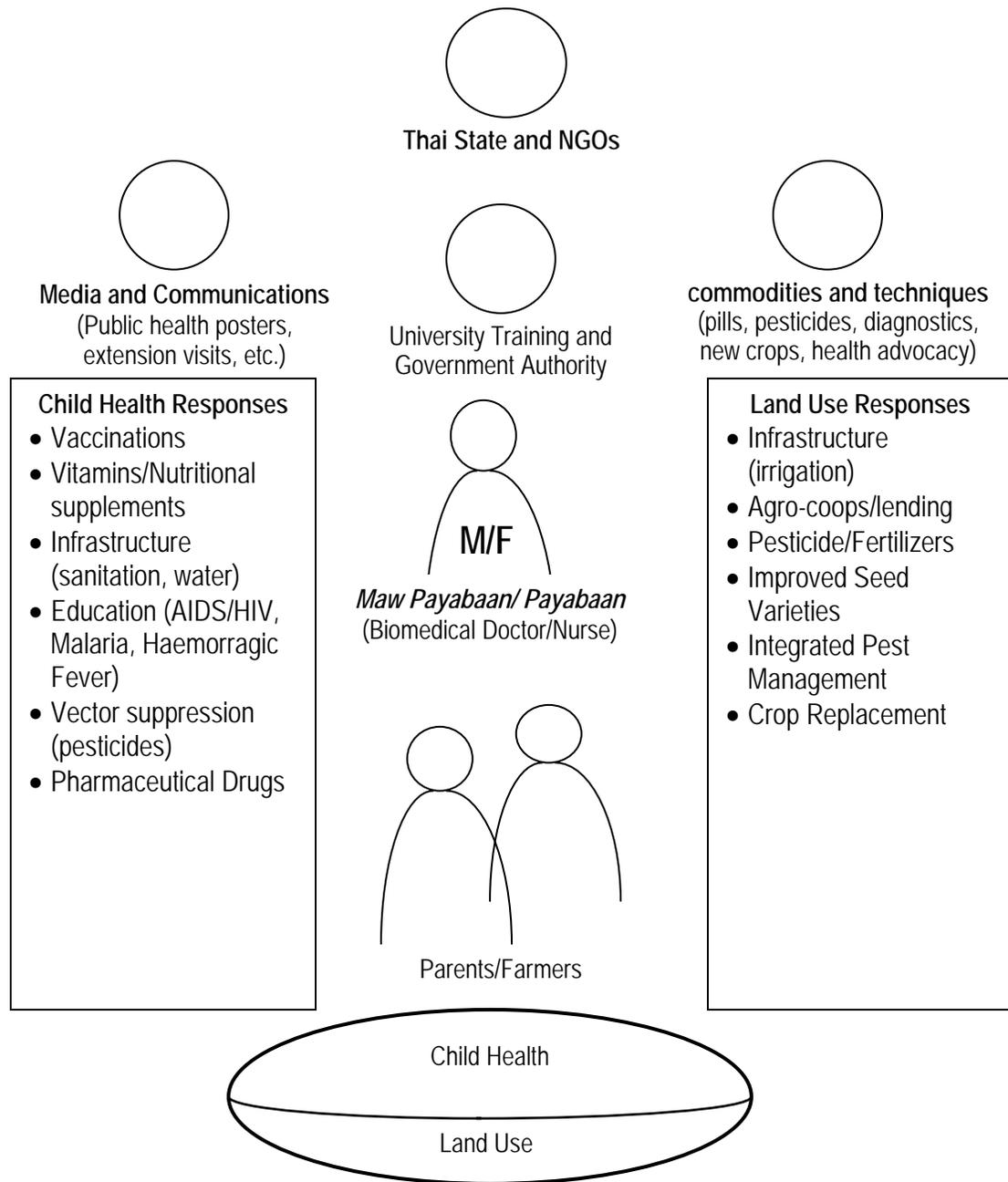
cropping, use of ‘green revolution’ technologies such as chemical pesticides and fertilizers, and since the 1990’s, conservation efforts including establishment of protected areas, and discouragement of swidden or ‘slash and burn’ cultivation.

In addition to the use of “only science” to address problems, it is also important to indicate that within the national system, and particularly within the domain of land use, there is also a strong and persistent nationalist Thai critique of the multinational companies, and the overall capitalist and consumer oriented direction of much of Thailand’s ‘development’. Within the land use domain, this critique is noticeable in efforts by the *kaset amphur* to encourage new ways of growing crops that reduce the need for pesticides, and efforts to encourage forms of land use, such as the royally endorsed concepts of the ‘New Theory’ for agriculture and the ‘sufficiency economy’. Both of these approaches advocate a return to small scale agriculture oriented towards the sustainable meeting of needs rather than maximizing profit and production through commercial cash cropping and debt intensive farming.

12.4 An Actor-Network of National Biotechnology

The official representatives of the Thai nation in Mae Chaem include the doctors, nurses, and agricultural extension workers of the valley. They are both symbols and social representatives of a rich and active biotechnical tradition that draws on national and international resources to ‘develop’ the valley. From an actor-network perspective they are obligatory passage points through which local parents and farmers can access international networks of efficacious knowledge, technology, and practice. Reliance on the networks of anamai and hospital, or on the farmer’s co-op or national agricultural systems implies an alliance and acceptance of the systems of the Thai state.

Figure 12.1: An Actor-Network of National Biotechnology



| Disease and Poisons (<i>Rok</i>) | Food and Nutrition | Sanitation and 'Development' | Accidents and weather | Genetics and Bodily Processes |
|---|--------------------|------------------------------|-----------------------|-------------------------------|
| <i>Kam</i> (Karma), either inherited (deep karma) or accrued (<i>bun bap</i>) [this is only relevant to Thai NGO and Thai Government actor-networks] | | | | |

Figure 12.1 is an attempt to diagram the core biotechnical relations implicit in the national stream. Parents and farmers are located at the centre of the diagram with biomedical doctors and nurses, or alternately the *kaset amphur*, acting as the biotechnical expert. The authority of the national expert is reinforced by university training, the media of the state, the commodities and techniques employed, and through affiliation with the nation state and the Thai monarchy. Various efficacious biotechnical practices are listed to the left and right of the diagram, with the recognized causes of illness in children and fields depicted at the bottom, below the rice grain of the child, or alternately the field.

12.5 National Biopolitics: Access and Advocacy

While the market stream provides the main source of ‘modern’ biomedical medicines, the national stream provides the main source of ‘modern’ biomedical practice in the valley. As noted in chapter eleven, while in most of Thailand the services of biomedically trained doctors and nurses are available through both public (*rong payabaan thamadaa*) and private for-profit hospitals (*rong payabaan piset*), there is only one small and recently opened private for-profit clinic in Mae Chaem. The fees charged within the ‘national’ system are nominal and policy changes by Thaksin, the Thai Prime Minister of the day, have sought to guarantee access to all ‘necessary’ medical treatments through the public system at a flat rate of 20bt (less than \$1 Canadian). Through the *anamai*, and through NGO advocacy campaigns and health research, medicines, services, health promotion and education are provided to Mae Chaem parents and farmers. Within the domain of land use, the *kaset amphur*, Mae Chaem co-op, and NGOs such as CARE Thailand, provide access to seeds, fertilizers, credit, and in the past, pesticides and agrochemicals, as well as training in new farming practices.

Ajaan Satsana (Preachers): Christ in the Hills

13.0 The Christian Stream

As a whole, Thailand has not proven fallow ground for the sowing of the Christian gospel. Missionary involvement in Thailand extends back to the 16th century and the Siamese courts at SukhoThai and Ayuthaya, but at a national level, Christianization has been a dismal failure (Wyatt 1984). The vast majority of the Thai population (approximately 95%) remains Buddhist. The only other significant religion at the national level (approximately 5% of the population) is Islam and most Thai muslims live in the southern provinces bordering Malaysia. Despite missionization attempts, Thais, in general, have simply not chosen Christianity as their religion of choice. The hills of northern Thailand are the only region where Christianity has been able to gain a foothold, and only amongst non-Thai ethnic minorities.

In Mae Chaem it is exceedingly rare to meet a Thai Christian. Over the past fifty years, none of the Thai parents and farmers in Mae Chaem's district centre reported reliance on Christian streams of dealing with land use or child health problems. Only one young Thai farmer, married to a Pgha'knyaw wife, in a village quite remote from the district centre, self identified as Christian and reported relying on prayer and blessings from the local Ajaan Satsana as a response to childhood health concern.

While every *khon Muang* community in the Mae Chaem valley remains almost universally Buddhist, Christian missionaries of many denominations (Catholic, Baptist, Pentecostal and Seventh Day Adventist) have made significant inroads into many of the more remote hill communities. In Mae Hae Tai and other Pgha'knyaw communities, it

was relatively common for parents and farmers to report reliance on Christian prayers for health and land use concerns, as well as reliance on Christian charitable hospitals and support for land use practices, including purchasing of seeds and chemicals, through nearby Mae Hong Son Christian congregations. The seeds of the Christian gospel have historically found particularly fallow ground in dry rice farming Karen communities such as Mae Hae Tai. Many of these communities have been subject to active missionization via the colonial presence in Burma since the mid-19th century when enthusiastic Christian scholars found similarities between Pgha'knyaw origin stories and the old testament of the Bible and an indigenous Karen clergy was established (Hovemyr 1989). Pgha'knyaw communities such as Mae Hae Tai stand out as remarkable Christian anomalies within the modern Buddhist states of Thailand and neighbouring Burma.

When in Mae Hae Tai we lived in an old teak house adjacent to khruu Mayurii, a respected elementary school teacher born and raised in Mae Hae Tai, and the daughter of the village's first permanent Karen Christian preacher or religious teacher (*ajaan satsana*). On the wall of the main room of the old teak house, below a large framed image of King Bhumipol common in all Thai homes, were tacked two large posters that dominated the room. In the centre of the wall was tacked a huge, glossy Christian calendar for the year previous, 2002. Off to the left, partly hidden behind the door, was another large red poster distributed by the Northern Farmers Network, and encouraging the use of traditional Karen swidden agriculture. As we conducted the parent-farmer interview and visited houses throughout Mae Hae Tai, this triptych of themes, King, Karen tradition, and Christianity, was echoed on the living room walls of many of the other houses. The images changed, different pictures of the royal family, different

depictions of Christ, sometimes a poster depicting the letters of the Karen alphabet⁷³, but the main themes were quite constant. At the edges of the central space, or on another wall, clusters of smaller magazine cut outs of motorcycle ads and pale skinned, pouting Thai pop stars were also common.

The Christian calendar that dominated the centre of khruu Mayurii's wall is worthy of special comment as it provides a succinct pictorial of the Christian message in Mae Chaem. The actual months and days of the year were small and held an innocuous position in the lower centre of the page. Clearly, the main function of the calendar was not utilitarian. On each side of the months and days, and below them, were six high resolution black and white drawings of hill tribe women and children, each representing a different ethnic group, and each wearing their distinctive ethnic costume. Written beneath them, in Thai, were the common names of their ethnic identity: Luwa, Hmong, Lisu, Karen, etc. Above the months and days, and dwarfing the black and white drawings, was a series of huge, full color graphics that dominated the top half of the poster. Largest of these, and at the centre, was a depiction of flaming sea with blackened human forms writhing in the foreground. Above the hellish flames and tribulation rose a brilliant and triumphant sky of cloud and light. At the centre of the sky, and at the heart of the calendar was inset a picture of Christ suffering on the cross, a crown of thorns on his head, a halo of light behind him, and a host of mid-eastern looking figures kneeling below. Under this was a line of bold Thai text proclaiming, "The Blood of Jesus Christ Saves". To either side of the main image were six more full color depictions of scenes from the bible ranging from a very Euro-American looking Adam and Eve to the resurrection and second coming of Christ, with the old testament stories on the left, and

new testament on the right, and the image of Christ's crucifixion mediating between the two.

In both the valley and the hills, the many divisions of Christianity are boiled down to two: *satsana catholic* and *satsana christ*. Several of the larger Karen communities, including Mae Hae Tai, are proud to proclaim themselves Christian, and the Church occupies a primary place in the social and religious life of the village. In the district centre, amidst a multitude of Buddhist monasteries and spirit shrines, there was only one small Christian chapel operating out of the front of a house and catering mostly to migrant Karen workers. Like the Christian calendar on khruu Mayuri's wall, set under the picture of the Thai king, the presence of the modest chapel on the main street of Mae Chaem signals a quiet declaration of Karen and Christian independence within the modern Thai state. It also provides a subtle declaration of allegiance to an alternate stream of global connection that does not rely upon the mechanisms of the state. And, where the parent-farmers of Mae Chaem have found new Christian faiths appealing, they have also found new notions of development, new identities and allegiances, and new ways of understanding and affecting life.

Not far from khruu Mayuri's house is a small shop belonging to Phaa Sira an elderly Pgha'knyaw lay preacher. Phaa Sira was born in Mae Hae Tai, but did not join the Church until as a middle aged man he attended the Baptist seminary in Chiang Mai for four years. He wanted to learn how to read and write and learnt from the head of the seminary, an American *ajaan satsana* famous for playing guitar and his singing voice. After attending seminary, Phaa Sira spent many years as a junior minister in Mae Hae Tai. During one visit he explained that, "God gives us everything. People ask me to pray

in their fields, or at their house because God gives us everything.” In contrast to the fire and brimstone imagery of the calendar hanging in Khruu Mayuri’s home, the kind of Christianity represented by Phaa Sira and other elders of the church in Mae Hae Tai seemed distinctly low key and humble.

13.1 Christian Bioecology: the Causation of Problems

Like the market stream, the Christian stream of land use and child health in Mae Chaem seems to be oriented more to the provision of solutions rather than the diagnosis of problems. The Christian ecology of Mae Hae Tai is still populated by potentially dangerous non-Christian spirits, but also accepts the largely materialist explanations of childhood illness proffered by biotechnical experts associated with the medical teams sent out by Christian hospitals in Mae Hong Son. Within the domain of land use, the main causes of problems in dry rice agriculture, as well as cash crops, are generally understood to be connected to physical conditions including the arrival of rains, and the quality of soil as a result of swidden burning or the application of chemical fertilizers. While Christian parents and farmers, as well as local Christian experts like Phaa Sira, reported explicitly Christian solutions to these problems (detailed below), the causes of those problems were generally discussed in relation to environmental processes and market economies.

13.2 Christian Biotechnology: the Solving of Problems

Most of the child health and land use practices related to the Christian stream in Mae Hae Tai involved prayer in the home for the health of sick children, or prayer in the fields for good harvests and sufficient rain. Pgha’knyaw parents and farmers often

reported that they would invite the local preacher to their homes when children were sick and ask the preacher to pray with them for the health of the child. In terms of land use, parents and farmers commonly would pray in their fields themselves, but also sometimes reported asking the local preacher, or other lay Christian leaders, to help with prayer related to solving particular agricultural problems. When problems, such as lack of rain, were widespread, parents and farmers also reported mass prayers said in church with the wider community. The use of faith healing as a public ritual within Christian congregations was not mentioned as a solution for child health concerns.

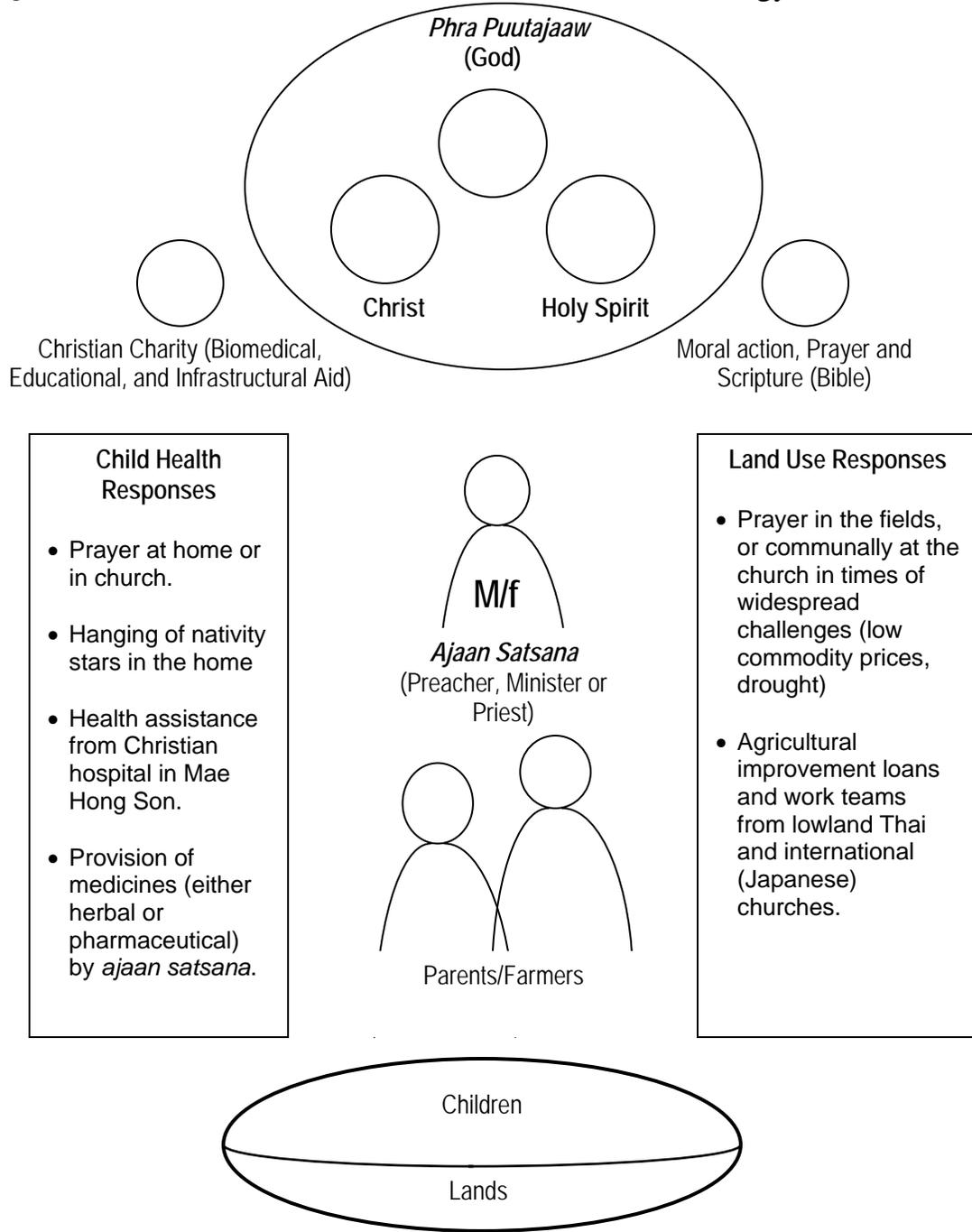
Beyond its spiritual dimensions, Christianity allows for a strong connection to global currents that provide a measure of independence and alterity in relation to the Thai state through providing a access to a broader, more international, and very wealthy Christian community. As such, the Church becomes not only a gateway to God, but also a gateway to a Karen participation in the global that is not mediated by the Thai state. The church becomes both a sacred space, and a transnational one. In Mae Hae Tai, outside the teak and bamboo church stands a sign thanking a Japanese Christian college for providing funds for its construction. A delegation of Japanese college students stayed in the village for several weeks in 2002 helping build the new church. Over the years, Christian churches from nearby Mae Hong Son province have sent both medical supplies and medical teams to help the children of Mae Hae Tai. Churches from outside the valley have also been involved in helping fund agricultural extension to Mae Hae Tai in order to improve the ‘development’ of the community’s upland swidden hills.

13.3 An Actor-Network of Christian Biotechnology

For parents and farmers in upland communities, like Mae Hae Tai, the Christian stream provides a set of relationships to both the spiritual expertise and power of religious teachers and the Christian God, Phra Phutajaaw. It also provides a unique path to accessing ‘modern’ and literate systems of health care, including hospitals and medicines, and agricultural aid, that bypass national systems associated with the Thai state. Figure 13.1, below, provides a diagram of the Christian biotechnical stream as understood from the narratives of both Christian parents and farmers, and the experts in land use and child health identified by them as associated with Christian networks of connection.

At the top of diagram is the Christian trinity, referred to generally in Thai and Pgha’knyaw as *Phra Puutajaaw*, which is understood, as noted by Phaa Sira above, to be the source of everything. The local preacher or missionary, or ajaan satsana, acts as an access point for divine power and intervention, and channels both connections to Christian charity organizations outside the Mae Chaem valley, as well as the moral authority provided through practice of moral action, prayer, and knowledge of Biblical scripture gained through education and literacy related to education gained through Christian seminaries and colleges in Chiang Mai city and elsewhere. Various land use and child health responses and practices are depicted to the right and left of the diagram.

Figure 13.1: An Actor-Network of Christian Biotechnology



| | | | | |
|--|--|------------------------------|-----------------------|--------------------------------|
| Disease and Poisons (<i>Rok</i>) | Food and Nutrition | Sanitation and 'Development' | Accidents and weather | Genetics and Natural Processes |
| <i>Sayasat</i> (malevolent sorcery) | <i>Pii</i> (includes ancestral spirits, domestic guardian spirits and malevolent spirits often associated with the landscape or with violent deaths) | | | |
| <i>Phra Puutajaaw</i> (God) and <i>bun bap</i> (sin and good acts) | | | | |

13.4 Christian Biopolitics: Access and Advocacy

Christianity exists as a potential stream of biotechnical action in both the uplands and the lowlands of Mae Chaem. Where it exists, Christian practice in Mae Chaem allows special access to networks of education, health care, and land use practice, that would otherwise be unavailable through alternate streams. Nonetheless, the Christian stream is almost entirely associated with the ethnic minority communities of Mae Chaem, particularly Pgha'knyaw ones. Conversely, it is almost entirely absent from the child health and land use narratives of the ethnically Thai majority communities in the district centre and surrounding valley bottom. This difference is likely related to several issues, including the unique history and privileged status of Pgha'knyaw and other Karen speaking peoples in the missionary history of northern Thailand. Other reasons include the maintenance and creation of a distinct Pgha'knyaw identity in subtle opposition to the overwhelmingly Buddhist identity associated with the Thai nation, and at a more fundamental level, the relatively late arrival of national Thai health and land use efforts in upland areas.

Shifting Streams

14.0 The Streams of Mae Chaem

The individual case studies provided in chapter five provide insight into the personal complexity of biotechnical choice within the history of Mae Chaem. The available biotechnical streams profiled in chapters seven through thirteen provide insight into what individual biotechnical choices imply. This chapter considers the composite picture of biotechnical change in the Mae Chaem valley since 1952 that becomes visible when child health and land use histories from across the valley are considered together. I begin with a qualitative analysis of the material from throughout the valley, including both individual, group, and expert interviews. I then focus in on the thirty-six Muang parent-farmer histories which together document child health and land use experiences reported for fifty five Muang children born between 1952 and 2002. Taken together, these narratives provide a composite picture of changing Muang child health practices and concerns in Mae Chaem. This composite picture suggests trends in the popularity of particular biotechnical streams, as well as connections between the changing nature of child illness and agricultural concerns as reported through parent-farmer histories. It should be noted that these figures are based on individual recall of events and are suggestive but are not necessarily indicative of the actual frequency of events. Given the composition and size of the sample, the figures do not allow for generalizations from the sample to the community as a whole. When considering this composite picture it is useful to remember that, while based on personal recollections, the recollections themselves are

tempered by the selective and social remembering of historical experience. Still, it is history as remembered rather than history as recorded, that exerts influence on the current and future biotechnical choices of parents and farmers, and colours perceptions of biotechnical change and development in the valley.

14.1 Listening to Stories: A Thematic Analysis of the Parent-Farmer Histories

Counting how many times particular biotechnical concerns or practices occur in the parent-farmer histories is one way to trace the changing biotechnical history of the valley and how parent farmers have manoeuvred within it. Another way is to engage with the parent-farmer histories as stories, and approach them through analysis of the dominant themes that run through and organize them. While the methodology used in the parent-farmer interviews asked participants to recall their own biotechnical concerns and practices in specific years, the remembering and telling of life stories involves narrative construction as well as historical recollection. In this regard parent-farmer histories can be seen as therapeutic narratives (Mattingly 1998) that construct and represent personal histories of illness, loss, and healing in relation to both children and fields, in particular ways. This section draws out some of the common themes that organize and run through the various parent-farmer histories.

Throughout the parent-farmer narratives several themes emerge that represent local parent-farmers as empowered biotechnical agents. While some histories involve themes of dependence and disempowerment, the vast majority emphasize the role of parent-farmers as active agents with diverse, flexible, partial, and strategic relationships to the biotechnical experts and streams around them. There was also a strong historical

sense running through the majority of the histories that the valley's parent farmers are moving from a challenging biotechnical past where child death was common and subsistence was basic towards an uncertain biotechnical future where biotechnical independence, and potentially the health of children and lands, is being exchanged for access to modern wealth and convenience.

Within the histories, power differentials between local parent-farmers and more powerful actors such as volatile agricultural markets, multinational corporations, the annual monsoon rains, or the Thai state are frequently recognized, and themes of resistance to these are common. Themes of dependence, constraint, structuration and powerlessness are far rarer in the narratives, either in relation to land use, or child health. These themes tend to depict Mae Chaem parents and farmers as effective biotechnical agents within the challenges of life and the diversity of the systems that surround them, but also indicate a concern that outside forces act to constrain the historical freedom of parent-farmers as empowered biotechnical agents.

Narratives regarding contract-farming arrangements between individual farmers and large multinational agro-corporations provide an excellent example of the tensions between local biotechnical agency and the constraining efforts of powerful external actors. Contract farming is a recent phenomenon in the valley, being reported for the first time in histories from 1997. The contract relationships involve farmers signing what is supposed to be a binding agreement with large and powerful transnational corporations. The agreements indicate a relationship where the company agrees to buy a farmer's entire crop at harvest time, thereby freeing the farmer of concerns regarding unstable market prices. In return, the farmer agrees to cultivate their land in a particular way and using a

particular regime of inputs and chemical products received on credit from the contract company. This contract relationship is the closest thing to a hegemonic and coercive relationship within the biotechnical streams of the valley. In discussing their involvement in contract-farming relationships parent-farmers often expressed pride at being one of the farmers asked by a corporation (*borisat*) to participate in a contract. However, the narratives also frequently indicate the malign tendencies of corporations to find reasons not to buy a farmer's crop at the end of the season if the market price is low. One farmer provided the example of a corporation who agreed to buy his crop of potatoes at a set price, but at the time of harvest, the company claimed that the potatoes were too large for their machinery and so gave a much lower price. Likewise, many farmers seemed delighted to tell stories of how they had agreed to farm on contract for a set price, but when the market price for their crop was higher at the time of harvest, they would sell it elsewhere and tell the agro-company extension agents that the crop had failed, or been stolen. One woman who had been contracted to grow seed corn in her fields by a large multinational talked about her arrangement while stripping yellow-orange kernels of corn off of their cobs and into a bowl for storage. Near the end of the interview she smiled and confided that her contract said she wasn't supposed to keep any of the seed for herself, but that she had held back several kilos of it from the company and intended to plant it herself the next year. Based on interviews with agro-company extension agents active in the valley at the time of fieldwork, it seems that the sense of empowered agency of parent-farmers with regards to coercive contract-farming relationships was so widespread, and so problematic for some of the more powerful multinational actors, that by late 2003 the Frito-Lays company, who had contracted Mae Chaem farmers to grow

potatoes for potato chips for several years, was considering pulling out of the valley on account of local Mae Chaem farmers not ‘respecting’ the terms of their contracts.

Even when faced with the ultimate structuring forces of life: serious illness, drought, and even child death, parent-farmers tended to discuss these with reference to loss, regret, and sadness, but not with a sense of disempowerment. In earlier years of the sample, where rice harvests were lost to rats or birds or an errant elephant or water buffalo, and where all attempts to drive them away failed, parent-farmers would often shrug at the memory and say that it was important for the animals to eat also. Serious child illnesses or droughts were often discussed in terms of disputes between parent-farmers and powerful spirits such as *paw gert mae gert*, or water spirits of field and sky (*phii muang fai*). With the right offerings, with the involvement of the right *maw muang* for a ‘cutting birth’ ritual, or the right monk for calling for rain (*khau fon*), or the right rocket sent up into the clouds at a rain calling festival, the child would get better and the rains would come. If, in the end, the child died, or the rains did not fall, parents and farmers expressed regret and sadness, but also recognition that the suffering that resulted was part of life and involved the resolution of demerit (*bap*) gained in the past, and through making merit (*tam bun*) now such misfortune might be avoided in the future.

Several closely connected themes informed this overall sense of empowered local biotechnical agency: diversity, flexibility, partiality, and strategic movement. The theme of diversity involves the various biotechnical streams that are widely seen as viable and accessible options. Khun Nok’s narrative illustrates his movements between land use strategies that involved spirit offerings, loans from the Lompong cooperative, cash cropping with pesticides, rice farming without, and most recently, a contract-farming

relationship with a large corporation. In the realm of child health Khun Nok reports seeking help from *maw tamyeh*, *khwan* rituals and *yuu duan* periods as well as the knowledge of village elders and the protective power of respected monks. Drugs and medicines are taken from the Mae Chaem hospital, or bought at local shops and vaccinations are received. Such diversity in biotechnical choices was widespread throughout the narratives in both land use and child health.

Connected to the ability to benefit from this biotechnical diversity are the agential themes of flexibility and partiality. These become essential in taking advantage of the multiple biotechnical systems available. Flexibility involves the perceived ability to switch freely between biotechnical streams at any time that the parent-farmer feels another stream might prove more effective in meeting one's interests, or the interests of one's children and lands. Parent-farmer narratives are full of stream switching in land use and in child health. Khun Nok gets medicines for his children from the hospital when it is convenient. At other times he buys them from local shops. He grows cash crops and uses pesticides until he sees the benefits diminish to the point that he no longer chooses to be involved. Instead, he rents his land out to another and chooses to focus on growing rice in fields closer to home.

The partial nature of biotechnical affiliation in Mae Chaem involves the idea that partial connections can readily be made, that streams can be mixed and combined freely by local actors and desirable pieces or practices from a particular stream can be used without necessarily accepting the whole. Alternately, multiple biotechnical practices and ontologies can be creatively maintained without necessarily compromising each other. This makes it unnecessary for parent-farmers to utilize strategies from only one

biotechnical stream if taking from multiple streams and mixing them simultaneously is possible. In Khun Nok's example, when his daughter's fever failed to respond to medicines from the drug store, he had no problem bringing the assistance of an elderly *Mae Ui*, and then a respected monk to bear on the situation. In other narratives, parent-farmers commonly report using three or four strategies from different streams simultaneously to deal with a child illness. As such, use of the practices of a particular stream does not necessarily mean that any deeper allegiance to its ontology is needed. However, as we will see through the quantitative analysis, use of a particular stream in one domain, such as in land use, does seem to make it more likely that the same stream will be used to address concerns in other domains, such as child health.

Finally, the child health and land use narratives also tend to show the agency of parent-farmers to be strategic. Parent-farmers actively consider the complex benefits and costs of particular biotechnical choices and move between them in order to follow their interests. Where decisions are not seen to be of much consequence, where the illness is minor, or the benefits or costs of a particular crop are minimal, then less strategy may be involved. However, where larger consequences are at stake, as in Khun Nok's decision to stop cash cropping in Lompong, parent-farmers go about making choices in a strategic manner. In choosing to stop cash cropping in Lompong, Khun Nok considered several issues: the financial costs of increasing chemical inputs, the risks involved in farming in an area where the water supply is not sufficient to meet growing needs, the unpleasantness of travel to Lompong and spraying with chemicals, and the perceived health risks involved in such chemical intensive agriculture. Khun Nok considered these issues against the option of stopping cultivation of cash crops in Lompong, renting the

land out to someone else, and focussing on his family and rice fields closer to home. Stopping cash cropping made more for him and his family at that particular time. When several years later the opportunity to grow feed corn, a less chemical intensive crop, on contract for a guaranteed price, he reconsidered the situation and began working in his Lompong fields again. These decisions were based on what Khun Nok saw as his own interests, and those of his family. His evaluation of the particular costs and benefits of the various biotechnical strategies, and his resulting manoeuvres, involved evaluation of both pragmatic economic and ecological consequences, as well as consideration of more aesthetic ones.

Taken together, the parent-farmer narratives portray an overall picture of empowered local agency whereby parent-farmers strategically manoeuvre between the diverse biotechnical choices that they see open to them. Connections to associated biotechnical streams are consistently flexible and partial as parent-farmers switch between and combining them in order to best achieve health, wealth and happiness for themselves and their families.

In a very few interviews there the overall narrative of empowerment and freedom was combined with a counter narrative that the current history of biotechnology in the valley is leading towards powerlessness and dependence on outside forces, combined with the possibility of being trapped in modern technological relationships that will impoverish local families and lead to unhappiness. Where these themes occurred, they were almost invariably associated with histories provided by older men or women and the sense of powerlessness was generally not regarding their own lives or lands, but about the lives and lands of their adult children. All of these cases discussed introduced streams

and strategies of modern biotechnology as forms of *addiction* whereby local lives and lands are ensnared in relationships that might seem appealing at first, but are ultimately destructive, and once started cannot be escaped. This notion of biotechnical addiction is discussed in more detail in chapter 15.

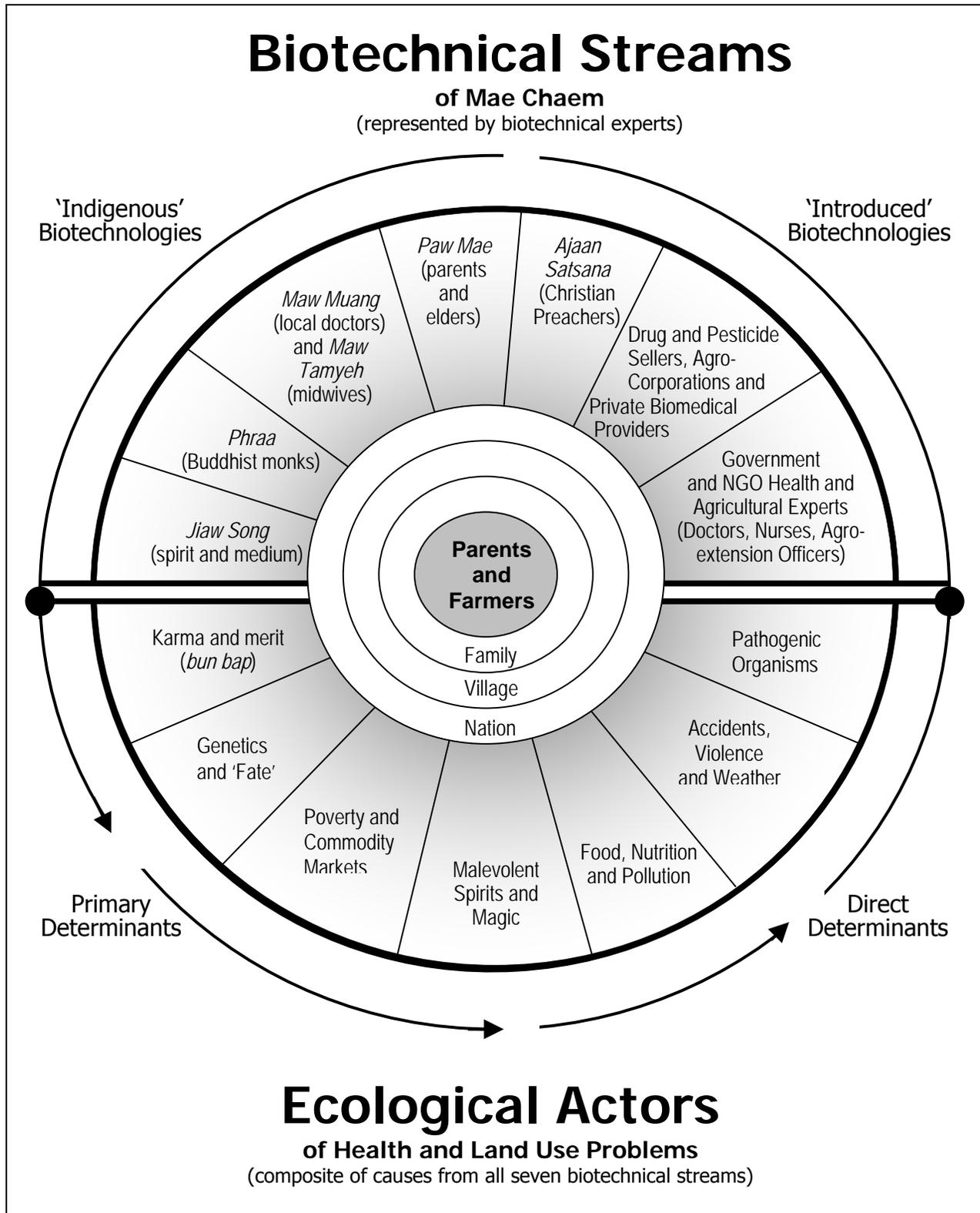
14.2 Agency and Biotechnical Complexity: A General Model of Land Use and Child Health

The farmers and parents of Mae Chaem build their biotechnical worlds from an array of cultural streams that transcends the lazy dualism of ‘modern’ and ‘traditional’. With effort and experience, tasting and practice, the waters of various biotechnical streams are sampled and, where found attractive, added to personal biotechnical worlds that parents and farmers draw upon to support crops and families. Through anecdotes and advice these biotechnical worlds may be communicated to others, including one’s children, and over time may be marginally or radically altered depending on the demands of personal experience. In Mae Chaem, the histories of parent-farmers illustrate diverse and flexible approaches to child health and land use that are refined and expanded based on pragmatic and aesthetic evaluation within a context of lived experience. These personal worlds of medical and ecological recourse are open to change and alteration and help define both conditions and definitions of health and illness, as well as the biotechnical practices used for addressing health concerns in humans and rice.

The complexity of reported child health and land use practices in Mae Chaem is daunting, however it is possible to consider all of the various biotechnical streams as part of a total universe of biotechnical possibilities that parent-farmer are able to manoeuvre within. Figure 14.1 introduces a general model of the seven biotechnical streams

identified in my work in the valleys and hills of Mae Chaem. At the centre of this diagram is the primary agent: the individual. The top half of the diagram shows the seven biotechnical streams. The bottom half shows seven ecological actors, or determinants, used by biotechnical experts (and parent-farmers) to explain illness in children and fields. The mandala-like symmetry is an unintentional, but appropriate, geometry in that it has received considerable attention in the field of public health, particularly in relation to ecosystem effects on human health (Hancock 1985) where the mandala is used as a circular symbol of the universe of health influences upon an individual. Within this figure the primary parent/farmer agent is encircled by the daily social networks of family or household (*kop krua*) the larger village (*baan*) and the more abstract notion of nation or people (*chaaw*). These embracing circles are intended to stand for the primary fields of social influence and identity that influence and exert pressure on parent/farmers in Mae Chaem. The larger family or kin group, beyond the primary care givers that we are calling ‘parents’ and ‘farmers’, plays a significant role in conditioning and influencing the decisions of Thai parents and farmers even though the primary agent remains the parent and farmer, however the position of parent and farmer is actually composed, shared, or negotiated. The second encircling layer is the more inclusive notion of village or community (*baan*), a field of identity and interaction that has long been recognized as a central feature of the Thai ethnoscape (Hirsch 1993). Despite claims by some (Riggs 1997) that modern transformations of Thai society have caused the Thai village to wane to the point of insignificance as a primary social institution, the social network of the village remains the defining field of local identity and interaction in Mae Chaem.

Figure 14.1: The Biotechnical Universe of Mae Chaem



The third encircling layer of nation (*chaaw*), in terms of a people, is intended to signify the influence of emerging and dynamic notions of national identity, or ‘Thai-ness’, (Thongchai 1994) as well as alternately constructed notions of identity composed around the idea of being Karen (Pgha’knyaw) or being Northern Thai (Muang).

Within this model, the central parent/farmer and encompassing social fields are surrounded from above by the array of biotechnical experts that may be encountered in the valley. Many are human representatives of particular streams with vested personal, political, or economic motives to extend and defend the stream with which they are allied. Others are non-human actants explicitly or implicitly designed to represent and extend allied biotechnical streams within the lives of parent-farmers. These would include pesticide advertisements posted on road sides or in rice fields, spirit shrines at street corners, or the standardized architecture of public health clinics or Buddhist temples. Figure 1 depicts the main stream ‘representatives’ within a series of seven biotechnical streams. These include four ‘indigenous’ ones that have relatively long historic roots in the valley, and three ‘introduced’ ones that have arrived relatively recently and largely over the past fifty years⁷⁴. The ‘indigenous’ biotechnologies of Mae Chaem are those that have been strongly localized and that are woven deeply within the identities and social structures of the valley. They are represented variously by Buddhist monks (*phra*), spirits and spirit mediums (*jiaw song*), local doctors (*maw muang*) or midwives (*maw tamyeh*) trained in ritual and herbal practices and parents or elders (*paw ui mae ui*). The introduced streams include those advocated by Christian missionaries (*ajaan satsana*), government and NGO researchers, doctors and extension workers, and the many levels of commercial health care and agricultural experts ranging from local

drug and pesticide sellers to national and multinational corporations. While the diagram separates and orders each of these seven streams, most experts are as likely to borrow from alternate systems in order to strengthen or augment their own biotechnical practices as they are to draw strong oppositional borders between themselves and alternate biotechnical streams. As such, while ethnographically based, the boundaries between the seven streams are not fixed. In actual application, both indigenous and introduced streams of biotechnical knowledge and practice are frequently allied and entangled.

These allied and entangled streams and their associated expert representatives are, however, only half of the picture. Completing the mandala, surrounding the parent/farmer from below, are the various ecological actors and causal forces used to understand illness and suffering in Mae Chaem. These are depicted as determinants of biotechnical health (of children or crops) ranging from ultimate, underlying causes of karma, genetics, and fate, through intermediate causes such as poverty, malevolent spirits, magical attack, and nutrition to the most immediate and material causes of suffering and loss, including issues of disease causing organisms, accidents and weather. Of course, particular biotechnical streams recognize and respond to particular ecological determinants: Buddhist streams recognize and respond to notions of karma and fate, the National medical stream responds to positive lab results and biometric diagnosis of physical problems. Each stream identifies causes and cures according to the ecological determinants that it selectively recognizes. Health and land use problems are then understood and represented in ways that are consistent with the extension of the stream's actor-network.

This general model provides a unified sense of the biotechnical streams available to local parents and farmers, and the contexts within which local biotechnical agency is practiced. Over the past fifty years parents and farmers have moved within this universe of biotechnical choices in particular ways. Analysis of the collective personal narratives collected in lowland Mae Chaem from Muang parent-farmers⁷⁵ provides a picture of how parent and farmer choices, as reflected through remembered practices, and taken together, have changed over time. In analysing the Muang child health histories, I have distinguished between curative and protective health practices. The diagram for each decade (with arrows) reflects all health practices reported including both curative and protective. Protective practices (also referred to below as preventions) are often general in nature and not connected to particular illnesses, while curative practices are targeted towards resolving a particular concern. The table for each decade is designed to reflect practices as related to particular child health concerns. As such, it includes cures but not protective practices reported by Muang parent-farmers. As mentioned in chapter five, the thirty-six Muang histories represent thirty-six different households from the district centre and nearby lowland Muang villages, and include child health and related land use accounts reported by parent-farmers for a total of fifty five children who were born in, or immediately prior to, the period from 1952 to 2002.

14.3 Overview of Histories: 1952-62 (2495-2505)

Although the valley was isolated and inaccessible by road, and upland areas even more so, the parent-farmer narratives indicate that several biotechnical streams were present even at this early time. Buddhist, Domestic, Muang, and Market streams of

biotechnology and expertise are all represented in the Muang parent-farmer narratives from this era. No parents-farmers reported resort to nationally sponsored biomedical or agricultural extension services at this time though some very early services, such as vaccinations and a nurse-midwife were available in the district centre after 1957.

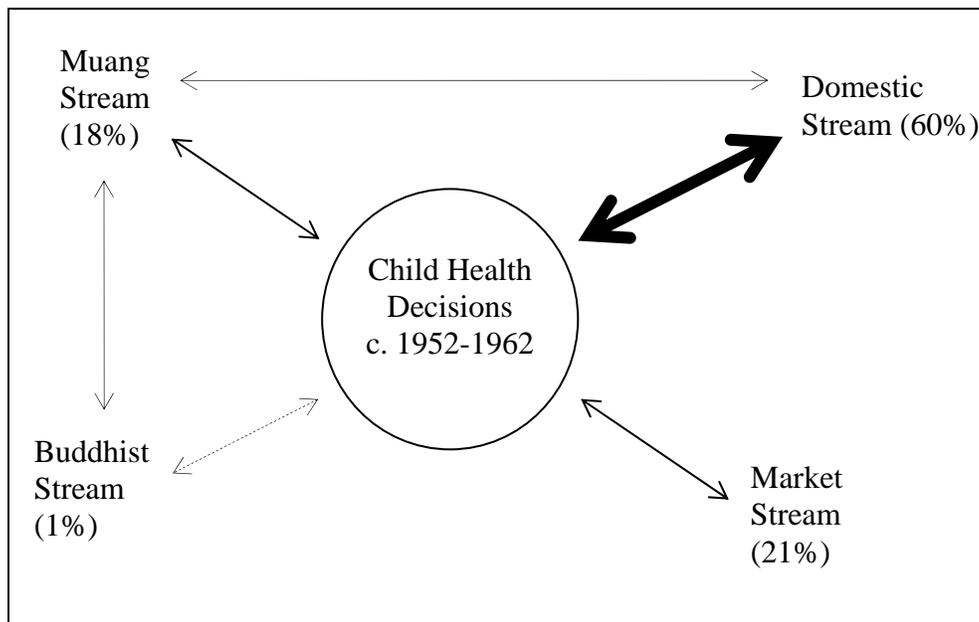
Taken together, a total of 147 child health actions (including cures and preventions) were reported in the lowlands within eight parent-farmer narratives for the years 1952 through 1962. Based on these recollections, by far the most common responses to child health concerns (60%, n=88) took place within the domestic sphere of household and kin based medicine. The kinds of practices reported generally involved herbal cures recommended by non-specialist older neighbours. Herb and diet based practices, Khwan rituals, and complex month long yuu duan periods were common as preventative, protective, and curative health technologies for both mother and child.

The next most commonly remembered stream of health practice involved medicines that were brought into the valley by traders and purchased through village shops, traveling medicine sellers, or at the Mae Chaem market. These were commonly used for problems such as childhood fever and parasites. It is clear from the parent-farmer narratives that market based streams of biotechnical expertise were popular in the valley well before the arrival of roads. The expertise of maw muang was called on somewhat less frequently than market bought cures, but generally for more serious illnesses such as high fevers, and to resolve suffering from the common complaint of khii yeh (crying a lot), often associated with improper treatment of a child who is the reincarnation of a recently deceased ancestor. Of the eleven births reported for this period, all took place with the help of maw tamyeh. The only two reported instances

involving Buddhist expertise used to address child health concerns were preventative actions: one parent-farmer recalled offering rice (tam bun) to help ensure an easy delivery for herself; another asked a high ranking monk (ajaan wat) to give a fortunate name to a new baby boy.

Figure 14.2 shows the child health practices (by stream) reported by Muang parent-farmers for this period. The varying weights of line used emphasize the relative frequency with which parents recalled using the various available streams with the actual percentage of health incidents (cures and preventions) using that stream is noted beside the stream name. Lines connecting the Buddhist stream and Muang stream, and the Muang stream and domestic stream indicate particularly close relationships between the streams themselves.

Figure 14.2: Muang Child Health Practices by Stream, 1952-62 (n=147)



This diagram illustrates that by far the most common stream (60% of all reported cures) of child health expertise between 1952 and 1962 involved reliance on the domestic sphere of household and kin based medicine. It also illustrates that, for the 1950's and into the 1960's, the Muang stream and market stream were the second most frequently sought out systems of biotechnical expertise remembered by parent-farmers. No parent-farmers reported reliance on state sponsored biotechnical expertise at this time, and only a very small percentage of remembered actions involving child health that relied upon formal monastic expertise.

Beyond looking at the kinds of biotechnical streams relied on by parent-farmers, the histories of child health also provide information on what kinds of illnesses parents remember their children becoming sick from, and who they approached for different illnesses. Figure 14.3 summarizes child health challenges (illnesses or health problems) that were reported for this period along with the stream of biotechnical expertise reportedly used to address them:

Figure 14.3: Lowland Child Health Cures by Illness (1952-62)

| | Total Incidence | Domestic | Muang | Market |
|---------------------------------|-----------------|----------|-------|--------|
| Births/Deliveries ⁷⁶ | 11 | | 11 | |
| Common Fevers/Colds | 58 | 42 | | 16 |
| Diarrhoea | 11 | 10 | 1 | |
| Headaches/Gen Pain | 0 | | | |
| Nausea (Preg. Related) | 2 | 1 | | 1 |
| High Fever | 6 | 2 | 4 | |
| Worms/ <i>Pung Lo</i> | 9 | | | 9 |
| Crying a lot | 8 | 3 | 5 | |
| Gas/ <i>Tong Uut</i> | 1 | 1 | | |
| Other | 2 | 2 | | |
| Total Cures | 108 | 61 | 21 | 26 |

A total of 108 child health problems were reported over this eleven year period, the vast majority of them (58) being common fevers and colds (*kai wat, pen wat*). Concerns

regarding childhood diarrhoea (11 incidents), malnutrition related to worms or parasites⁷⁷ (*pung lo*, 9 incidents), crying a lot (*khii yeh*, 8 incidents) and high fevers (6 incidents) were also recalled and reported with some frequency. Medicines from commercial sources were used either to treat malnutrition related to parasites (9 incidents), or for relatively minor fevers or colds.

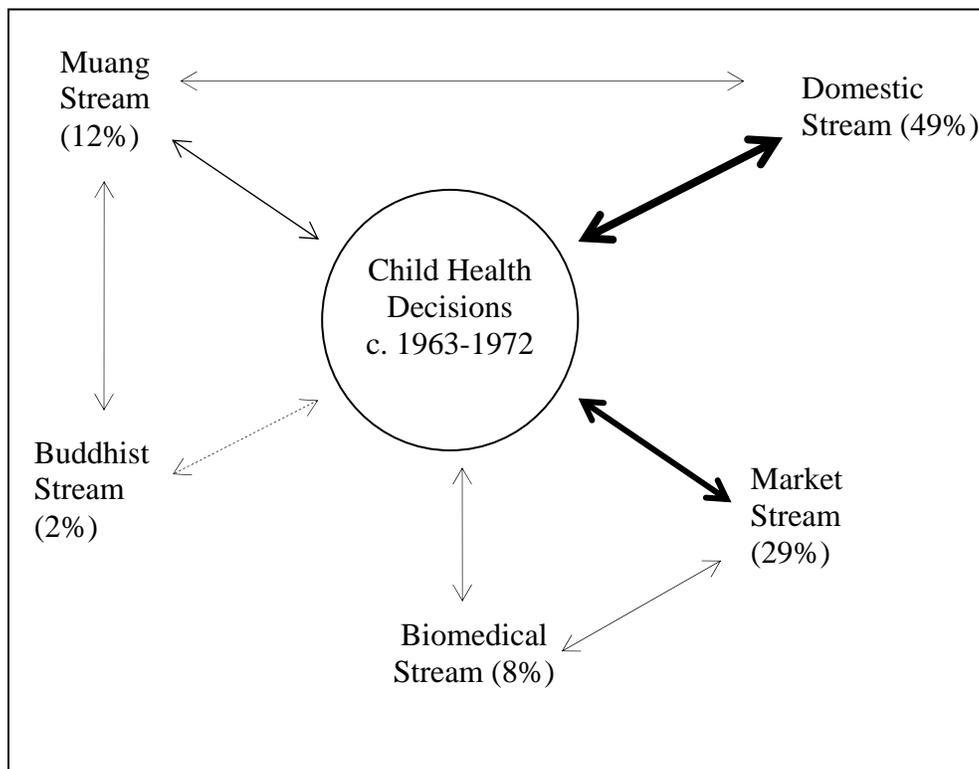
While the child health histories collected from parent-farmers focus mainly on child health, morbidity and illness, they also illustrate that child deaths were common at this period of time. While full histories were recorded for eleven births over this time period, a total of thirteen births to Muang parents were reported and three of these children died before the age of six. This provides a child mortality rate (5 and under) of approximately 20%. This is generally consistent with data on pre-industrial child mortality collected in northern Thai communities by Kunstadter *et al.*(1986) and others. Information on child mortality in the upland Pgha'knyaw communities of Mae Chaem is sparse for this era, but rates were likely even higher.

14.4 Decade Overview: 1963-72 (2506-2515)

Based on the parent-farmer histories, the most commonly accessed stream of child health practice between 1962 and 1972, as in the 1950's, was the domestic. Out of 153 child health practices reported, reliance on domestic expertise informed 49% of them. Domestic child health strategies continued to revolve around herbal medicines and washes, preventative *khwan* rituals, and *yuu duan* periods following child birth. Almost 30% of child health practices recalled for the decade involved reliance on commercial market based expertise, 21% on *Maw Muang* or *Maw Tamyeh*, and 2% on Buddhist

practices. 8% of child health practices reported between 1963 and 1972 involved reliance on newly available national biomedical services and associated provision of vaccinations and simple medicines through the new hospital and clinic. *Maw tamyeh* continued to deliver all of the reported births (n=7) and also played a major role in preventative health rituals associated with newborns.

Figure 14.4: Muang Child Health Practices by Stream, 1963-72 (n=153)



From 1963 through 1972, substantial changes are evident in the streams relied upon by parent-farmers. Out of 153 child health practices reported, reliance on domestic expertise informed 49% of them. This contrasts with 60% of reported health practices in the previous decade. Increased availability and awareness of free or inexpensive national health services and increased availability of vaccinations and simple medicines through

the new Mae Chaem hospital and *anamai* likely account for the lower percentage of reported practices reliant upon the domestic.

Of the 153 child health practices reported by lowland parent farmers in this period, 97 were associated with health problems requiring a cure. Of these, the majority of health problems were described as *kai wat*, *pen wat*, or *kai thamadaa*, all generally falling under the category of common fevers and colds (56 incidents). Figure 14.5 outlines the various kinds of child illness that parents reported between 1963-72, how many incidents were reported, and what biotechnical stream was relied upon.

As illustrated, parent-farmers tended to rely on either domestic cures (usually herbal

Figure 14.5 Lowland Child Health Cures by Illness (1963-72)

| | Total Incidence | Domestic | Muang | Buddhist | Market | Biomed |
|---------------------------|--------------------|----------|-------|----------|--------|--------|
| Deliveries | 7 | | 7 | | | |
| Common Fevers/Colds | 56 | 23 | 2 | | 24 | 7 |
| Diarrhoea | 11 | 8 | | | 3 | |
| Headaches/Gen Pain | 0 | | | | | |
| Nausea (Preg. Related) | 1 | 1 | | | | |
| High Fever | 6 | 1 | 3 | | 2 | |
| Worms/Pung Lo | 6 | | | | 6 | |
| Crying a lot | 3 | | 1 | 2 | | |
| Gas/Tong Uut | 3 | 1 | 2 | | | |
| Other | 4 | 4 | | | | |
| Total Cures | 97 | 38 | 15 | 2 | 35 | 7 |

remedies or *khwan* rituals) or on medicines bought from the market or other medicine sellers. As national biomedical services became available parents who were near the district centre began using these services to address common childhood concerns.

Diarrhoea (11 incidents), high fevers (6 incidents), and malnutrition due to parasites (6 incidents) were also relatively common during this decade.

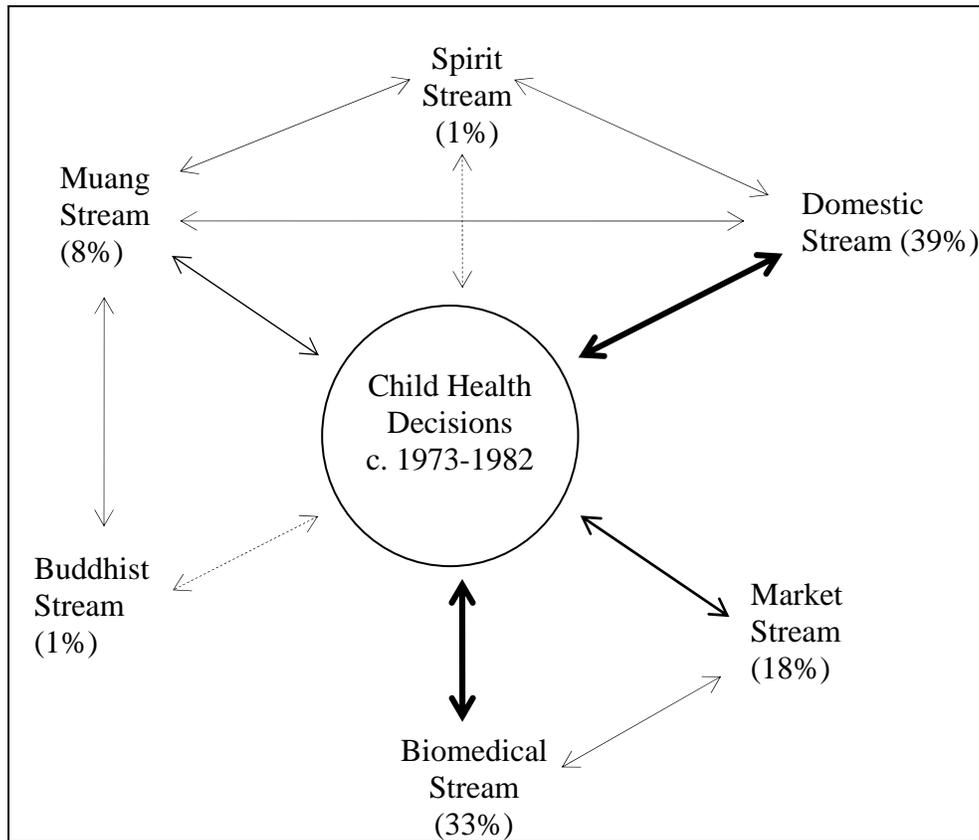
Full histories were recorded for seven births over this time period, a total of thirteen births to Muang parents were reported and three of these children died at the age of six or younger. This provides a child (six and under) mortality rate of approximately 20%. This is generally consistent with data on pre-health transition child mortality collected in northern Thai communities by Kunstadter (1986) and others. Information on child mortality in the upland Pgha'knyaw communities of Mae Chaem is sparse for this era, but the rates were likely even higher.

14.5 Decade Overview: 1973-82 (2516-2525)

The arrival of roads and the construction of state infrastructure in the valley over this period was accompanied by corresponding shifts in reported child health practices. Far more of the reported child health actions involved reliance on the national biomedical systems. Of 189 reported child health practices reported by parents for this period, 33% are associated with a reliance on biomedical streams of expertise. From 1952 to 1972 all reported births were delivered with the help of a local *maw tamyeh*. From 1973 to 1982, of the eight deliveries reported, three were made with the help of national biomedical experts (doctors or nurses). Still, even with this rapid increase, the domestic stream remains the most commonly relied upon source of biotechnical action in responding to child health concerns.

Figure 14.6 shows the lowland child health practices (by stream) reported for this period as a percentage of the total number of health incidents (cures and preventions) reported over the eleven year period (n=189):

Figure 14.6: Muang Child Health Practices by Stream, 1973-82 (n=189)



Practices drawing on the domestic stream still make up nearly 40% of the reported child health responses. Reliance on the biotechnical expertise of Buddhist monks remains rare, while the first reported reliance on a spirit medium for dealing with child health issues occurs in this period. The absence of spirit mediums in earlier years seems to support the argument that while spirit mediumship in northern Thailand depends on much older roots, the form that it takes in contemporary northern Thai society is a relatively new one that has grown out of contemporary Thai social and gender relations (Morris 2000).

Figure 14.7 illustrates the child health problems reported between 1973-82, number of incidents reported, and what biotechnical streams were relied upon. As in previous decades, the majority of child health problems (72 of 114) described fall within

the category of common fevers or colds. Interestingly, a quite common local illness category, *khii yeh* (crying a lot), is not mentioned during this decade, although it appears both earlier and later.

Figure 14.7: Lowland Child Health Cures by Illness (1973-82)

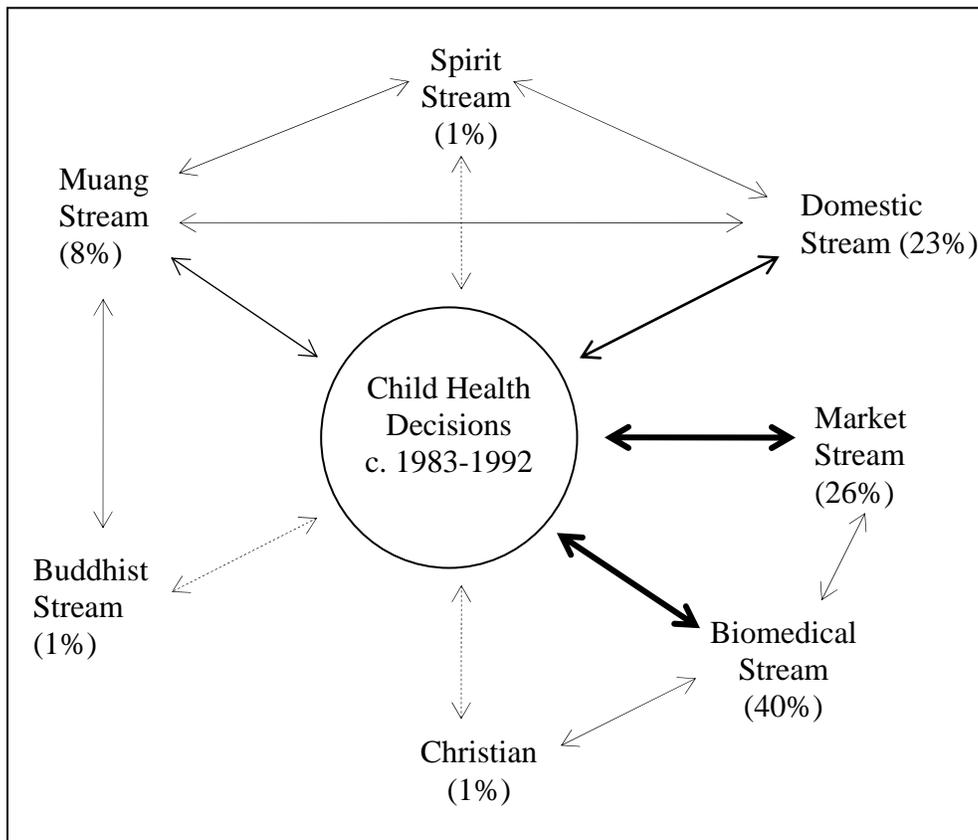
| | Incidence | Dom. | Muang | Buddh. | Pharma | Biomed | Spirit |
|--------------------|-----------|------|-------|--------|--------|--------|--------|
| Deliveries | 8 | | 5 | | | 3 | |
| Common Fever/Colds | 72 | 31 | 5 | | 18 | 18 | |
| Diarhea | 5 | 4 | | | 1 | | |
| Headache/Gen Pain | 0 | | | | | | |
| Nausea (Preg.) | 3 | 1 | | | 1 | 1 | |
| High Fever | 8 | 2 | 3 | 1 | 1 | | 1 |
| Worms/Pung Lo | 8 | | | | 8 | | |
| Crying a lot | 0 | | | | | | |
| Gas/Tong Uut | 1 | 1 | | | | | |
| Other | 9 | 4 | | | | 5 | |
| Total Cures | 114 | 43 | 13 | 1 | 29 | 27 | 1 |

14.6 Decade Overview: 1983-92 (2526-2535)

Biomedicine continued to increase in popularity through this period to 40% of child health choices, while the percentage of domestic practices continues to decline. Only two of eight recorded births are attended by *maw tamyeh*. After loosing ground in the 1970's, the commercial stream of pharmacists and medicine sellers makes gains in this decade with 26% of remembered child health practices relying on commercial products and expertise. This period is the first where more parents reported helping their children with medicines bought at local drug shops or market stalls than helped them through domestic expertise with herbs brewed at home, or with *khwan* rituals done by elders. The early 1990's also see the first reports of Christian health practices in the lowlands making this decade the first where all seven biotechnical streams are available and reported in the district centre. The percentage of practices

relying on *maw Muang* was similar to previous years even though fewer women relied on *maw tamyeh* in child birth. Figure 14.8 shows the proportion of health choices, 1983 to 1992.

Figure 14.8: Muang Child Health Practices by Stream, 1983-92 (n=181)



Within the domain of land use, this period sees the increasing importance of cash crops in the economy of lowland Mae Chaem. Nearly 30% of parent-farmers reported using pesticides in this decade, nearly all in association with cash crops (red onion, soy, corn, tobacco) rather than with the wet rice production that remains the staple of the valley. Several parent-farmers also reported working as wage labourers within the valley

working for other farmers on cash cropping, or with NGO and national Thai government efforts to reforest upland areas.

Figure 14.9 documents the child health problems reported between 1983-92, how many incidents were reported, and what biotechnical stream was relied upon. Both Buddhist and Christian streams were reported only as preventatives in this decade and so do not appear in the table of cures.

Figure 14.9: Lowland Child Health Cures by Illness (1983-92)

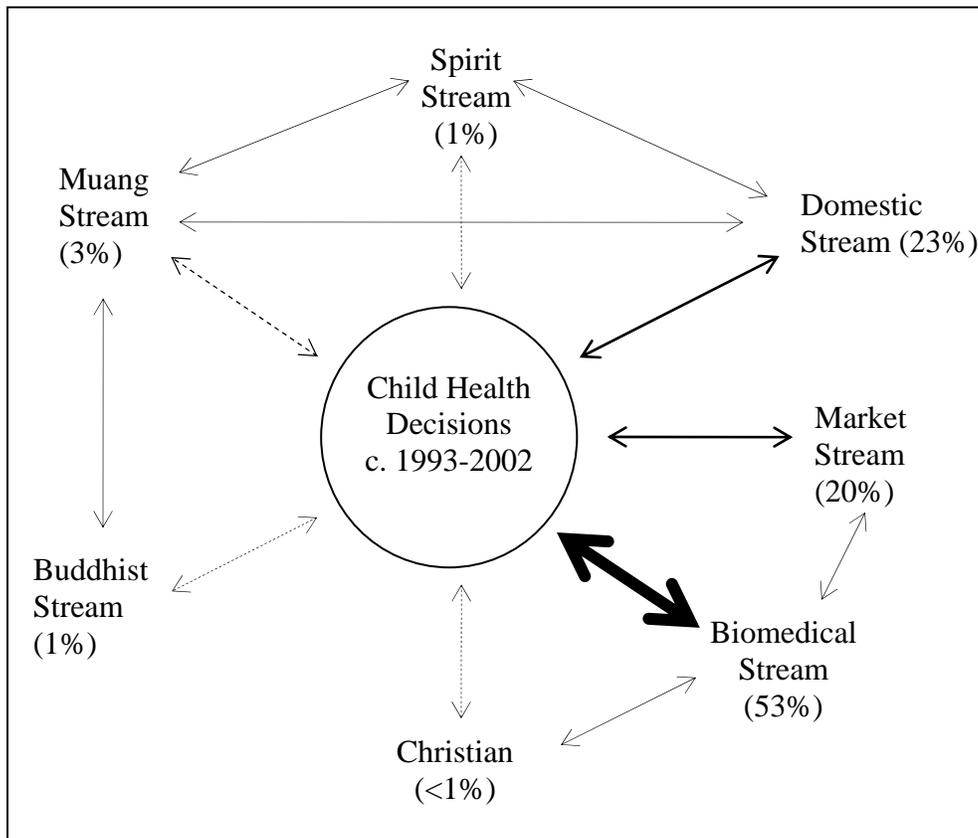
| | Incidence | Domestic | Muang | Pharma | Biomed | Spirit |
|------------------------|-----------|----------|-------|--------|--------|--------|
| Deliveries | 8 | | 2 | | 6 | |
| Common Fevers/Colds | 56 | 7 | | 22 | 26 | 1 |
| Diarhea | 5 | 4 | | | 1 | |
| Headaches/Gen Pain | 8 | | | 1 | 7 | |
| Nausea (Preg. Related) | 3 | | | 1 | 2 | |
| High Fever | 2 | | | | 2 | |
| Worms/Pung Lo | 11 | | | 11 | | |
| Crying a lot | 8 | 1 | 7 | | | |
| Gas/Tong Uut | 0 | | | | | |
| Other | 14 | 3 | 3 | 4 | 4 | |
| Total Cures | 115 | 15 | 12 | 39 | 48 | 1 |

As in previous years, the vast majority of illnesses reported were common fevers and colds, but far fewer of these were remembered as being treated with the herbs or *khwan* rituals of domestic expertise. *khii yeh* (crying a lot) returns to the sample with eight instances, seven of which are dealt with through accessing the expertise of a maw Muang. For the first time headaches (*buat hua*) and general pain (*muay*) are reported by parents as a child illness (eight instances), all of which are dealt with through either biomedical authority, or commercial products bought at market.

14.7 Decade Overview: 1993-2002 (2536-2545)

The total number of child health episodes is much higher in this period (n=525) than in the others. This is partly because more than two-thirds of the sample population of parent-farmers is between the ages of 18 and 45 (reflecting the broader age distribution of the valley) and so more have had children in this decade (nineteen births recorded) than in any of the previous periods. As discussed in chapter 15, it is also because the number of reported illnesses per child is higher in this decade. Out of the nineteen births recorded in this decade, none involved the attendance of a traditionally trained *maw tamyeh*. Based on the parent-farmer narratives from this decade, national biomedicine continues its ascendancy as the child health stream of choice, but still only 50% of reported child health practices involved a visit to a hospital or health clinic (*anamai*). The other half of the time, parent-farmers access forms of health expertise in the home or at the market that do not involve national systems of standardization or health surveillance⁷⁸. Increasingly, though still infrequently, some Mae Chaem parents report accessing health services, such as hospitals, outside of the valley. In some cases this is a sign of increased rural-urban connections as young parents migrate seasonally to find work in the city taking their children, and attendant child health concerns, along with them. In other instances, it is an indication of local perceptions that hospitals in the city of Chiang Mai, and especially private hospitals in Chiang Mai, have better doctors and provide better care than does the Mae Chaem hospital.

Figure 14.10: Muang Child Health Practices by Stream, 1993-2002 (n=525)



For the first time since the 1960's the percentage of health practices where parents report relying on domestic expertise does not drop, but remains steady at 23% of all reported health practices. The percentage of practices involving the Market stream drops slightly as the prevalence of national biomedicine increases. While the Muang stream drops in terms of percentage of practices, it remains stable in terms of actual reported cures as do the Buddhist and Christian streams.

Figure 14.11 documents the child health problems reported between 1993-2002, how many incidents were reported, and what biotechnical stream was relied upon:

Figure 14.11: Lowland Child Health Cures by Illness (1993-2002)

| | # of incidents | Dom. | Muang | Buddh. | Pharma | Biomed | Spirit | Christ. |
|------------------------|----------------|------|-------|--------|--------|--------|--------|---------|
| Deliveries | 19 | - | - | - | - | 19 | - | - |
| Common Fevers/Colds | 195 | 8 | 2 | 1 | 62 | 121 | 1 | - |
| Diarrhoea | 34 | 7 | - | - | 11 | 15 | - | 1 |
| Headache/Gen Pain | 17 | 5 | - | - | 1 | 10 | 1 | - |
| Nausea (Preg. Related) | 15 | 8 | - | - | 1 | 6 | - | - |
| High Fever | 13 | 2 | 4 | 1 | | 4 | 1 | 1 |
| Worms/Pung Lo | 12 | - | - | - | 8 | 4 | - | - |
| Crying a lot | 10 | 5 | 4 | - | - | - | 1 | - |
| Gas/Tong Uut | 0 | - | - | - | - | - | - | - |
| Other | 29 | 3 | 3 | 1 | 4 | 18 | - | - |
| Total Cures | 344 | 38 | 13 | 3 | 87 | 197 | 4 | 2 |

As in previous decades, the majority of child health problems reported by parents involved common fevers and colds, often attributed by parents to changing weather (*akaat*) or the changing bodily states of children (teething, sitting up, walking, etc.). Problems related to childhood diarrhoea and headaches are the next most common reported concerns, both of which are dealt with most commonly through biomedical, market, or domestic streams. Problems with high childhood fevers are reported to be dealt with as often by resort to maw Muang as to biomedical systems (4 instances each).

14.8 Stories and Numbers: A Composite Biotechnical History of Mae Chaem, 1952-2002

Over successive interviews and multiple narratives, each spanning several years, the individual accounts of parent and farmers begin to show particular patterns and trends. It is through analysing these patterns and trends that I have tried to trace some of the patterned connections between land use practices and child health change in the

valley. In terms of quantitative analysis, I do not make any claims to statistical significance, although interviews were conducted based on a representative sample of the valley's population, as discussed in chapter 3. The numbers, rates and percentages discussed in this chapter simply provide a way to talk about multiple histories as a composite counterpart to the more individual and personal case studies provided in chapter five.

Figure 14.12 provides a composite picture of the reported health practices, by decade. It covers all of the child health practices (n=1,195) reported for the past fifty years by khon Muang parents from the lowland villages in and around Mae Chaem, and includes all reported instances of health practices aimed at preventing illness and strengthening child health (pre-natal and post-natal), as well as those aimed at curing existing problems (preventions and cures). The table provides a composite picture of reported child health practices in the Mae Chaem lowlands. Numbers outside brackets indicate total number of health practices (cures or preventions) reported for that stream in that decade. Numbers inside brackets indicate number of health practices that depended

Figure 14.12: What Streams Have Parents Chosen?

Muang Child Health Choices (Preventions and Cures), 1952-2002, by Stream (n=1,195)

| | 1952-62 | 1963-72 | 1973-82 | 1983-92 | 1993-2002 |
|---------------|----------|-----------------------|-----------------------|-----------------------|------------------------|
| Biomedicine | 0 | 13 (11 [#]) | 63 (35 [#]) | 75 (27 [#]) | 274 (72 [#]) |
| Buddhist | 2 | 3 | 2 | 1 | 5 |
| Spirit | 0 | 0 | 1 | 1 | 4 |
| Pharma/Pest | 31 | 45 | 34 | 47 | 107 |
| Domestic | 88 | 73 | 73 | 42 | 115 |
| Christian | 0 | 0 | 0 | 1 | 2 |
| Muang Experts | 26 (13*) | 19 (9*) | 16 (6*) | 14 (2*) | 18 (0*) |

* Indicates the number of incidents involving Maw Tamyeh (traditional birth attendants) rather than Maw Muang.

Indicates the number of incidents involving *anamai* (Public Health Centres) rather than biomedical hospitals.

on a particular subset of that stream's biotechnical expertise (maw tamyeh as opposed to maw Muang, and health clinics as opposed to the hospital).

In the 1950's there are only four biotechnical streams represented in the Muang parent-farmer narratives: no Biomedical, Christian, or Spirit related health practices are reported. The first biomedical practices are reported in the 1960's, the first spirit medium (jiaw song) practices are reported in the 1970's, and the first Christian health practices are reported in the 1980's. By 1992 all seven streams are present in the sample with biomedical, commercial, and domestic forms of medicine far more commonly reported than the other streams.

The first thing that is clear from this composite picture, though not terribly surprising, is that the biomedical stream of practice, accessed largely through the valley's health centres (anamai) in the past and now more commonly through the Mae Chaem Hospital, is currently the predominant strategy for child health used by local parents in and around the district centre. This is not surprising considering that the valley's hospital is in the district centre with very good road access to it from all parts of the southern Mae Chaem lowlands. However, it is interesting to see that while the percentage of biomedical child health practices reported by parent-farmers increases relative to other systems over time, the actual incidences of non-biomedical health choices remain relatively unchanged, or increase slightly, over the five decades where parent-farmer narratives were collected. This seems to indicate that, in terms of child health, and with the exception of female Maw Tamyeh (addressed below), all seven of the valley's biotechnical streams of expertise seem to be at least maintaining their presence within the biotechnical spectrum of the valley. This understanding is reinforced by the persistence

of Domestic, Muang and Buddhist streams in all years of the chapter five case studies, as well as more generally in the parent-farmer histories. It is also useful to note that the past fifty years of development and globalization in Mae Chaem has resulted in a more diverse spectrum of child health streams in the valley, rather than a more homogenous range.

The one stream of biotechnical expertise in the valley that seems to be doing least well within the current spectrum is the stream of Muang expertise, and particularly the subset of Muang expertise practiced by female maw Muang, or traditional birth attendants. In the final row of the above composite table, the first number (not in brackets) indicates the total instance of reliance on Muang expertise over the five time periods. The second number (in brackets) indicates the number of instances where the stream is reported to be accessed through maw tamyeh. In the 1950's there were thirteen reported child health practices involving maw tamyeh. This drops to two instances in the 1980's and none reported between 1993-2002, despite the general rise in the total number of health practices reported over the fifty year time period as a whole. In contrast, the actual number of reported practices involving male maw Muang shows a general increase over time with thirteen incidents in the 1950's and eighteen reported between 1993-2002. The reasons for this gendered split are likely related to efforts made by the Thai government and the national Thai health system to encourage women to go to hospitals for the birth of their children, thereby displacing the biotechnical authority and expertise of maw tamyeh within the domain of child birth.

Figure 14.13 provides another composite overview of reported child health changes, based on parent-farmer narratives, over the past fifty years. It illustrates the reporting of different kinds of child health problems over time rather than the reporting of parental responses and choices regarding those problems. Where the previous table provided a picture of shifting alliances between particular streams, this table provides a picture of the changing child health problems, as defined and reported by parent-farmers, over the fifty year period. The table covers all of the child health concerns (n=778) reported between 1952 and 2002 by Muang parents.

Figure 14.13: Child Illnesses Reported by Muang Parent-Farmers 1952-2002, by Illness and as % of Total (n=778)

| | 1952-62 | 1963-72 | 1973-82 | 1983-92 | 1993-2002 |
|---------------------------|----------|----------|----------|----------|-----------|
| Deliveries | 11 (10%) | 7 (7%) | 8 (7%) | 8 (7%) | 19 (6%) |
| Common | | | | | |
| Fevers/Colds | 58 (54%) | 56 (58%) | 72 (63%) | 56 (49%) | 195 (57%) |
| Diarhea | 11 (10%) | 11 (11%) | 5 (4%) | 5 (4%) | 34 (10%) |
| Headaches/ Gen. Pain | 0 (0%) | 0 (0%) | 0 (0%) | 8 (7%) | 17 (5%) |
| Nausea (Preg. Related) | 2 (2%) | 1 (1%) | 3 (3%) | 3 (3%) | 15 (4%) |
| High Fever | 6 (6%) | 6 (6%) | 8 (7%) | 2 (2%) | 13 (4%) |
| Worms/Pung Lo | 9 (8%) | 6 (6%) | 8 (7%) | 11 (10%) | 12 (3%) |
| Crying a lot | 8 (7%) | 3 (3%) | 0 (0%) | 8 (7%) | 10 (3%) |
| Gas/Tong Uut | 1 (1%) | 3 (3%) | 1 (1%) | 0 (0%) | 0 (0%) |
| Other | 2 (2%) | 4 (4%) | 9 (8%) | 14 (12%) | 29 (8%) |
| Total Cures | 108 | 97 | 114 | 115 | 344 |

This table includes all reported instances of child health concerns that resulted in resort to one of the biotechnical streams of expertise. Where no cure was attempted, this was taken as a domestic resort to the reported problem. Numbers outside brackets indicate total number of instances reported of that particular concern in that decade. Percentages inside brackets present the total number of instances of that concern as a percentage of the total

number of concerns for that decade. While the previous table includes the incidence of all reported health seeking behaviours including preventions and cures, this table includes only reported cures. It illustrates that while there have been some changes in what kinds of child health problems parent-farmers recall over time, these changes have not been major. Throughout all five time periods of the sample, the most common childhood health concerns remain minor health 'natural' fevers (kai thamadaa) and common colds and flus (pen wat, kai wat). As a percentage of reported child illness, common fevers and colds consistently account for between about fifty and sixty percent of reported child health problems in all time periods. The second most common child health challenge reported, in almost all time periods, is childhood diarrhoea followed closely in third place by the incidence of pung lo (big belly) generally understood by parent and farmers to be caused by intestinal parasites (usually worms).

Based on the histories collected, parent-farmers do not seem to consider there to have been major changes in the contributions that these common childhood health concerns have made to the overall experience of child illness, nor do they seem to indicate the development of any strongly prevalent new childhood health concerns. In terms of new childhood diseases, or health concerns, the only new arrival in the reports of parents is within the category of general pain (buat) and headaches (buat hua). There was no mention of these as child health concerns from the 1950's until the late 1970's, but they constitute between five and seven percent of all reported child health problems for the past two decades. Another illness category, khii yeh or 'crying a lot', related closely to concerns regarding reincarnation and appropriate treatment of a child's spirit, is relatively common in the early part of the sample, then disappears in the 1970's, only to

resurface in the 1980's and 1990's. Considering the small size of the sample, and the relatively small percentage of child health concerns described as 'crying a lot' or as general pain and headaches, it is very difficult to say if this is significant. Further investigation, including comparison to biomedical records, would be useful in understanding why these two illness categories seem to be more common in some decades and less common in others. What can be said is based on the parent-farmer histories is that it seems that the kinds of illnesses that Mae Chaem's parent-farmers remember their children getting sick of in the 1950's are essentially the same kinds of illnesses that Mae Chaem's parent-farmers remember their children getting sick of in the 1980's and 1990's. In general, the composite picture of changing child health problems provided by the table above seems to indicate that there are few clear trends or changes in the kinds of illnesses that parents report their children getting sick from over the past fifty years. In general, the kinds of child illnesses reported by parents today, and their percentage contribution to child illness in the valley, are very similar to the kinds of child illness, and their percentage contribution to total reported child illness, as remembered and reported by parent-farmers who were raising their children fifty years ago. Mae Chaem parents remembering back fifty years and those remembering back only a few report the same kinds of illnesses occurring, and the percentage incidence, as a proportion of the total instances of child illness in the valley, seems to have stayed relatively constant. Considering the huge changes in the biotechnical streams available to parent-farmers, and the very different definitions of child illness used by them, this finding is surprising.

While the focus of my analysis has been on child health, it is also interesting to note that the overall increase in reliance upon market and national health streams for child health concerns, it is echoed by a similar, but more marked, increase in reliance upon pesticides and chemical inputs provided by either Market based or National agricultural streams of land use biotechnology. It is clear from the parent-farmer narratives that use of pesticides and other agrochemicals has rapidly gained in popularity amongst Mae Chaem families over the past fifty years..

Figure 14.14 shows the percentage of reported annual histories in which parent-farmers reported direct pesticide use. As pesticide use may vary for a particular household from year to year, and non-pesticide using households may become pesticide using households midway through a particular child's life, I divided up the thirty-six Muang parent-farmer narratives by year and took each year as an annual history of child health and land use. These annual histories form the building blocks, or component parts, of the larger child health and land use histories provided through the parent-farmer interviews. For simplicity I refer to these component parts as 'child-land' years. I categorized each 'child-land' year as either associated with pesticide use in the household, or not. If a parent-farmer reported using pesticides or other agro-chemicals including herbicides, fungicides and agricultural hormones (but not including simple fertilizers) in their own fields, or reported working for wages in fields where pesticides or agro-chemicals were used, in any given child-land year then that child-land year was counted as being associated with pesticide use in the household. The thirty-six Muang histories are composed of 318 separate child-land years from memories of fifty five children reported by their parents for the period from 1952 to 2002.

Figure 14.14: Reported Pesticide Use

Muang annual histories (child-land years) with Pesticide Use (1952-2002)

| | 1952-62 | 1963-72 | 1973-82 | 1983-92 | 1993-2002 |
|--|---------|---------|---------|---------|-----------|
| % of child-land years with pesticide use | none | 8% | 15% | 37% | 60% |

This table illustrates how pesticide use has grown since the 1960's. The first reported use of pesticides in the parent-farmer histories was in 1967 (see *1967 Case Study #1* in chapter 5) and its use has risen rapidly since then. As this table illustrates, the percentage of child-land years where pesticide use was reported essentially doubles in each succeeding decade of the sample until in the 1990's sixty percent of child-land years reported involved pesticide use in the household. These numbers are consistent with those collected for northern Thailand as whole. The 2003 Agricultural Census Northern Region (NSO 2003) reports that in 1993 56.3% of northern Thai farmers reported using agro-chemical pesticides. In 2003 the percentage had risen to 68.3%.

14.9 Morbidity and Mortality: Child Deaths and Illness, 1952-2002

While the kinds of health problems Mae Chaem parent-farmers remember their children getting sick of do not seem to change much over the past fifty years, two major trends connected to the Mae Chaem child health concerns do emerge at the composite level. Both trends are also echoed in the case study material. The first major trend is in terms of child mortality. Child mortality rates are the classic measure of how successful national development and modern bioscientific technologies and medicines have been. Because of this, major development efforts and public health improvements in Thailand have specifically targeted early child deaths and brought down the national incidence of

child mortality. In the khon Muang parent-farmer narratives from the 1950's the death of a child early in life (five and under) is a frequent occurrence. Incidence of child death is even more common in the upland Pgha'knyaw narratives. Accounts of child deaths in the parent-farmer narratives range from the earliest years of the study (early 1950's) with the deaths of children understood to result from issues of khwan and relations with spirit parents (paw gert mae gert) to the much more recent deaths of a pair of premature twins from Mae Chaem who were born and died in an intensive care unit in Chiang Mai. Despite this span, instances of child or infant mortality are much rarer in the narratives of the past twenty years than in previous decades. This trend towards fewer child deaths is consistent with national Thai health statistics, as well as health transitions associated with development and increased access to national biomedical systems elsewhere in the world. All indications, from national child mortality rates to the parent-farmer narratives of Mae Chaem suggest that far fewer children die of illness today than did in the past.

The second major change, and the more surprising one, relates to child morbidity (how often children get sick). Consistent with the understandings of many Mae Chaem elders, the parent-farmer narratives provide a picture of child health that suggests the incidence of child illness (average illnesses per child per year) in the valley has increased over the past fifty years. Table 14.15 shows the number of child-land years recorded in the parent-farmer histories for each decade, and the average number of illnesses per child-land year for each decade:

Figure 14.15: Frequency of Child Health Concerns per Year
 Muang Child Health Concerns (Cures Only) per Child-Land Year, 1952-2002

| | 1952-62 | 1963-72 | 1973-82 | 1983-92 | 1993-2002 |
|-------------------------------------|---------|---------|---------|---------|-----------|
| # of Child-LandYears | 58 | 54 | 47 | 46 | 113 |
| # of Cures | 108 | 97 | 114 | 115 | 344 |
| Average # of Incidents/ Child Yr | 1.9 | 1.8 | 2.4 | 2.5 | 3.0 |

There are several possible explanations for this apparent increase in how often parent-farmers reported children becoming ill. It may be that the apparent rise in child morbidity is an accurate reflection of experienced child illness. It seems equally plausible that fewer child health concerns are reported in the more distant past simply because fewer child health concerns are remembered due to the nature of recall over long periods of time. Current parents may simply be remembering, and so reporting, more child illnesses, in more recent years. It is also possible that the general increase in the rate of reported child illness over time is due to changing definitions of what constitutes child illness and increasing access to a greater variety of biotechnical expertise, especially expertise accessed through national hospitals and clinics. In all likelihood, the best explanation involves a combination of these factors, but as suggested in the final chapter, thematic analysis of individual histories and more quantitative analysis of the composite histories suggests a connection with the rise of pesticide use in the valley.

Linking Streams

15.0 Memory, Change, and Addictive Modernity

In Mae Chaem, practices of child health and land use are connected at many levels. Local streams of medical and ecological practice, enmeshed in the Thai Buddhism, local spirit beliefs, and the expertise of elders and maw Muang, all provide understandings of life and power that can be applied to both bodies and fields. In the lives and experience of parents and farmers in Mae Chaem, the historical development and practice of 'modern' biomedical and pharmaceutical medicine, through the market system, and through national services, has occurred in conjunction with the development of contemporary agro-technologies made available through the same systems. The parallel 'revolutions' in food production and child mortality and nutrition that were fundamental to the success of development efforts through the latter half of the 20th century provide additional parallels between child health and land use change in Mae Chaem.

While analysis of Mae Chaem's child health and land use histories seems to support the notion that parent-farmers in Mae Chaem have been, and continue to be, empowered local biotechnical actors with significant freedom in moving between the various biotechnical streams of the valley, this hopeful picture of local agency is tempered by the perspectives of many of the older participants in the study. As mentioned in chapter 14, beside the overall theme of empowered agency, there was also a counter-theme of loss and constraint that ran through many of the histories provided by older

parent-farmers in the valley, but this sense of loss was not in regards to their own lives or lands. Instead it involved the implicit and explicit comparison of their own lives and experiences as young parents and farmers in the 1950's, 60's, and 70's to the lives of their adult children and grandchildren in more recent years.

In particular, several valley elders, as well as some younger people, expressed concerns regarding the popularity of growing cash crops with large amounts of pesticides and other chemicals. These generally revolved around a fear that, while the potential profits of cash cropping may allow the purchase of motorcycles and other desired commodities, they also resulted in household debt and the initiation of a negative cycle of biotechnical addiction that ultimately may result in more health problems for both people (including children) and the environment (including rice fields), and the possibility of a future for Mae Chaem that is worse than its past.

The significance of concerns around the issue of pesticide use was first indicated in a parent-farmer interview with a grandmother who lived near our home in the district centre. She was in her seventies at the time of the interview, and recalled being a new mother in the 1950's and before. She spoke in detail regarding the birth of her first children, three of whom died at before they were one year old. She recalled who was present at the births, what herbs she took while she was pregnant, how long she kept yuu duan, and who she went to for help when the children were ill or died. She also recalled in detail what the family planted in the years when her children were young, and how they cultivated their rice fields at the time. However, when I asked about child health problems, other than those that led to the deaths of three of her children, she recalled her surviving children to have been very healthy and free of illness. Likewise, she recalled

very few any agricultural problems in the 1950's. In this regard, her responses were similar to those of many of the other older parents we had interviewed. Very few biotechnical challenges were being reported for the earliest years of the sample and far more were being reported for more recent years. I considered this to be fundamentally an issue of recall: older parents and farmers, now in their sixties and seventies, were not remembering many child health and land use problems that they encountered fifty years ago. As I knew this particular elder well and spoke with her often, I pressed the issue and asked if she thought this might be the case. In my fieldnotes that day I wrote:

...we got to the child health and land use questions and Yai kept saying that there were no problems in the fields, everything was good, a few rats and birds, but rain was on time, all of the children were healthy, there was no need for medicines. No problems, *bo mii, bo mii*. ...[we] sat just inside the house while Yai ironed banana leaves to make cigars... [She] talked through a mouth full of *miang* all the way through... I kept probing and asked Raywat to help translate so we might get more details about any problems she might remember. Yai kept saying ...the child never had any problems, the fields didn't have any problems... With Raywat's help I politely asked Yai why she thought older people's children and fields seemed to have so few problems compared to many of the younger parents. She nodded and ironed another leaf, then launched into a long explanation in rapid fire northern Thai. By the tone of her voice I knew I was being chastised for asking such an obvious question. Of course there are more problems in the fields, of course the children get sick now: it's because the food and the water aren't clean, because there are so many chemicals on food from the market that you can't get them off even if you soak the vegetables and wash them with soap, it is because now there are new insects that eat the rice, and new weeds that come up in the fields so the farmers need more chemicals, herbicides, fungicide, it's because the air stinks with pesticides in the dry season when the farmers spray the cabbages, red onions, potatoes...

In another interview towards the end of the main fieldwork trip another community assistant, Khun Laan, and I sat and interviewed another *mae ui* who was still strong and energetic at 82. She helped her now grown daughter mind a shop near the edge of town.

She talked for most of the interview about her younger days farming and raising children in the valley. She recalled that the very first merchant to bring cash crops into the valley came in about 1955 before there was any road. She recalled his name and that he brought seeds for potato and Chinese cabbage so that people would grow them and would transport the produce down the Mae Chaem river by boat, and then by truck to Chiang Mai city once he got to the roads. She recalled events from the 1950's in detail, but when it came to discuss problems in the fields, or child health problems she said there were very few. During the interview, a monsoon squall blew in and we watched the rain pound the surface of the Mae Chaem road outside her shop. Laan and I drew the interview out while we waited for the rain to pass. I told Mae Ui that the younger parent-farmers we interviewed were reporting more health and land use problems than older parent-farmers were. *Mae Jaan* nodded her head in agreement:

That is because now illness (*lok*) comes from the weather (*akaat*). The wind carries it into the valley, carries it in from chemicals in the fields, from the smoke of the vehicles. A long time ago these illnesses were not problems. Now everything has a price, everything is money...not good, not good (*bo dii, bo dii*)...now if you have more than you need in your fields you sell it rather than give it to your neighbour... we have more things now, but we have less happiness... Now there is a lot of illness because everything has fertilizers, everything has chemicals and pesticides on it (*sai pui, sai yaa*). People won't eat the vegetables they grow because they know what chemicals have gone into it. They are only for sale in the market... Fields, rice, vegetables, everything has problems now. Our land used to be good quality. We had buffalo dung for fertilizer and we worked hard to pull the weeds by hand. Now there are new insects and new weeds that have come into the valley along with the chemicals and the machines. Now everyone needs money, needs profit to eat, to get medicine, to get around with a motorcycle, a pick-up. They need to use chemicals to do this, and the chemicals cost money too. Now some years we even need to use pesticide to grow our rice!

Mae Ui put great emphasis on this last statement. While pesticide use is widespread, it is generally reserved for growing cash crops intended for sale to

markets outside the valley. Rice is a crop usually needs no chemical inputs and because it is for subsistence, not for sale, farmers generally avoid putting any kind of chemicals on it, other than fertilizer, and then only rarely. For her children to have to use pesticide on their rice was, for this grandmother, proof that something had gone very wrong.

I was surprised at how negative Mae Ui was regarding the changes in the valley and, trying to move the interview in a more positive direction, asked what could be done to make things better. She replied:

It is impossible to go back now. The fields are addicted to the chemicals. The insects are all resistant so you need to use more and more of chemicals to kill them. Every day you need to use chemicals or the rice won't grow well. How can they stop?

Me, I won't eat vegetables from the market. I know what is on them. I know what they should taste like. But I worry about my grandchildren. What kind of life do they have in front of them? When I die, I don't want to be born here, I want to be born in the past when the river was clean, rice was clean, food was clean. When I was young there were fish in the river and food in the forests and Mae Chaem people's hearts were good...

Mae Ui pointed up the road telling us that she would only buy vegetables from one shop in town. It had been set up several years before by a group of housewives (*mae baan*) who had more vegetables in their household gardens than they could use. The shop now sells extra vegetables from household gardens around the district centre. Mae Ui would only buy her vegetables there because she knew that the produce at the shop was grown mainly for subsistence rather than for cash, so she could trust that the vegetables had not been heavily treated with pesticides. The shop that she indicated is well known in the district centre and is often busy with parent-farmers buying vegetables that they trust

rather than the commercial vegetable crops, especially the cabbage, carrots, and other products grown by Hmong in the cool uplands, that are considered to be particularly dangerous by many of the lowland Thai Muang.

Both these elderly women, along with other older participants, discussed introduced streams and strategies of modern biotechnology, especially those involving pesticides, as involving a kind of addiction whereby local lives and lands are ensnared in biotechnical relationships that might seem appealing at first, but are ultimately destructive, and once started are difficult to escape. Calling upon a metaphor of addiction had particular power at the time of my fieldwork as this was a time when the Thai government and monarchy were both pointing at rampant addiction to methamphetamine, small pills called *yaa baa* or crazy medicine, as the greatest danger to the Thai people and the Thai nation. In early 2003, midway through our fieldwork, the Thaksin government launched a war on addictive drugs (*yaa septic*) that was focussed on *yaa baa*. With the King's blessing, the military and police were given three months to eliminate the problem and purify the nation of this modern biotechnical danger (Candler 2004). From February through May of 2003 more than 2000 Thais were murdered, generally shot in the head multiple times, by masked gunmen. Mae Chaem was widely seen as an important transit area for *yaa baa* manufactured on the Burmese border, with the drug being moved through older opium trade networks that took the illegal drug to market through remote upland areas. Close to a dozen killings took place in Mae Chaem during this period with one woman shot three times in the head outside the local elementary school that many of the district centre's children, including my own daughter, attended⁷⁹.

It is within this very dangerous context that the older men and women of the valley used the metaphor of addiction to describe the kinds of constraints that modern biotechnologies such as pesticide and debt, were placing on local biotechnical agency. Fields were discussed as addicted to expensive pesticides and fertilizers that at first improved production but were poisonous and destroyed the soil, and so more pesticides and fertilizers were needed to reinforce it. Debts were discussed as attractive at first because they allowed the purchase of a new motorcycle or tractor for the fields, but the interest rates proved crippling and impossible to escape without taking on more debt to buy chemical inputs in an attempt to increase cash crop production. Introduced media and foods were also discussed as potentially addictive: fun and desirable at first, but consuming them would make people fat, ill or morally weak and vulnerable, resulting in ill health and the loss of traditional practices of respect for elders, monks and spirits that in the past had led all to a better life.

15.1 Parent-Farmers or Parent-Pharmers?

The perspectives raised by these two Grandmothers, as well as other older parent-farmers, are challenging. This is partly because of the content of their concerns, and the disturbing implications for Mae Chaem, and predominant notions of national and foreign sponsored development, if they are correct. They are also challenging because they are put forward by village elders who are themselves situated within a particular power struggle between biotechnical streams. As discussed in chapter six, the elders themselves are the informal expert representatives of a domestic biotechnical stream which, in the 1950's and 60's was dominant in the valley. Even in the 1990's it was the second most

commonly reported stream of biotechnical recourse. As such, grandmothers have a particular vested social and political interest in supporting the stream with which they are most closely allied (the domestic), and stand to gain through the moral denigration of pesticides and agro-chemicals that are allied to, and provide potent agricultural cures within the national and market based streams that have come to challenge the domestic stream as the dominant biotechnical choice of Mae Chaem's parent-farmers. However, despite this Machiavellian suspicion of Mae Chaem's grandmothers, they, by virtue of their age, experience, and kin associations, have been witnesses to the history of biotechnical change in the valley for over fifty years, and so are likely better able to comment on it than most. As well, they are perhaps the most likely to be sympathetic to the futures of Mae Chaem's children and grandchildren. Another reason to consider the elder's critique carefully is that, as discussed in chapter 6, the domestic stream is not only a biotechnical stream unto itself. It is also an intermediary step through which other parent-farmers access other biotechnical streams. As such, regardless of their motives, the perspective of Mae Chaem's elders, as respected representatives of the domestic stream, are influential.

The question that they raise is important, and it is very similar to the one posed by Pravit Phothiart in the poem that began this thesis. Has 'development' in Thailand's north, and particularly the ascendancy of national and market based biotechnologies, including pesticides, fertilizers, and cash crops been "...part of a great merit making exercise? Or are we lost, and will the winds of change soon blow cold?" In essence, has the developmental change that has been advocated and practiced in Thailand's north over the past fifty years, however well intentioned, been 'good'? The same question is

fundamental to the recent prevalence, at the national level, of King Bumipol Adhulyadej's 'sufficiency economy' (UNDP 2007), and echo broader debates in Thai development studies (Sulak 1990, Delcore 2004). While such questions go beyond the scope of this thesis, my work provides an examples of how local actors move within larger streams of development change, and how local oral histories can shed an ethnographically sound light on how development, especially in areas of child health and agriculture, is experienced, remembered, and evaluated within local lives.

As discussed in chapter 14, the composite histories indicate that the popularity of pesticide intensive agriculture in the valley has risen rapidly since the first reported use of DDT in 1967. More than 60% of the annual land use histories reported between 1992 and 2002 involved personal use of pesticides or other agro-chemicals (not including fertilizer). Concerns regarding the health effects of pesticide use in the valley were also raised within many of the parent and farmer histories. In his 1997 case study, presented in chapter 5, Khun Nai describes his rejection of pesticide use after years of farming with chemicals. Taken with others accounts of the past decade, his narrative illustrates that while use of pesticides and agrochemicals has been increasing in Mae Chaem generally, some parent-farmers have, in recent years, cut down on their use of agrochemicals partly because of concerns regarding health. This shift, while limited, has been supported by recent national extension efforts to reduce reliance on agrochemicals through integrated pest management, as well as an increasing market for 'organic' vegetables in Chiang Mai, Bangkok and other urban centres.

Despite this shift, the parent-farmer histories indicate ongoing concerns in Mae Chaem regarding the effects of pesticides and 'modernity' on the health of children. As

discussed in chapter 14, the parent and farmer histories do not indicate major changes over the past fifty years in the kinds of illnesses that children in Mae Chaem get sick with. However, over time, they do suggest a general increase in the frequency of health concerns per year per child. In the earliest decade, parent-farmers reported an average of two illnesses per child per year. In the most recent decade (1992-2002) parent-farmers reported an average of three illnesses per year per child. Considering the nature of memory, and increased availability of health care services in the valley, it is easy to understand why more child illnesses might be reported in recent years than in the 1950's. However, this simple explanation is complicated when pesticide use is considered.

If the small rise in the frequency of reported child illness is due to issues of recall over time, or access to health services, then because both memory decay and access to health services are factors that pesticide and non-pesticide using parent-farmers share, there should be little difference in how often pesticide and non-pesticide using parent-farmers report their children becoming ill. Parent-farmers remembering back fifty years would generally remember fewer child health concerns and parent-farmers remembering back only ten would generally remember more, regardless of their use of pesticides.

Figure 15.1 compares the frequency of health concerns per child-land year by pesticide using and non-pesticide using parent farmers reported for the period 1993 to 2002.

Figure 15.1: Child Health Concerns (per year) by Pesticide and Non-Pesticide Using Parent-Farmers (Muang parent-farmers,1993-2002)

| | All Muang Parent-Farmers | Pesticide Using Muang Parent-Farmers | Non-Pesticide Using Muang Parent-Farmers |
|--------------------------------------|--------------------------|--------------------------------------|--|
| # of Child-Land Years | 113 | 68 | 45 |
| # of Concerns | 344 | 262 | 82 |
| Reported concerns per child per year | 3.0 | 3.9 | 1.8 |

Based on analysis of the Muang parent-farmer histories from 1993-2002, the average pesticide using parent-farmers reported 3.9 illnesses per child per year while the average non-pesticide using farmers reported only 1.8 illnesses per child per year. In other words, the composite picture provided by the Mae Chaem parent-farmer interviews suggests that there are connections between pesticide use and the frequency with which Muang parents in Mae Chaem report child health concerns. As noted at the beginning of this chapter, these figures are based on individual recall of events and are suggestive but are not necessarily indicative of the actual frequency. Given the composition and size of the sample, the figures do not allow for generalizations from the sample to the community as a whole. Still, the toxicology of pesticides suggests that suppression of children's immune systems at chronic pesticide exposure levels (UNEP 2004) is a plausible explanation for why pesticide using parent-farmers report more frequent child health concerns than non-pesticide using families. Qualitative analysis of the larger set of individual and group interviews also suggests pesticides in land use being connected to the frequency (but not the intensity) of child health concerns.

Another possible explanation for the apparent difference in how often pesticide and non-pesticide using parent-farmers report child health concerns is that it may reflect differences in how pesticide using and non-pesticide using parents define child illness and the point at which a child health concern is identified and reacted to. This possibility implies that parent-farmers who ally themselves through the use of pesticides with market or national biotechnical streams also tend to define child health in particular ways that result in them reporting more frequent child health concerns than non-pesticide using parent-farmers. Additional fieldwork, including interviews with parent-farmers to more

fully explore and compare how pesticide and non-pesticide using parent-farmers define child illness, would be needed to elaborate on this. However, the composite picture provided by the parent-farmer histories suggests that there are differences in how pesticide using and non-pesticide using parent-farmers respond to child health concerns once they are identified. Thematic analysis of the parent histories suggests that parent-farmers who rely upon pesticides as biotechnical solutions in their fields also often on cures for child health problems that are also derived from the market or national streams. Figure 15.2 illustrates the different biotechnical streams that pesticide and non-pesticide using parent-farmers used to deal with child health concerns:

Figure 15.2: Child Health Practices by Stream for Pesticide and Non-Pesticide Using Muang Parent-Farmers (1993-2002)

| | Pesticide Using Muang Parent-Farmers | Non-Pesticide Using Muang Parent-Farmers |
|------------------------------|--------------------------------------|--|
| Market | 78 (30%) | 9 (11%) |
| National | 143 (55%) | 54 (66%) |
| Domestic | 24 (9%) | 14 (17%) |
| Maw Muang | 9 (3%) | 4 (5%) |
| Others | 8 (3%) | 1 (1%) |
| Total Child Health Practices | 262 | 82 |

Both pesticide using and non-pesticide using farmers reported accessing the national biomedical systems of the valley (hospitals and anamai) more than any other biotechnical stream to address child health concerns. However, while both pesticide and non-pesticide using parent-farmers rely on a considerable diversity of biotechnical streams, this composite picture suggests that over the ten year period, pesticide using parent-farmers relied on the market stream for 30% of their reported child health practices while non-

pesticide using farmers relied upon the market stream only 11% of the time. Instead of using the market stream, non-pesticide using parent-farmers tended to rely on national, domestic, and maw Muang streams for a larger portion of their child health practices. There seems to be a clear tendency for pesticide using parent-farmers to rely more often on biotechnical solutions purchased through the market to resolve child health problems than for non-pesticide using parent-farmers to do so. This may be due to issues of wealth, access, or differing definitions of child illness, but it in any case traces another link between child health and land use practices in Mae Chaem, and supports the understanding that child health and land use are linked biotechnical domains. While all parent-farmers in Mae Chaem engage a flexible diversity of biotechnical streams in addressing child health challenges, the enrolment of farmers within actor-networks of pesticide and agro-chemical dependent agriculture seems to raise the possibility that parent-farmers are turning into what might be termed parent-pharmers: local actors who are heavily engaged, both in terms of land use and health, within biotechnical actor-networks that are dominated by the products and ontologies of large agro-chemical and pharmaceutical companies. If it is true that the use of pesticides also have negative effects on child health, as perceived by many in Mae Chaem, this would make it more likely that those parent-farmers who use pesticides will have children with more health concerns, and will be more likely to buy market based solutions when they consider their children to be ill. Considering these connections, understanding the strategies used by local pesticide sellers and by multinational pesticide and pharmaceutical corporations to enrol local farmers within actor-networks of pesticide and agro-chemical dependent agriculture is reinforced as an issue of child health as well as an issue of ecology.

15.2 Summary

It is through affiliation with particular streams, and enrolment in their networks, that parents and farmers access the life-sustaining and productivity-enhancing practices of biotechnology that they apply to children's bodies and agricultural fields. Through choosing between streams parents and farmers determine the course of biotechnical change in the valley and the success or failure of various streams of local and global knowledge. Through putting the cultural contents of biotechnical streams into practice, parents and farmers build and enact the individual biotechnical worlds that define the current(s) manifest in the valley. It is through their choices, as well as through experienced ecological conditions, that Mae Chaem's children thrive, weaken, or die. It is through them that Mae Chaem's farmers feed their families (and ours), possibly gaining wealth or lose their land to debt in the process. It is also within the contexts of these biotechnical streams, and the choices made between them, that parents and farmers, at the end of the day, look back and judge where they were fifty years ago and where they are now, and whether or not the past fifty years of history, modernity, development and change have, in the end, been good or bad. These are not small questions, and the answers to them are complex. My work has tried to take these local perspectives seriously in order to provide a locally grounded understanding of change.

As laid out in the first chapter, and elaborated on in chapter three, my thesis has based around three primary objectives:

- 1) Understanding the diversity of 'biotechnical streams' available in the Mae Chaem valley over the past fifty years. Chapters six through thirteen are based on

analysis of interviews with biotechnical experts from the Mae Chaem valley and articulate the seven streams identified while tracing the distinct constellations of authority and actor-network relationship they draw upon. The ethnographic depictions of biotechnical diversity in the valley forms a major component of this thesis.

2) Documenting what parents and farmers say about their own child health and land use practices over time. Parent and farmer narratives show a dynamic, flexible, and critical interplay between the agency of local actors and the long standing diversity and complexity of biotechnological practice in the valley, as illustrated in case studies (chapter 5) and composite histories (chapter 14).

3) Analysing relationships between changing child health and land use practices over the past fifty years. This objective is reflected throughout this thesis, from the semantic and ethnographic connections embodied in the term *yaa*, and the mini-ethnographies of each stream, through the more quantitative analysis of remembered parents and farmer practices, and local connection of pesticide contamination with current environmental and child health.

In the process of achieving these objectives, I have advanced several related arguments. Expansion of these provides fertile ground for future work. They include:

1) That there are multiple biotechnical options in Mae Chaem, and that while the parade of biotechnology has different entries today, there were complex biotechnical options in the past as well. In other words, parents and farmers in Mae Chaem have always been engaged in making choices between biotechnical traditions. The condition of cultural complexity is not a recent phenomenon.

2) The parade of agricultural technology in Mae Chaem is entwined with the parade of child health technology. These two ‘parades’ are connected to greater or lesser degrees in all of the biotechnical streams through language, causality, common practitioners, and shared ontologies of practice and effect. In general, each stream or tradition applies its unique technologies, ontologies, and expertise to both child health and agricultural land use. As such, both child health and land use can usefully be discussed as components of larger biotechnical streams.

3) Because of the diversity of biotechnical streams available in Mae Chaem, the continued existence of each stream is dependent on the biotechnical choices made by local parents and farmers. Through advertising and other devices, biotechnical streams and their experts encourage parents and farmers to form particular biotechnical allegiances and avoid others.

4) In addition to issues of convenience and cost, a defining component of local biotechnical choice is retrospective judgement regarding the efficacy and consequence of past biotechnical choices and changes. Local retrospective judgements are influenced by many factors, including past experience, local history, and embodied values regarding good health in children and fields.

Based on these arguments, and on data collected through fieldwork and interviews with biotechnical experts and parent-farmers throughout the central Mae Chaem valley, my work leads to several understandings:

- 1) that changes experienced, and choices made in the domain of child health are closely connected to changes experienced and choices made within the domain of land use;
- 2) that local parents and farmers have been, and continue to be, central and critical agents in manoeuvring between the various biotechnical streams available to them;
- 3) that, particularly in the domain of agricultural land use, parents and farmers perceive local agency to be increasingly constrained by the results of chemically intensive cash cropping. Both children and fields are seen as enmeshed in a cycle of ‘addiction’ that is seen locally as a key consequence of modernity that is being reinforced by the practices of multinational corporations advocating particular forms of agriculture and agricultural biotechnology in the valley, and;
- 4) Retrospective judgements of past biotechnical experience in the valley are complex and ambiguous, particularly amongst older generations of parents and farmers. Local elders generally see the process of development in northern Thailand, particularly as it relates to children’s health and land use, as having had very mixed, and often negative, consequences for the health of Mae Chaem’s children and lands. Such retrospective judgements need to be considered within material environments of disease, ecology, and economy, but also within mental environments of media, advertisement, and social meaning. Such critical judgments by Mae Chaem’s elders play a critical role in affecting local biotechnical choices and are likely to continue to provide a framework for biotechnical diversity and heterogeneity in the valley.

15.3 Evaluation

In their introduction to *Anthropology and International Health: Asian Case Studies* (1996), Mark and Mimi Nichter issue a challenge for medical anthropologists:

In need of consideration are reasons why particular health ideologies and practices are privileged, neglected, or resisted by different actors at different times in specific contexts. This requires longitudinal monitoring of health perceptions and health care practices in environments sensitive to social, political-economic, and ecological transformations. It further requires the monitoring of national as well as international health policy and implementation. (Nichter and Nichter 1996: xvii)

Although Nichter and Nichter's challenge was issued almost ten years ago, ongoing processes of globalization and localization occurring in Southeast Asia and elsewhere mean that the issue of how local agents manoeuvre between alternate systems of health ideology and practice are, if anything, a subject of increasing rather than decreasing importance.

However, the Nichter's challenge is a difficult one for anthropology and the social sciences to address. There are several reasons for this:

- 1) It requires a detailed understanding of the multiple biotechnical ideologies and practices available to actors within a community at different times, as well as the social and ideological networks through which they are accessed, and within which choices are made.
- 2) Longitudinal monitoring requires access to anthropological data of significant time depth. Conventional longitudinal studies require systematic and detailed fieldwork over a long period of time, often generations. This is something that is rarely possible given the intensity of most anthropological field work. Conventional sources of longitudinal data on perceptions and practices of health or land use are far and few between, particularly for places and peoples at the margins of national economies and attendant structures of bureaucratic surveillance and national census. Where they do exist, they are rarely sensitive to social, political-economic and ecological transformations, let alone national and international levels of policy and implementation. In such circumstances, oral histories and local memory often form the only documents upon which a detailed understanding of past practices can be based.

- 3) Developing the complex sensitivities needed to incorporate social, political-economic, and ecological contexts, as well as links to the national and international, requires reference to an extremely wide-ranging network of actors and actants (Latour 1993, 1999). This requires movement from individual specifics towards larger and more global scales of history, interaction and analysis.

Despite these hurdles, the Nichters' challenge for the anthropology of health provides a useful ground from which to test my own work regarding a larger, or at least more connected, domain of biotechnology. In focussing on the notion of biotechnology as a wider field of knowledge and practice that includes the medical and the ecological, and through recognizing oral narratives of land use and child health provided by parents and farmers, I have sought to understand this key question: Given the diversity of biotechnical streams available, how have parents and farmers in Mae Chaem chosen to move?

My research and fieldwork substantiates ethnographically grounded relationships between changing land use and child health, as well as role of local agency and choice within a history of biotechnical diversity. In doing so it addresses several of the complications presented by the Nichter's challenge:

- 1) Understanding the various biotechnical ideologies, practices, and their networks of access has involved first identifying key biotechnical experts through group interviews with local parents and farmers, and then in-depth interviews with the experts themselves regarding the biotechnologies and bio-ontologies that they themselves rely upon.
- 2) Longitudinal depth has been developed through a careful collection of first person land use and child health narratives, mapped across time rather than space. These involved semi-structured interviews asking parents and farmers to reflect back concurrently on all of the child health and land use practices that they themselves engaged in over the first six years of their children's lives, and extending as far back as fifty years.
- 3) Finally, through combining these two strategies with understandings gleaned from the literature on northern Thailand and participant-observation over two

years of field work, I have endeavoured to analyse land use and child health narratives within the broader contexts of biotechnical networks and local connections that often extend towards more global levels.

Bringing oral histories to bear in understanding past land use and child health practices provides a plethora of first-hand oral records of past perceptions and practices that are extremely sensitive to social, political-economic, and ecological transformations and that span significant time depths. I have compared and considered these accounts both individually as narrative, and together as a larger community-based representation of biotechnical change over time. To be sure, memories are selectively recounted and narratives must be taken as contemporary discourse regarding the past, but they do also address a genuine referent. With careful ethnographic methods, narrative constructions that result from the interview process form particularly focussed contemporary accounts of past practices and experiences. These provide a rich and detailed source of data for understanding both contemporary understandings, and past conditions. Disregarding the detailed oral sources of first-hand longitudinal data that exist in human words and memories undermines local knowledge at the same time as turning a blind eye to what is, in many cases, the best available information, and often the only available information, for understanding how the local present comes about through the broad trends of the past.

15.4 Conclusion

Based on land use and child health histories, and the reports of various biotechnical experts in Mae Chaem, parent-farmers in the valley have, over the past fifty years, entertained the representatives of diverse and contrasting local and global actor-networks in order to build their own worlds of child health and land use. They have built

them from what they considered the most promising or at least the most convenient and persuasive, possibilities offered to them: powerful pharmaceuticals, malevolent field spirits, Buddhist merit and demerit, deadly pesticides, magic words, rain making, drought predictions, new rice hybrids, and many others. Through analyzing accounts of these choices across generations and between communities, I have tried to provide a picture of how local understandings and practices of land use and child health seem to have changed together over the past five decades. Thai villagers see connections between practice of child health and practices of land use. These connections are tied together in the local term 'yaa' and in streams of biotechnology that provide both land use and child health strategies. Within these child health and land use practice rely upon similar notions of what things exists in the world and how particular technologies work on living things in order to effect change. These biotechnical streams have in the past, and continue today, to condition the remarkable latitude of biotechnical choice that Mae Chaem parents and farmers move within. In navigating these choices, a range of both aesthetic and pragmatic concerns are implied and must be considered in understanding how and why people manoeuvre between biotechnical affiliations.

The child health and land use histories of Mae Chaem's parent-farmers, as well as the accounts of biotechnical experts, illustrate the multiple biotechnical streams that exist in the valley today. The histories also indicate that multiple biotechnical streams have existed in the valley since at least the 1950's. While Mae Chaem's biotechnical parade may have more entries in it now than in the past, for at least fifty years, and likely for centuries before that, parents and farmers in Mae Chaem have been engaged as active agents choosing between multiple biotechnical traditions in order to

provide for the health of their children and their fields. Biotechnical complexity and local agency are not new phenomena in the Mae Chaem valley.

Each of the seven biotechnical streams available in the valley integrates, to varying degrees, both land use and child health related practices. Land use and child health seem to be part of the same parade of biotechnology with the various entries striving for the attentions of the parent-farmers of the valley. While parents and farmers in the valley indicate that there has been a general shift from reliance on domestic and kin based streams of expertise in the 1950's, towards streams national and market based streams in more recent years, parent-farmer choices still frequently call upon the domestic stream and other streams indigenous to the valley. The persistence of the domestic stream, as well as other indigenous approaches to biotechnology including those advocated by maw Muang, Buddhist monks, and spirit mediums, at the same time as the introduction of other biotechnical streams from outside the valley, particularly the national and NGO based biotechnical stream, have resulted in increased biotechnical complexity over the past fifty years. The continued existence of each stream is dependent on the biotechnical choices made by local parents and farmers. Future biotechnical homogenization as a result of parent-farmers abandoning indigenous streams in favour of introduced ones is a possibility in the future, but does not seem likely at present because of the flexible, partial and multiple biotechnical relationships that parent-farmers in Mae Chaem engage in. Through advertising and other devices, biotechnical streams and their experts encourage parents and farmers to form particular biotechnical allegiances and avoid others, but parent-farmers remain empowered local agents. Mae Chaem's parent-farmers consider the biotechnical options available to them, and choose amongst them

based on both past experience and personal notions of what constitutes good health in children and fields.

Based on data collected through nearly two years of fieldwork and interviews with both biotechnical experts and parent-farmers throughout the central Mae Chaem valley, the narratives of parents and farmer in the valley portray a picture of changes and choices made in the domain of child health that are closely connected to changes experienced and choices made within the domain of land use. Local parents and farmers have been, and continue to be, central and critical agents in manoeuvring between the various biotechnical streams available to them, and, particularly in the domain of agricultural land use, older parents and farmers in Mae Chaem perceive local agency to be potentially under threat from the popularity, and potentially addictive nature, of chemically intensive cash cropping.

My analysis gives considerable power to local farmers and parents as effective agents in determining the experience of biotechnical change. I argue that both local choices and global currents are essential in shaping the challenges of life and living in northern Thailand, but that while global cultural flows help provide the context of choice, local agents are the ultimate gatekeepers of change. The parent-farmer is a key agent at the juncture between the often painful world of enviro-bodily experience, and the various ontologies and ecologies (including paths of prescribed knowledge/practice) advocated by the actor-networks of child health and land use at work in Mae Chaem. Each choice holds the promise of understanding, interacting with, and altering the world and future bodily experiences of it. Because of this, the child health and land use choices of Mae

Chaem parent-farmers form a key route to understanding the dynamics of child health and land use change in the valley.

The history of biotechnical change in the Mae Chaem valley is complex and ambiguous. The perceived dangers of recent changes, including shifts towards pesticide based cash cropping, seem to be of particular concern amongst older generations of parents and farmers. Such critical retrospective judgements give consideration to material environments of disease, ecology, and economy, but also to mental environments of media, advertisement, and social meaning. The role of local parents and farmers in Mae Chaem as central and empowered biotechnical agents within the parade of various biotechnical streams and actor-networks that engage them, seems likely to continue to provide a framework for biotechnical diversity, complexity and heterogeneity in the upland valleys of northern Thailand well into the future.

This thesis might be described as an applied medical and ecological ethnography of globalization and development in Southeast Asia. This complex amalgam brings with it connections to several fields and sub-fields, including anthropology, and development studies, and the results of my work constitute potential contributions to both. As an anthropologist of globalization and development, I have tried to grasp the thorny surfaces that emerge from the friction between lived lives, local agency, and the global flow of development and biotechnical power in northern Thailand. As an applied medical and ecological anthropologist I have tried to understand connections between changing cultural knowledge, health and land use practice in a manner that provides insight and potential value for future consideration.

The flow of biotechnical streams of child health and land use in rural Thailand, as elsewhere, has been profoundly influenced by multinational interventions, and particularly Euro-American intervention, but at the same time the importance of local agency and choice is often under emphasized. In particular, ideas of ‘development’ and ‘progress’ fostered through international linkage, economic liberalization, and ongoing relationships of international inter-dependence have had significant and often very mixed consequences for rural life in northern Thailand. Mae Chaem’s *paw ui mae ui* (elders or respected grandparents) deeply question the consequences of the ‘developed modernity’ that they find themselves, along with their children, and their lands, enmeshed within at the beginning of the 21st century or alternately, by the Thai calendar, the middle of the 26th. From the perspective of local parents and farmers, life has in some ways been improved. Families have more access to luxury goods now, and child mortality has dropped precipitously. However, in other ways, life seems to have gotten worse. Parents and farmers see the use of pesticides and the influence of the cash economy to have negatively affected the physical health of children and the environment, as well as the social health of communities. The results of my work suggest that these critical local perspectives may be situated in more than nostalgic views of the past, but also in the evidence of local experience and memory, and genuinely different valuations of the importance of key achievements of development in the late 20th century. Reductions in infant mortality over time are recognized in Mae Chaem, but local elders consider this development ‘success’ within a historical sense that children’s overall health is worse now than in the past because it is compromised by exposure to modern agro-chemicals and the negative consequences of modern media and diet. This sense is supported by the

composite historical picture provided by parent and farmer narratives. Likewise, in the field of land use, increased incomes resulting from cash crop production are considered by local elders within a sense that the financial wealth comes along with increased debt, risk, and negative environmental and health effects.

While local resistance and the ability of people to critically evaluate, and even determine, the flow of local history form a significant part of the Southeast Asian literature on development and change (Scott 1985, Ong 1987), these lessons seem to be rarely taken very seriously within the application of 'development' in northern Thailand. As often as not, ideas of local involvement and participation have been as much tools for subverting and converting as they have been tools for genuinely involving and supporting the local agents (Cooke and Kothari 2001). In terms of shaping future conditions, far more emphasis tends to be given, in planning and understanding 'development', to global power structures and flows of neo-liberal economic efficiency than to the conditions and propensities of local choice and maneuverability. To be sure, international interventions do have tremendous affect on local biotechnical realities, but attention to local perspectives and decision making is often sorely lacking and needed. The importance of local manoeuvrability seems to be particularly critical in areas such as the Mae Chaem where fragile ecosystems, diverse ethnic communities, and changing economies exist at the margins of more global power flows and combine to form extremely complex and dynamic situations.

Beyond significant ethnographic contributions to understanding local cultural complexity and histories of change and modernity in rural northern Thailand, my work with the oral histories of child health and land use change provided by Mae Chaem's

parents and farmers also informs larger debates in anthropology regarding how local voices and histories that are informed by the subjectivity of local experience and personal memory can be brought to bear in commenting substantively on the potential limitations and biases of more dominant histories and trajectories of development and change. Both the ethnographic and methodological contributions of my work also provide value to ongoing debates in development studies in general, and consideration of development efforts in northern Thailand, and in relation to the advocacy of cash cropping and technological extension by multinational corporations in particular (Rigg 1997, Bello 1998, Glassman 2004).

Coming to some understanding of how and why local actors choose, refuse, or ignore various health and land use options needs to be an essential part of any backward glance if we wish to design and create more appropriate, effective and sustainable environmental and health relationships. Taking a backward glance at land use and child health change in a place like Mae Chaem requires that it be informed by more than an analysis of the archival remnants of past international development interventions. While the material environments of disease and ecology are critical considerations in the choices of local agents, the mental environments of media, advertisement, and social meaning are also of critical consequence. My work provides an example of how a locally based backwards glance regarding the consequences of change and development can be developed in a way that includes personal narrative, but also moves beyond the limitations of personal anecdote. With the benefit of hindsight there is room to hope that in another fifty years, in 2052, the elders, or paw ui mae ui, of Mae Chaem, some of whom I will have interviewed as young parents and farmers, will be able to look back on

their lives, lands, and children, and feel that their experience of 'development' and 'modernity' has left a less ambiguous legacy than has the period of development from the 1950's to the present.

Notes to Chapter 1: Changing Land Use and Children's Health in Mae Chaem

¹ For an example of the term *yaa* being used to refer to a ritual practice, see reference to *bun dii yaa dii* in the quote on page 16.

² While non-parent farmers and non-farmer parents both exist in Mae Chaem, they are relatively rare and are not included in my interview sample. Throughout Mae Chaem, most villagers have complex roles as parents to their children and farmers to their rice. The roles of farmer and parent are intertwined symbolically, economically, socially, and pragmatically.

³ While the personal names of interview participants, such as those in the case studies presented in chapter five, have been replaced with pseudonyms, I have maintained the names of villages and geographical features (rivers, mountains, etc.) to allow readers familiar with the Mae Chaem valley to navigate my arguments and evidence without undue guesswork. Where I refer to individuals within the context of events occurring in the field, including friends, academic colleagues, and co-researchers, I have chosen to use their real names in order to recognize and reference the importance of their personal contributions to my work and my understanding of northern Thailand and the Mae Chaem valley.

⁴ 1 rai = 1,600 square meters.

⁵ A *kratong* is a small offering, usually made of banana leaves, flowers, incense, and a candle, that is set to float on a body of water as part of the *Loy Kratong* celebration.

⁶ The historical origins of the *loy kratong* celebration are unclear but are generally traced to the SukhoThai period. Davis (1984) associates the festival with central Thai traditions sponsored by the Thai state and indicates that in Nan province at least, it has only been celebrated since the 1960's.

⁷ Including Mae Chaem.

⁸ While the thesis as a whole is based on qualitative analysis of all seventy eight individual interview plus participant observation, focus group interviews and expert interviews, the more quantitative analysis presented in chapters fourteen and fifteen focuses on the thirty-six individual interviews conducted with Thai muang parent-farmers in and around the district centre.

⁹ Pghakinyaw is the ethnic self-identifier used by the Skaw Karen speaking communities (Buddhist and Christian) of Mae Chaem.

¹⁰ While overtly anti-development protests have taken place elsewhere in the country, particularly in relation to large mega-projects, the protests witnessed in Mae Chaem seemed to revolve more around the Government's advocacy of particular crops that turned out to have low prices than around a direct opposition to development. Farmers who faced low prices at market wanted the government to purchase their crops at higher (and what they saw as more fair) prices.

¹¹ *Mat muu* refers to the common practice of tying the wrists with white string to secure the *khwan*, or spiritual essence, of an individual within the human body, often along with a series of three wishes or blessings. In Mae Chaem, and throughout northern and northeastern Thailand *mat muu* (sometimes called *suu khwan* or *juu khwan*) is commonly done by elders for younger people at annual new year celebrations, during major life transitions, and at times of illness.

¹² Meaning one black, one white.

¹³ The idea that various biotechnical systems come parcelled with attendant (and corresponding) sets of problems which are defined and articulated by that system is a central idea in much of the critical medical anthropology literature (Good 1994, Kleinman 1995, Lock and Kaufert 1998) and is derived from Foucault's notion of biopower (Foucault 1973). It is an idea that I apply to broader biotechnical systems where they exhibit the same self-referencing of cause and cure and similar privileging of biotechnical knowledge and authority. I explore this in more detail in chapter four.

¹⁴ My use of the term 'biotechnical worlds' stems from Fredrik Barth's notion of cultural worlds (1993) which he uses to identify the particular constellations of ideologies, practices, and social affiliations that are assembled by local agents from the various cultural streams available to them in order to best achieve desired ends. This notion is clearly related to more psychological approaches to culture, including Anthony Wallace's (1970) definition of individual culture as 'mazeway'.

¹⁵ This influence has had financial implications as well as intellectual ones. As well as benefiting from associated training, I was able to fund a significant portion of my fieldwork through an *Ecosystems Approach to Human Health Award* generously provided to me through the Canadian International Development Research Centre (IDRC).

¹⁶ The concept of actor-networks is explored in greater detail in chapter 2.

¹⁷ The concept of cyborgial technologies (Haraway 1991) implies a blurring of boundaries between biology and technology, between nature and culture. Augmentation of the human immune system through injection of vaccines, crops boosted by chemical inputs, children healed by the actions of spirit mediums: all of these become cyborgs when the notion of biotechnology is broadened to cover all kinds of biotechnical streams.

¹⁸ While the anthropology of childhood may have its roots in the work of early ethnographers focussed on the enculturation of children into social beings, more contemporary writers have focussed on the notable absence of children's voices from the ethnographic record, and on the often unacknowledged roles that children play in society (Nieuwenhuys 1994), or on the role that children play in determining the status of women (Muecke 1984). My own work is situated within a different branch of the anthropology of childhood in that it does not focus on the voices and practices of children, but rather the voices and practices of adults as they seek to care for children (Scheper-Hughes and Seargent 1998).

¹⁹ See pages 58 and 59 for additional rationale for why children are more likely to exhibit symptoms of contaminant exposure than adults.

²⁰ Understandings of karma are diverse and often more nuanced than this generalization. Some forms of 'deep' karma may also be inherited from previous lives, and at least one of the parent-farmer narratives involved an understanding that karma created by a parent may cause health problems in a child.

²¹ While this is generally seen as true, orthodox understandings may see this innocence within the Christian concept of original sin.

Notes to Chapter 2: 'Thinking' Anthropology: Theoretical Background

²² Good (1994) calls for recognizing aesthetics as a problematic within biotechnical medicine and other medical traditions. A response to this call can most readily be seen in work on illness narratives and the dramatics of medical performance (Good 1994, Laderman and Roseman 1996, Kleinman et al. 1997, Mattingly 1998).

²³ Ingold (1995) provides a fascinating argument in juxtaposing the idea of building with the idea of dwelling. In Ingold's account, while building involves a conscious, systematic effort on the part of a reflective agent to bring together disparate parts in order to form a new whole, the idea of dwelling articulates an ongoing, possibly unconscious practice and process of living in, adjusting, and fixing a 'dwelling place' that is itself as much a living thing, affected by the ravages of time and reality, as those living within it. While lacking the chutzpah of the phrase 'building medical worlds', the idea of dwelling in medical worlds may be a more accurate metaphor.

²⁴ The British-American-Chinese opium trade has continued to have major ramifications for northern Thailand through the 20th century and into the 21st as heroin markets, and more recently markets for crystal meth (methamphetamines or *yaa baa*), continue to grow and be supplied with drugs that are frequently either produced, or transported through, Thailand's north. Issues of crystal meth and heroine addiction continue to play a major role in Thailand's north in terms of economy, ecology, health, and domestic Thai policy and took a violent turn in 2003 with the deaths of nearly three thousand Thais in a government sponsored 'war on drugs'.

²⁵ Akhil Gupta (1998) explores this issue in greater detail in regards to the place of agricultural science in Indian narratives of development.

²⁶ The term 'manoeuvre' seems particularly appropriate as it implies an essential sense of agency, motivation, and work that is integral to Barth's argument, as well as my own.

²⁷ Kleinman's (1980) 'hierarchy of resort' provides one possible approach to this idea of 'choosing medicines', but I would argue (as Kleinman [1995] later recognizes) that it is an overly static and mechanical approach that has the additional shortcoming of assuming that choices are between alternate medicines rather than between alternate medical or cultural worlds.

²⁸ Chapters six through thirteen engage this step in greater detail.

²⁹ As discussed in chapter three, this is particularly problematic when the written documents themselves are heavily biased, or poorly recorded as is the case with much of the early statistical data from rural Thailand.

Notes to Chapter 3: ‘Doing’ Anthropology: Methodological Background

³⁰ By the Thai calendar, which begins its count in the time of the historical Buddha, the western year 2007 is equivalent to the Buddhits year 2550. .

³¹ While Pghaknyaw and Thai Muang communities in Mae Chaem are distinct, the streams of land use and child health they rely upon are broadly similar. The one marked difference is the importance of the Christian stream in some Pghaknyaw villages, and the almost total absence of it from Thai Muang lives.

³² In Mae Chaem the term Khii Yeh (cries too much) is used to refer to a child illness category evidenced by excessive crying often understood to be related to the child’s desire to have their previous lives recognized through provision of particular gifts such as jewelry. Elsewhere in Thailand, other terms such as Khii Hai may be used to describe a similar childhood condition.

Notes to Chapter 4: Ethnographic Contexts

³³ In Thai, Mae refers to a river so Mae Chaem translates to River Chaem. Though it is redundant, in English I use the term Mae Chaem river.

³⁴ This was one of the first major efforts of the United Nations.

³⁵ In Mae Chaem, as elsewhere, while news reports spoke of ‘unknown assailants’, local understanding was clearly that the killings were being done by Thai military and police acting within the three month period of Thaksin’s ‘war on drugs’.

³⁶ This portrayal of highland communities is consistent with what Anan Ganjanapan (1997) sees as a dominant discourse regarding highland minorities in Thailand that portrays them as destroyers of nature, threats to national security, and illegal drug producers and smugglers.

³⁷ It is interesting to note that the percentage of households with televisions seems to be increasing much more quickly than the percentage of households with access to safe drinking water.

³⁸ Moerman (1965) notes the challenges of defining ethnicity based on shared land use and language in northern Thailand.

³⁹ For the purposes of the research, my working definition of ‘parent’ has been the primary care giver(s) for a child, and the definition of farmer has been the primary land user(s) of a location. I think these definitions reflect the flexibility of kinship terms and tenure patterns in both Karen and Thai households. A mother’s sibling, whether affine, fictive or consanguine, when acting as the primary ‘parent’ of a child, is, as a rule, called *mae* (mother) by the child, and is considered as such for the purposes of this study.

⁴⁰ Yos Santasombat (2003:114) notes that among the Akha, Men are understood to have twelve khwan, and women nine.

⁴¹ This took place during demonstrations in 1999. Dr. Anan Ganjanapan, as well as several other faculty members from Chiang Mai University were the subjects of the burnings. See also Anand Rajah (2005) for an analysis of this incident.

Notes to Chapter 5: Histories of Child Health and Land Use Practice

⁴² As each parent and farmer child health and land use interview may span multiple years (usually 7, but up to 14 when multiple children were recorded), several of the interviews spanned multiple decades. Where an interview spans decades it was counted in both decades.

⁴³ In 2002, 20 baht was roughly equivalent to one Canadian dollar.

⁴⁴ In Mae Chaem the term Juu Khwan is used to refer to a version of the *suu khwan* ceremony practiced in central and northeastern Thailand. A complex form of *suu khwan* is described in Tambiah 1970.

⁴⁵ the same elder whose history for 1957, involving her first child, is summarized above.

⁴⁶ This was the first time that a parent-farmer reported use of spirit mediums to deal with child health concerns.

⁴⁷ Multicropping refers to the practice of growing more than one crop together in one field or sequentially within the agricultural round. Multicropping of cereals like rice with soybean (a legume) has been widely advocated by NGOs and government agencies since the 1970’s. This advocacy contributed to a glut of soy bean in the late 1970’s and a steep reduction in the price that farmers could get for soy at market.

⁴⁸ While the specific name of the injected birth control was not recalled, it was likely Depo-Provera, a drug that was advocated widely in Thailand, particularly by UN organizations, and is commonly used. Depo-Provera has come under close international scrutiny due to potential side effects and because of the absence of information provided to many women in developing nations who participated in its testing.

Notes to Chapter 7: The Domestic Stream

⁴⁹ Fermented tea leaves chewed mostly by older people.

⁵⁰ Puu Ruu was an easily recognized category suggested through the focus groups. Puu ruu may be knowledgeable elders, or knowledgeable younger people (e.g. farmers or parents considered to be especially knowledgeable).

⁵¹ Based on parental narratives of child health, domestic concerns regarding kin pit, and accounts of child health problems resulting from it, seem to be especially common in upland Pgha'knyaw areas of Mae Chaem.

⁵² Pghaknyaw parents from the upland community of Mae Hae Tai recalled brushing a child's first set of clothes three times on large rocks in order to confer the strength and stability of the rock upon the child.

⁵³ Medicines collected from wild areas are generally considered to be more efficacious.

⁵⁴ Beyond these more ritually oriented biotechnologies, parents in Mae Chaem also turn to domestic experts for advice on a whole range of other non-health related parenting issues.

Notes to Chapter 8: The Thai Buddhist Stream

⁵⁵ *Yoreh* is a small branch of new Japanese religion that emphasizes the channelling of healing power through meditation, and encourages organic farming and a formalized Japanese aesthetics.

⁵⁶ The forest tradition of Thai Buddhism emerged early in the 20th century, but is founded firmly in the millennia old teachings of the *tripitaka*.

⁵⁷ However, failing to help one's family, especially if motivated by greed, may be a very significant form of *bap*.

⁵⁸ especially meditation and observance of monastic precepts including early rising, eating one meal a day, abstinence from sex or alcohol, etc.

⁵⁹ This was especially true during Prime Minister Thaksin's brutal 2003 war on *yaa baa* or methamphetamine.

⁶⁰ Once written, the *kata* becomes a sacral element of charms, protections, and offerings. *Kata* can be written on almost any material: paper, cloth, clay, metal, stone, or tattooed on skin.

⁶¹ In Mae Chaem *pui mai noi* is celebrated in the lunar month prior to *songkran* and involves similar water based rituals calling down the rains, washing temple images, and generally making merit.

⁶² Literally, *luuk phraa* means 'monk's offspring'. Considering the strong (but occasionally broken) tradition of celibacy within the Thai Sangha this term has obvious double meanings that seemed to bring laughter and smiles every time it was discussed.

⁶³ There is a large literature that has documented the rise of 'environment monks'. See Hirsch (1997).

Notes to Chapter 9: The Thai Buddhist Stream

⁶⁴ Phra Sitata is the Thai name for the northern Indic prince who became the historical Buddha. This reference points to the nascent Buddha's realization, on riding out from his palace, that life is full of suffering (*dukha*) and that old age, sickness, and death are certainties of human experience. This is the realization that set him on the path to enlightenment.

⁶⁵ Phayabaan (hospital) means literally, a nursing house.

⁶⁶ While there are various kinds of ritual diagnosis referred to as *spok*, the most common form encountered in Mae Chaem involve interpretation of a pendulum made from a ball of sticky rice hung from a cotton string.

⁶⁷ It is very unusual for a hospital to have a maw muang on staff. My understanding is that in Mae Chaem this resulted from a particularly innovative hospital administrator seeking to better meet the kinds of services requested by patients.

⁶⁸ Occasionally a *maw tamyeh* will also become an expert in herbs or other medical techniques beyond child birth, but in these cases she will be referred to as a *maw tamyeh* and a *puu ruu* (knowledgeable person). In my experience, I have never heard of a female expert in herbs referred to as a *maw muang*.

⁶⁹ Given their very different social positioning, and the relative persistence of male Maw Muang tradition versus that of female Maw Tamyeh, a comparison of Maw Tamyeh and Maw Muang would make for very interesting work in the future.

Notes to Chapter 10: *Jiaw Song: The Spirit Stream*

⁷⁰ This could, of course, also be understood as an interest by local women in taking on the role of spirit medium. However, this privileging of the human agent within the *jiaw song-maa kii* relationship would likely not be in keeping with locally orthodox interpretations.

⁷¹ Jamthewi is likely a local Mae Chaem interpretation of Queen Chamathevii, a popular figure of worldly feminine power in Thai literature, and an historic figure persistent in Muang stories.

Notes to Chapter 11: *Selling Cures: Medicines, Pesticides, and Multinationals*

⁷² This is a medicine that is rubbed under the nose as a stimulant and a protection against nausea.

Notes to Chapter 12: *Ajaan Satsana (Preachers): Christ in the Hills*

⁷³ While I am here interested primarily in the issue of Christianity, it is important to note that the grouping of King, Christ, and Karen together is a succinct statement regarding the three major poles of nation, ethnicity, and religion around which identity seems to be negotiated in Mae Hae Tai.

Notes to Chapter 14: *Shifting Streams*

⁷⁴ I use the terms ‘indigenous’ and ‘introduced’ to avoid the much debated distinction of ‘modern’ and ‘traditional’ and also to consciously recall what I think is a useful agricultural and ecological metaphor of indigenous and introduced (sometime called invasive) plants and animals.

⁷⁵ See case studies in chapter 5 for examples.

⁷⁶ Illness categories are based on the local terms used to describe the health concerns during interviews in 2002 and 2003. Parents were encouraged to talk about what they thought was the problem *at that time* and what steps they took, or expertise they relied on, to address it. Where a parent reported an illness or problem but chose not to do anything about it (did not engage in practices associated with any particular stream) then this was assumed to represent a course of action within the domestic realm

⁷⁷ While I have interpreted Pung Lo as malnutrition (which may or may not be related to parasite load), parents and farmers in Mae Chaem relate Pung Lo to the presence of worms or other parasites.

⁷⁸ This surprisingly low level of reliance on national biomedical forms of medicine makes an interesting point in relation to the much talked about international concerns regarding ‘bird flu’ (*kai nok*) and surveillance of the potential emergence of epidemics from rural Southeast Asia.

Notes to Chapter 15: *Linking Streams*

⁷⁹ The ‘war on drugs’ and associated killings received extensive and largely positive national press attention. Several killings, including the shooting next door to the nearby primary school, took place in the Mae Chaem district centre, or in nearby villages, while we lived there in 2003. Both men and women were targeted. To my knowledge, all of the victims in Mae Chaem were either Thai (Muang) or Hmong. During that time, the sound of a loud ‘bang’ nearby was occasion for much anxiety. Several days after the shootings near the school my co-researchers and I suspended fieldwork for fear of becoming targets of suspicion. My family and I left the country for several months until the three month period was over and stability returned. Hmong communities in Mae Chaem are historically connected to opium cultivation, and Muang people frequently expressed suspicion that the current wealth and success of many Hmong peoples

in cultivating cash crops such as cabbages was also tied to ongoing involvement in drug trafficking. The number of Hmong victims in Mae Chaem was likely disproportionate to their small population in Mae Chaem. In particular, people who had become wealthy quickly and recently (especially since the 1997 economic crash) seemed to come under local suspicion. While most villagers in Mae Chaem seemed to accept the understanding that those killed were connected to yaa baa, there were also persistent rumours and fears that the police and military were using their window of extra-judicial power to eliminate personal enemies not connected to drugs.

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Appendices

ID#:

Appendix A: Interview Protocol for Parent-Farmer Interviews

| | | | | | | | |
|--------------------------|-------|-------|-----------------------|------------|-------|------|------|
| Name: | M | F | Land Owned: | yes | no | 1952 | 2495 |
| Age: | | | # of rai: | _____ | | | |
| Place of Birth : | | | # of naa: | _____ | | | |
| | | | Past Work | # of years | | 1962 | 2505 |
| # of Years in Mae Chaem: | _____ | | _____ | | | | |
| Level of Schooling | _____ | | _____ | | | | |
| Religion: | B | C | P | _____ | | | |
| Ethnicity: | K | T | H | other: | _____ | 1972 | 2515 |
| Child's Name | Age | m/f | Work and Home @ birth | | | | |
| 1. | _____ | _____ | _____ | _____ | | | |
| 2. | _____ | _____ | _____ | _____ | | | |
| 3. | _____ | _____ | _____ | _____ | 1982 | 2525 | |
| 4. | _____ | _____ | _____ | _____ | | | |
| 5. | _____ | _____ | _____ | _____ | | | |
| 6. | _____ | _____ | _____ | _____ | | | |
| 7. | _____ | _____ | _____ | _____ | 1992 | 2535 | |
| 8. | _____ | _____ | _____ | _____ | | | |

YEAR:

Land Use Info and Help Resources

Problem
Time
Cause
Solution
Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate 𑄎

good 𑄎

not enough 𑄎

Cash Income:

adequate 𑄎

good 𑄎

not enough 𑄎

Notes:

Child Health Info and Help Resources

YEAR:
Child's Name:



Notes:

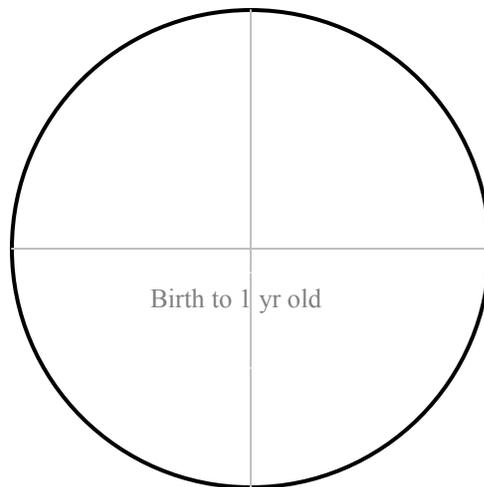
Nutrition:
adequate ٥
good ٥
a concern ٥

General Health:
average ٥
sick often ٥
strong ٥

Problem
Time
1st Cause
1st Solution
Advice or Help?...
(Other causes, solutions,
advice and help?)
Outcome

Child Health Info and Help Resources

YEAR:
Child's Name:



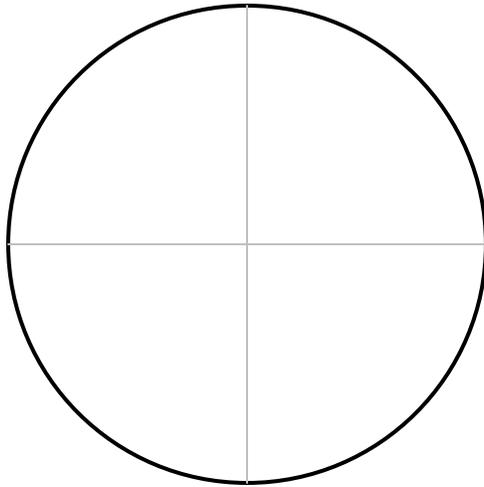
Notes:

Nutrition:
adequate ٥
good ٥
a concern ٥

General Health:
average ٥
sick often ٥
strong ٥

Problem
Time
1st Cause
1st Solution
Advice or Help?...
(Other causes, solutions,
advice and help?)
Outcome

YEAR:



Land Use Info and Help Resources

Problem

Time

1st Cause

1st Solution

Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate ڤا

good ڤا

not enough ڤا

Cash Income:

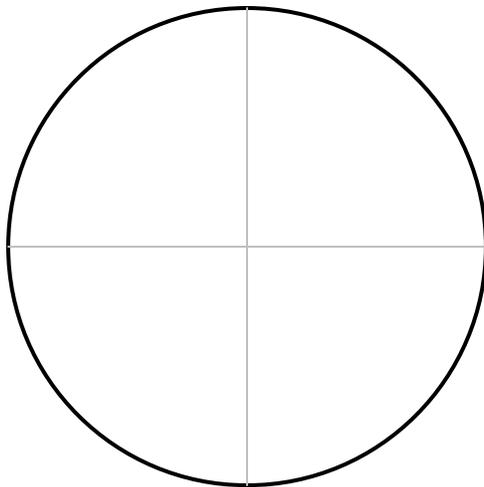
adequate ڤا

good ڤا

not enough ڤا

Notes:

YEAR:



Land Use Info and Help Resources

Problem

Time

1st Cause

1st Solution

Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate ڤا

good ڤا

not enough ڤا

Cash Income:

adequate ڤا

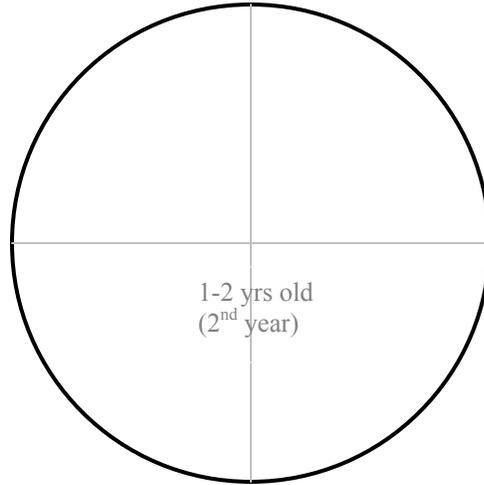
good ڤا

not enough ڤا

Notes:

YEAR:
Child's Name:

Child Health Info and Help Resources



Notes:

Nutrition:

adequate ١٢٤
good ١٢٤
a concern ١٢٤

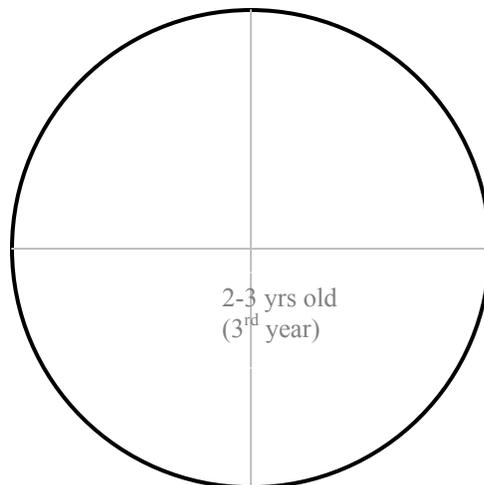
General Health:

average ١٢٤
sick often ١٢٤
strong ١٢٤

Problem
Time
1st Cause
1st Solution
Advice or Help?...
(Other causes, solutions,
advice and help?)
Outcome

YEAR:
Child's Name:

Child Health Info and Help Resources



Notes:

Nutrition:

adequate ١٢٤
good ١٢٤
a concern ١٢٤

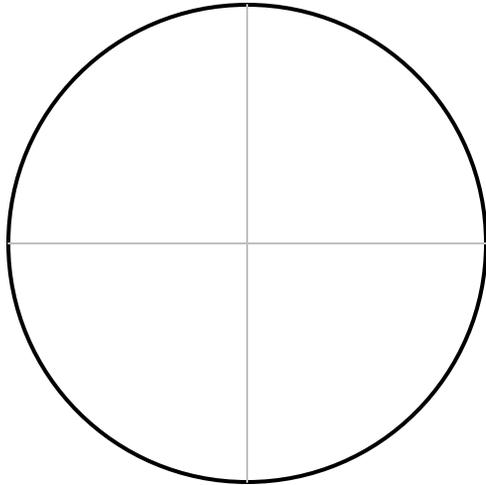
General Health:

average ١٢٤
sick often ١٢٤
strong ١٢٤

Problem
Time
1st Cause
1st Solution
Advice or Help?...
(Other causes, solutions,
advice and help?)
Outcome

YEAR:

Land Use Info and
Help Resources



Problem

Time

1st Cause

1st Solution

Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate ٢

good ٣

not enough ١

Cash Income:

adequate ٢

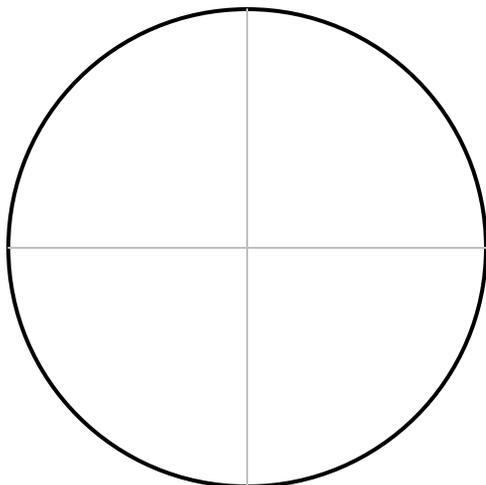
good ٣

not enough ١

Notes:

YEAR:

Land Use Info and
Help Resources



Problem

Time

1st Cause

1st Solution

Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate ٢

good ٣

not enough ١

Cash Income:

adequate ٢

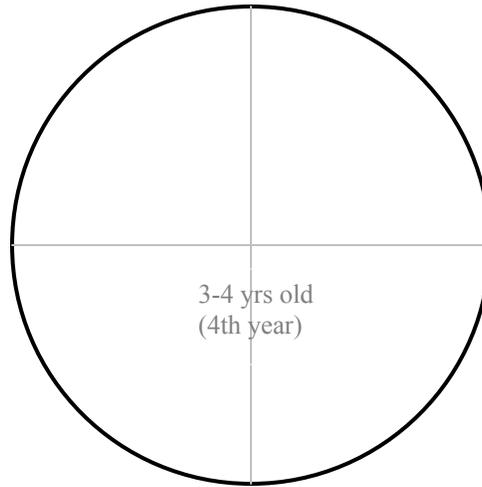
good ٣

not enough ١

Notes:

YEAR:
Child's Name:

Child Health Info and
Help Resources



Notes:

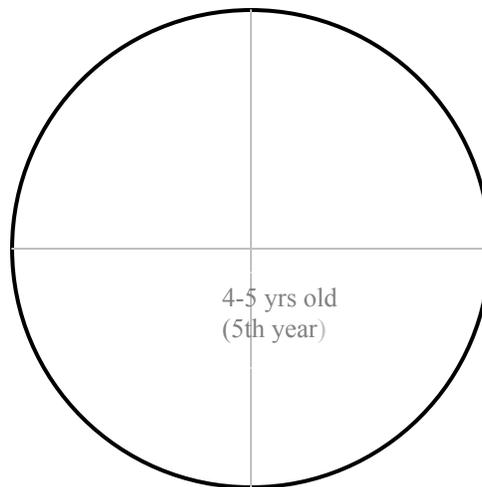
Nutrition:
adequate قفا
good قفا
a concern قفا

General Health:
average قفا
sick often قفا
strong قفا

Problem
Time
1st Cause
1st Solution
Advice or Help?...
(Other causes, solutions,
advice and help?)
Outcome

YEAR:
Child's Name:

Child Health Info and
Help Resources



Notes:

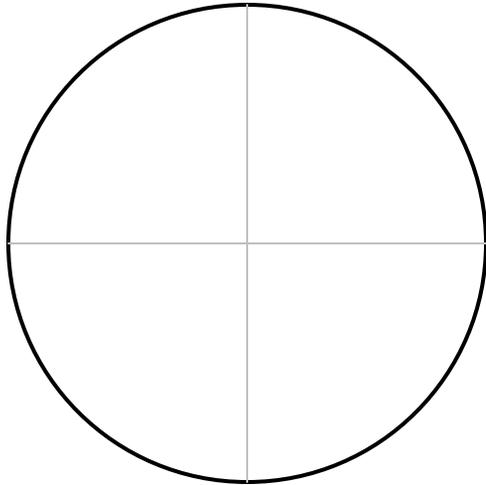
Nutrition:
adequate قفا
good قفا
a concern قفا

General Health:
average قفا
sick often قفا
strong قفا

Problem
Time
1st Cause
1st Solution
Advice or Help?...
(Other causes, solutions,
advice and help?)
Outcome

YEAR:

Land Use Info and
Help Resources



Problem

Time

1st Cause

1st Solution

Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate ٢

good ٣

not enough ١

Cash Income:

adequate ٢

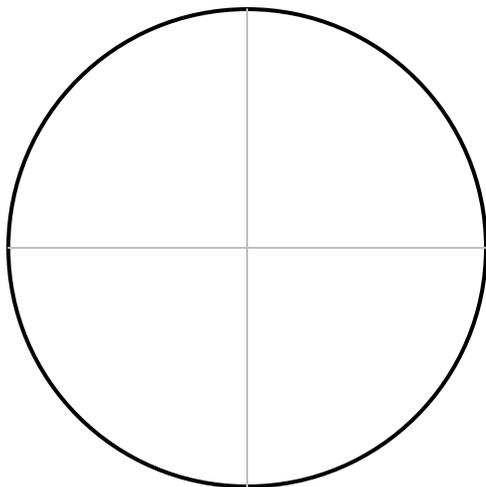
good ٣

not enough ١

Notes:

YEAR:

Land Use Info and
Help Resources



Problem

Time

1st Cause

1st Solution

Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate ٢

good ٣

not enough ١

Cash Income:

adequate ٢

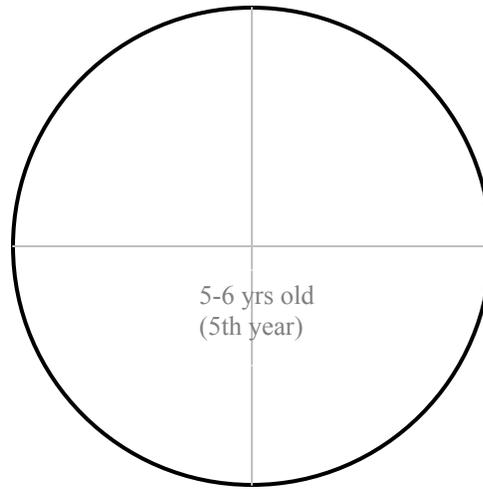
good ٣

not enough ١

Notes:

YEAR:
Child's Name:

Child Health Info and Help Resources

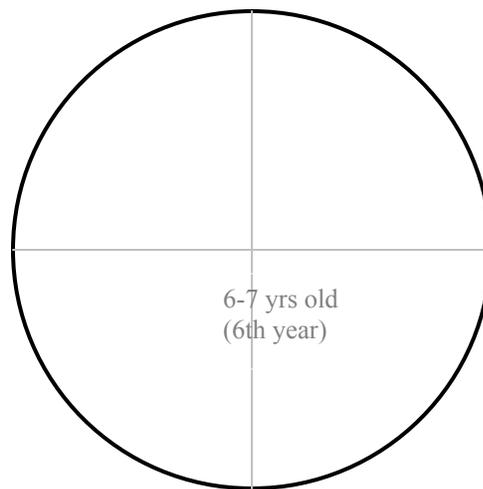


Notes:

| | | | |
|------------|----|-----------------|----|
| Nutrition: | | General Health: | |
| adequate | شا | average | شا |
| good | شا | sick often | شا |
| a concern | شا | strong | شا |

Problem
Time
1st Cause
1st Solution
Advice or Help?...
(Other causes, solutions,
advice and help?)
Outcome

Child Health Info and Help Resources

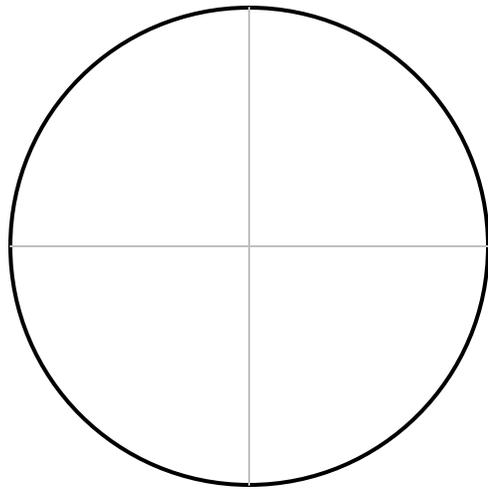


Notes:

| | | | |
|------------|----|-----------------|----|
| Nutrition: | | General Health: | |
| adequate | شا | average | شا |
| good | شا | sick often | شا |
| a concern | شا | strong | شا |

Problem
Time
1st Cause
1st Solution
Advice or Help?...
(Other causes, solutions,
advice and help?)
Outcome

YEAR:



Land Use Info and Help Resources

Problem

Time

1st Cause

1st Solution

Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate قفا

good قفا

not enough قفا

Cash Income:

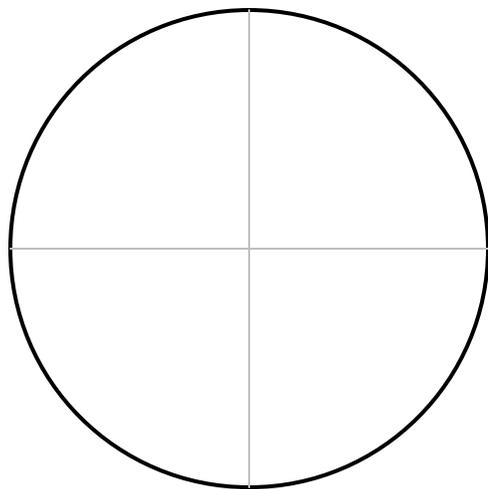
adequate قفا

good قفا

not enough قفا

Notes:

YEAR:



Land Use Info and Help Resources

Problem

Time

1st Cause

1st Solution

Advice or Help?...

(Other causes, solutions, advice and help?)

Outcome

Rice Harvest:

adequate قفا

good قفا

not enough قفا

Cash Income:

adequate قفا

good قفا

not enough قفا

Notes:

Appendix B: Glossary of Thai Terms

Note: Transliteration of Thai and northern Thai terms using an English alphabet presents unique challenges. In this thesis I have tried to maintain a balance between precision and readability. I have based transliteration on the conventions of Marry Haas (1964), who provides what is perhaps the most precise system, but have omitted tone marks and simplified Haas' vowel transliteration with the use of common English language characters.

Amphur Mae Chaem – district center (government or administrative offices)
Baan - neighbourhood or village (translates more as community of families).
Anamai -health clinic staff
Ajaan Satsana -preachers
Bun dii, yaa dii – literally do good-good medicine, meaning that if the person has merit, the medicine will work
Bun/bap - merit and demerit
Dtaat guut -cutting birth ceremony
Farang – foreigners
Kata - offerings and magical formulae for children
Khaaw niaw - glutinous rice
Kin pit - ate something wrong
Hom daeng - shallots
Jiao Song - spirits
Juu khwan -calling the khwan ceremony
Kam -karma
Kham muang – Northern Thai or Lanna dialect
Kaset Amphur - government agricultural extension agents
Khaaw – rice
Khaaw mai - new rice
Khon Thai (or khon muang) – Thai citizens
Khun Paw Khun Mae - parents and elders
Khwaan – spiritual essence of an individual
Khii yeh - crying too much
Kin khâaw - eating rice
Lai duang saa - small children enter the world clean and fresh
Liang pii – spirit offerings
Lok bot buam - pneumonia
Loy Kratong - a small offering, usually made of banana leaves, flowers, incense, and a candle, that is set to float on a body of water as part of the loy kratong celebration.
Luuk khon - human child
Luuk pii - the child of a spirit
Maa Khii - spirit mediums, literally ‘riding horse’
Mat muu – tying of wrists
Muang Fai - Irrigation societies
Maw Muang - local doctors (traditional healers)
Maw Tamyeh – midwife or traditional birth attendant

Mia noi – mistress, country wife or little wife
Muang – local northern Thai
Naa - irrigated wet rice paddy
Naam glua -oral rehydration salts
Naam puu - a salty, fermented paste made from field crabs
Naam tuam – floods
Ngaan khaw fon – a festival held at the end of the hot season to call down the monsoons
Ok duan -exiting the month of post-partum seclusion
Pak weng pae tanwo - cleft palate
Paw ui mae ui - elders or respected grandparents
Paw Guut Mae Guut –spirit parents that take care of a child before it is born (parents in the spirit world)
Phasa lanna – Northern Thai dialect
Pgha'knyaw – Karen
Peunthii sii daeng – communist or designated ‘red’ area
Phra - Monks
Phrá' - powerful scriptures and charms
Pii aarak - household spirits
Phii jiao thii – honourable or noble spirits
Por luang elected village head
Pui chemi - chemical fertilizers
Puu taen yai taen - parents in the spirit world (same as *paw guut mae guut*)
Puu yai baan - village head
Phuu Ruu -knowledgeable farmers
Rai – unirrigated upland field or unit of measurement describing the area of a piece of land.
Soi – street
Songtaew - a pick-up truck modified with two benches in the back to carry passengers
Tdaa laew -hawk’s eye symbol
Thamada - illnesses
Tam bun - making merit
Tambon - sub-district councils
Tinjok -distinctive Mae Chaem tradition of weaving
Wat - Buddhist temple
Yaa - medicine, drug
Yaa baa - methamphetamines
Yaa boran - traditional medicine
Yaa kaa maleng – pesticides
Yaa kaa yaa - herbicides
Yaa praachabaan: pharmaceutical medicine
Yorei Buddhist sect based on a Japanese New Religion that emphasizes ecological, aesthetic and healing practices as part of spiritual development
Yuu duan - post-partum seclusion

Appendix C: UBC Research Ethics Board's Certificate of Approval



The University of British Columbia
Office of Research Services and Administration
Behavioural Research Ethics Board

Certificate of Approval

| | | |
|--|--|--------------------------------------|
| PRINCIPAL INVESTIGATOR McKellin, W.H. | DEPARTMENT Anthropology & Sociology | NUMBER B02-0515 |
| INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT UBC Campus , | | |
| CO-INVESTIGATORS: Candler, Craig, Anthropology | | |
| SPONSORING AGENCIES Social Sciences & Humanities Research Council | | |
| TITLE: Buying Medicines, Building Worlds: Knowledge, Health and Land Use Change in Mae Chaem District Northern Thailand | | |
| APPROVAL DATE SEP 12 2002 | TERM (YEARS) 1 | DOCUMENTS INCLUDED IN THIS APPROVAL: |
| <p>CERTIFICATION:</p> <p>The protocol describing the above-named project has been reviewed by the Committee and the experimental procedures were found to be acceptable on ethical grounds for research involving human subjects.</p> <p style="text-align: center;"><i>Signature Blanked out.</i></p> <p style="text-align: center;"><i>Approval of the Behavioural Research Ethics Board by either: Dr. James Frankish, Chair, or Dr. Cay Holbrook, Associate Chair</i></p> <p>This Certificate of Approval is valid for the above term provided there is no change in the experimental procedures</p> | | |