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Home Grown
Ngöbe Home Gardens in a Changing World

by

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Abstract

Home Grown: Ngöbe Home Gardens in a Changing World By Gillian Laura Locascio

Home gardens—highly diverse plots near the house in which plants are cultivated on a small scale, mainly for home consumption—are internationally recognized for their role in environmental conservation, culture, and food security. For the indigenous Ngöbe communities of western Panama, who are battling declining productivity of the land and suffer the highest levels of malnutrition in the entire country, home gardens provide a stable and invaluable source of nutrition. While organizations have taken ecological factors such as climate, slope, and soil type, into account when they design home garden programs, they have struggled to include the more difficult-to-classify sociocultural and economic factors that impact garden use. As a result, many garden “betterment” programs do not fit the reality or interests of each community.

Research was conducted in three communities, one on the edge of the highway, at the entrance to the indigenous state or Comarca Ngöbe-Buglé, another one hour on foot from the first, and a third community that is also an hour away from the nearest road but has a ten year history of working with agricultural organizations. During three separate trips over the course of a year I lived in the communities, mapped gardens, and interviewed families and organizations. Of the human factors that shape home gardens, access to cash or the market and access to production or farmland are most influential. Organizations, though, that provide cash or material support over time can change the opportunity structure. It is possible to create a rapid assessment tool that allows home garden programs to adjust to these sociocultural and economic influences in different communities.

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The Visitor

I'd never eaten rice this way, not in all my months in Panama. I'd never eaten off my lap, sitting on a piece of wood to stay off the muddy floor while the wind whipped through the house-with-no-walls. I stare at the small cracked plastic bowl, heaped with steaming plain white rice and the half-smile of a boiled green banana. On top perches the crowning achievement: a single boiled chicken's foot. I feel eyes on me, cloudy eyes set into a leathery old face, big round eyes of the five children, everyone waiting for the look of delight that should cross my face with the addition of something to add flavor to the meal. My stomach is in knots; the kids just have rice.

I'd thought I was old hat at this, a seasoned "guest" to the generous families who agreed to share part of their lives with me, an expert at small talk in a language I was still getting used to. This was different. My host mother remains oddly silent. An hour passes and I still can't seem to maintain a conversation. She speaks a mix of Spanish and Ngobere, converting to pure Ngobere whenever she talks with the children or the other women. I am completely lost.

I huddle against the chill in my bones, lucky enough to have a sweatshirt when the kids running around me only have XXL T-shirts to wear like dresses, shirts which still can't hide their distended bellies. In the hour plus walk to get there, straight up a muddy trail in the pouring rain and carrying everything I own, the weight and worth of everything in those two bags was suddenly and painfully thrust upon me. The family's clothes were hung along the edges of the wooden platforms that served as beds, a sort of

curtain of mold-speckled naguas and slacks and shirts. Everyone keeps coughing. Am I going to get sick? I am so cold. I should stop complaining.

When my mom turns I offer the delicacy to one of the little girls. I can't help myself, and even though I'm hungry it doesn't ache the same way when I catch sight of the slow rise and fall of the toddler's distended belly as he sleeps. Seventy-two percent chronic malnutrition. The statistics are so cold, so scientific. I can say them to myself, shut myself off from what I am seeing. In other houses, some of my classmates are crying, are giving everything away. Am I cold? "What do you need here?" I ask.

"Corn, rice, beans, yucca."

"Education? Medicine?"

"That would be nice." It would be nice. Winning the lottery would be nice.

"We need help," she turns. "We need a latrine, we need a telephone in this community because it's very far and if someone is hurt we need to be able to call." I feel awkward and out of place, anxious. None of my book learning does any good here. What does she expect me to be able to do? I don't know what to do.

Then they discover my camera. Breathless with excitement, the girls begin to model all of their naguas, their traditional dresses, for me, dancing and then running to look as the picture appears on the small LCD screen. Their smiles split their faces from ear to ear. Finally they pause. Maybe they have run out of dresses or are tired of changing, they don't tell me. The oldest girl just skips out into the downpour, face lifted to the rain. Slightly shy and completely consumed in joy, the second joins her, both of them falling over in a fit of giggles before getting up to keep playing. I couldn't help but smile and adore their innocence. Happiness knows no bounds. I join them for something

like baseball, using our hands as bats, then slide with the boys through a muddy game of soccer. The younger girl counts to eleven in English for me, proud of her accomplishment. The boys list their words: cheek-en, dog, cat, bro-ter, sees-ter. "Do you want to hear a song?" They sing, voices jubilant and loud without care for pitch, We are soldiers of God, marching, marching. . . The oldest boy tells me that he loves to travel. "Does it snow where you are from? Is it always cold?" We play for hours, until the darkness forces us inside. My camera has long run out of batteries. I'm still wet but I'm not cold.

The next day dawns sparkling. My head is whirling, but I pick up a machete and head out with them to help weed a nearby field of just-sprouting rice. Weeding means flicking the machete skillfully between the desirable plants in order to chop down all of the competitors. Even the younger children do it flawlessly. I inevitably chop down every fifth rice plant, collateral damage from my lack of skill. They laugh at me and try to teach me proper form, probably wondering how I have managed to survive this long. The family that lives down the hill, the older woman's daughter, comes up to join us. One of the eight year old boys takes my machete to finish the section faster, and I end up mostly watching and chatting. At least conversation seems to be a little easier today.

Together, we walk back up the hill to the house, and in the bright sunlight I notice their yard for the first time. It is beautiful. Elegant old mangoes dot one side, stands of bananas fill the hillsides, and orange trees line the path. One side of the house is a grassy area where they have strung across a clothes line, and the other side boasts

numerous skinny bushes hung with sweet chili peppers and, along a shallow drainage ditch, single otoa, yucca, and plantain plants.

Surprised by my interest in the plants after an abysmal performance with the machete earlier, they offer to show me their gardens. We walk through a stand of timber, them explaining each plant at my behest, then emerge from the shade into the stifling heat of a cleared field. As we walk through the maize stubble the scent of cilantro fills the air, and I look down at my feet. The rounded saw-toothed leaves of a local plant, culantro, sprout amongst the stubble. “She sells the leaves,” my guides say of the older woman as they bend down to collect leaves by the handful. As we continue through trees and patches of field, passing by the occasional fire-colored shocks of leaves and flowers from ornamental plants, they chop a piece of sugar cane, pull upward-arching sprouts from the roots of a local bodá palm, and then proudly pause before a tall, okra-like plant. “This is Indian’s Coffee, as outsiders call it. Ñajú. You toast it and grind the seeds and it makes a wonderful drink like coffee.” As we loop back toward the house, the man suddenly stops. “Wait,” he says, and walks over to a small tree. “Do you know what this is?”

I look closely, then, almost not believing, guess, “A cherry tree?”

“Yes, we brought it back from the colder lands, out by Volcan.”

“And it produces here?” I ask, already sweating slightly in the late morning sun.

“Of course.”

Lunch that day boasts culantro-flavored rice adorned with slightly bitter bodá and some other tasty leaves I don’t recognize. “Jiraca,” they explain, which I later learn

means any edible leaf, usually requiring cooking. We wash everything down with a dark-stained liquid, rich and sweet, that tastes like something halfway between coffee and chocolate: ñajú. “You should sell this to outsiders! It’s amazing.” It really was delicious. If only it weren’t illegal to bring seeds through customs, I’d take some home for people to taste.

The sunlight lengthens and the time to join my classmates below draws near. I pack up quietly, and after straight-faced goodbyes I set off with a few family members for the town below. As we walk I tick off in my head the strange mix of plants I had seen, ones they brought back from travels or work, foreign plants like oranges or bananas that were now completely their own, and local plants that I had not seen anywhere else. Then we turn a corner and all other thoughts disappear. Laid out before me is a terraced garden with rows of a fibrous grass holding the earth in place, tall with maize and, below, string beans growing up A-frames of poles taller than me.

It was unlike anything I had seen in the last few days. “Whose is this?” I asked, eyes wide.

“My brother’s,” says the woman, “he directs this garden for the organization here, Nutrehogar.”

The Ngöbe Home Garden

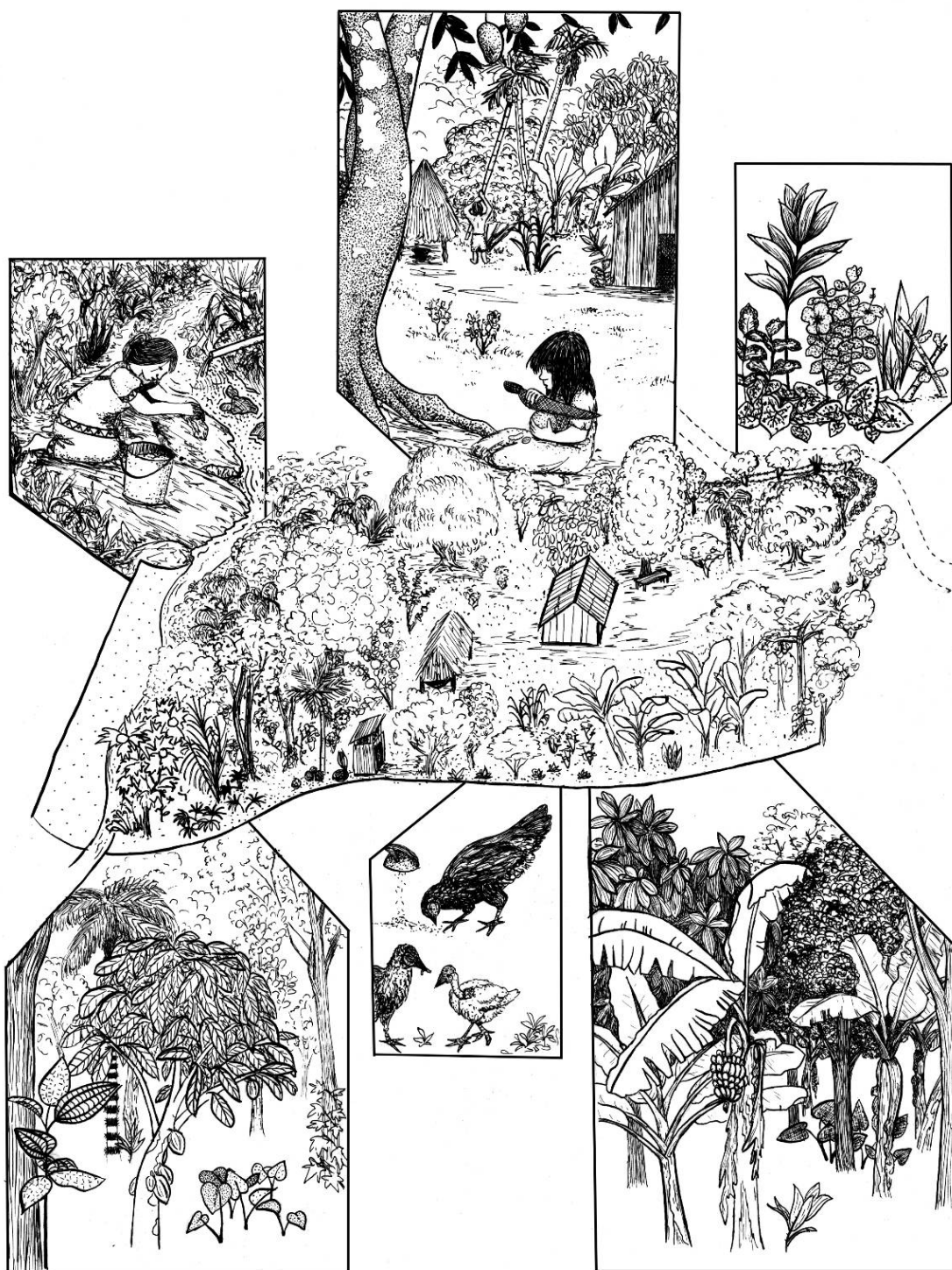


Figure 1.0 The Ngöbe home garden is a patchwork of microzones including, clockwise from upper left, the stream, the clear area around the house, ornamental plants, areas of mixed long-term and short term cultivars, small domestic animals, and areas of mixed perennials. [Drawing by author]

Introduction

The Ngöbe just don't learn production techniques as quickly. They were hunter-gatherers; they have no history of agriculture.

~Agricultural extension director, national NGO

It was a comment I had heard before and would hear again. It was why I had traveled over four thousand miles to walk through people's backyards.

Growing up in one cultivation culture, the fluidity of agriculture is hardly obvious. In fact, all too often culture—"information capable of affecting individuals" behavior that they acquire from other members of their species through teaching, imitation, and other forms of social transmission"—is not "consciously available"; in other words, we take for granted many of our ideas, knowledge, beliefs, skills, and attitudes as universal or normal (Richerson and Boyd 2005:5). I remember vividly my confusion when I first watched foreign extension workers teaching rural families in the territories of the Mam, a group of Mayan descendents in Guatemala, how to plant carrots in well-spaced lines. "Sometimes I come back in a few months, and they are planting all of the carrots in a single hole, or they forget how far apart or how deep to plant them," the extension worker had sighed. "Or we help them build chicken coops to protect the chickens from dogs and keep all of the eggs in one place, and when we come by to visit the doors of the coops are all open and the chickens are wandering about. It's frustrating."

How was it, I thought uneasily, that a group of people who had survived by subsistence farming for longer than all of my ancestors had been on this continent, couldn't remember how to plant carrots? It didn't make sense. From that moment, I could not stop thinking about what I had seen. My mind was whirling. Unable to rest with the nagging sense that I was missing something important, I barged into the office of a trusted professor and spilled the whole story. He raised an eyebrow just slightly, and asked me one question.

“Is that the way people all over the world plant? In straight lines?”

I didn't know what to say. Of course it is, I answered in my head. “Isn't it?” I retired to the library to read. It wasn't. In fact, the gardens of neighboring groups of Mayan descendents in Mexico were some of the most diverse and complicated found in the Americas, and they never planted in rows. Everything I had seen suddenly told a different story; I thought of the tourists who, unable to communicate in the local language, resorted with frustration to speaking loudly and slowly in their own language with the occasional mimed assist. What happens, then, when two cultivation cultures meet? What would happen, I wondered, if extension agents worked with local planting practices to “build a better” garden?

I had come to the Comarca Ngöbe-Buglé in western Panama to explore just that. Thus, in a way, I had come to explore the extension director's comment, and there was no better place to look than the *patio*. The patio is the closest correlate to what scientists refer to as the traditional tropical home garden, or the space around or near the house in which many types of plants are cultivated for home use, in small quantities and high

densities (Nair 1993). Their complex structures can be looked at in terms of form, or vertical and horizontal structure, as well as the function for the inhabitants (Lok 1998). On an ecological level, the gardens are part of the agricultural system that defines the landscape in the Comarca Ngöbe-Buglé. The ecology of the area cannot be considered without including the people who live there, and the form of these traditional tropical gardens is unique in its diversity and structure. In fact, this form closely follows function, and as the space around the house, home of many food plants and other useful plants, and the area in which the family spends much of its day, home gardens are deeply integrated into local culture. Culture, environmental scientist Peter J. Richerson and anthropologist Robert Boyd argue, is what allows humans to adapt faster than genes alone would allow, and it can remain stable for long periods of time and then, reaching some tipping point, change rapidly (2005). Culture is something people choose and people are born into, something that can resist outside change or adapt to it.

The Comarca Ngöbe-Buglé has not been immune from this century's forces of rapid change, modernization and globalization. In fact, the residents of these territories have had to negotiate incorporation into the market and the culture of both non-indigenous Panamanian society and the international powers. Modernization, according to sociologists Stephen Cornell and Douglas Hartmann, includes three main sets of processes. First, the capitalist economy is expanding globally and connecting people ever more tightly into worldwide markets and production. Second, state and military power are expanding on a global scale. Finally, mass media and communications are spreading information and ideas, as well as cultural practices, images, and symbols with "unprecedented speed and penetration." Increasingly, they argue, people around the

world are linked to faraway events that they have no power over, and societies become less and less “discrete” or “clearly bounded,” (Cornell and Hartmann 1998:234).

Bombarded by ideas and influences from a few powerful countries—the United States, European nations, and recently Japan—Sahlins (1985) argued that people from outside of these cultures have put influences “into their own cultural terms,” struggling to “make their own histories, identities, and ways of life out of materials both indigenous and foreign, [and] fitting external influences and externally driven events into their own evolving interpretive schemes,” (Cornell and Hartmann 1998:235).

While not home to the most-studied agricultural systems, the Isthmus of Panama has long been a site of cultural and biological exchange. The isthmus itself is a geographical, biological, and cultural crossroads. It was in Panama that plants, animals, and finally humans first moved between North and South America, and it was Panama that served as the main transport route for Spanish loot during the Colonial era. Later, it was Panama that was chosen, first by the French, then the United States, to be the crossroads between the East and the West. Here laborers, often enslaved, were brought from China and Africa to build first the Panama Railroad, then the Panama Canal, and for almost one hundred years the United States had exclusive rights to and operated that infamous stretch of land and water between the locks that bisected the country.

In the southern lowlands of district Nole Duima, a gateway between neighboring states and the part of the Comarca Ngöbe Bugle where I had come to work, the forces of modernization and globalization arrived much more recently. In the whole of the “Interior,” as Panamanians refer to the part of their country that stretches west from the Canal Zone, life had gone on largely unchanged after the initial rural colonization of

these areas, which created a well-established mestizo culture in the coastal plains. For years, foreign government and even the domestic government paid little attention to these lands and even less attention to the indigenous populations living in the adjacent mountains. According to Herrera (1981), only from 1903 on, after the Kuna Indians in the San Blas region (close to what later became the Canal Zone) collaborated with Colombian troops, did the government begin to show an interest in the indigenous regions of the country, establishing ways of creating temporary reservations with the aim of “incorporating the Indian into Latino society,” (translation by author) (Behmel and Palacio 1996).

Still, as of the 1960s the Ngöbe territories had seen little infrastructure development or contact from the national government, and it was not until the election of populist President Omar Torrijos in the 1970s that the government launched efforts to, in name at least, benefit the indigenous population (Bort and Young 2001). In the territories of the Ngöbe, the largest indigenous group in Panama at 52 percent of the total indigenous population and, as of 2000, with a population of 110,080 individuals just within the Comarca, this began a new era in outside relations (Quintero Castillo and Jurado Castillo 2002). The Ngöbe inhabit lands in Western Panama on both sides of the mountains, with a small population also in southern Costa Rica (see Figure 1.2). Yet, until the 1970s there was not a single large road through these territories, nor was there a single representative elected to the national government by the area.

While these areas remained relatively isolated, changes were subtle and largely controlled by the Ngöbe themselves, such as the adoption of new plants like bananas and oranges or the use of metal tools such as machetes, axes, and *pailas* (large metal cooking

pots). The area was by no means static; between 1930 and 1990 the population grew from 16,161 to 121,679, surpassing in 1960 what is generally understood to be the subsistence limit of 15 inhabitants per square kilometer for tropical slash-and-burn agriculture (Bort and Young 2001).¹ Short term seasonal migration to nearby coffee plantations, whose temporary character was unusual for Latin America, became established as the need for cash and outside supplies grew, and this migration in turn brought more outside supplies, plants, and techniques back to the territory (Behmel 1996).

Still, the massive road construction efforts, followed by the building of schools and health posts, that began in the late twentieth century catalyzed these changes and brought with them a whole new set of influences and goods. Ngöbe families were faced with more and more choices of how to best manage these changes, but on a large scale they had little say in how their territories were developing. Even in 2001, Ngöbe leaders protested that they have no input on betterment projects, with leader Julio Dixón asking “national organizations and Panamanian society in general to give us the right to choose our own destiny,” (Bort and Young 2001).

In 2004, the lack of basic needs in the Comarca Ngöbe-Buglé, by the government’s indicators, was the highest in the country at 98 percent lacking and 90 percent extremely lacking (Ministerio de Economía y Finanzas: Dirección de Políticas Sociales 2004). Most strikingly, the government reported, 72 percent of the population was malnourished.

National and international nutrition programs arrived, some working to alleviate childhood malnutrition through food supplements, others working to improve and

¹ Philip Young notes that the surveying of these numbers, and who was or was not included, was not reliable but that the overall change is significant enough to make these census errors unimportant (1971).

intensify production in farms and, later, in the patio. Some worked to understand local practices, like the Ngöbe Agroforestry Project (PAN-GTZ), a ten-year partnership between German non-governmental organization Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) and Panama's Authority on the Environment (ANAM) that worked to holistically understand production as well as to better existing agroforestry techniques.² Halfway through the project, in 1997, the signing of Law 10 officially created a Comarca, as Panama designates a semi-autonomous indigenous state, for the Ngöbe, carving the new state out of three existing ones. Local leaders had begun pushing for Comarcal status since 1894, and were joined by popular movements in the late 1960s (Behmel 1996). At the end of the project many of the Panamanians who had worked with PAN-GTZ began to work for the government ministries in new branches created to serve the Comarca. Three years after the official end of PAN-GTZ I first set foot in the Comarca, eager to see the impacts of cross-cultural agriculture work in the important but often overlooked sphere of the patio.

If anything, change since that time has only accelerated. Roads are built or paved every year and organizations working on all levels have a strong presence. As these two forces, roads and organizations, move into new areas, they change the way that people conceptualize space and their connections to surrounding areas. Space, as something that each person constructs, impacts his or her perception of an area. It may be firmly rooted in a physical place but it is also “the product of interrelations,” and as roads and organizations change those interrelations, so changes the space in which people conceive the options and limits of their home gardens (Massey 2005).

² Agroforestry, according to “Agroforestry Systems” journal, is an “integrated system involving trees and crops and/or livestock” (Agroforestry Systems, accessed April 5, 2009).

These conceptions can be vastly different, as I saw early on. When two former classmates from the United States had just returned from a two-day visit to a nearby community into which I was planning to extend my research. Eager for a preview, I asked them what the home gardens were like there. My question was returned by two blank stares. “They didn’t really have anything planted around the house,” my classmates told me, haltingly, “just a few bananas, some worn grass, and then the jungle.” That jungle, I learned upon visiting, was carefully managed in space and also in time to provide foods, building materials, and other useful products, as well as an aesthetically pleasing and safe surrounding for the house.³ Yet, compared to the carefully manicured lawns, shapely flowerbeds, perfectly pruned orchards, and straight green rows of annuals that my classmates considered gardens, these home gardens were untamed, disorderly jumbles of encroaching nature. So I embarked on a journey to understand today’s patio, and how the players—each gardener and each organization—envision the role and form of the home garden amidst so much change.

³ True late-succession forest would perhaps have been more surprising, as it is in short supply in this area. Relatively dense populations using slash-and-burn agriculture keep forests in the regrowth stage.

Location of Panama in the World



Figure 1.1 Panama, which connects North America and South America, is a country at a crossroads.

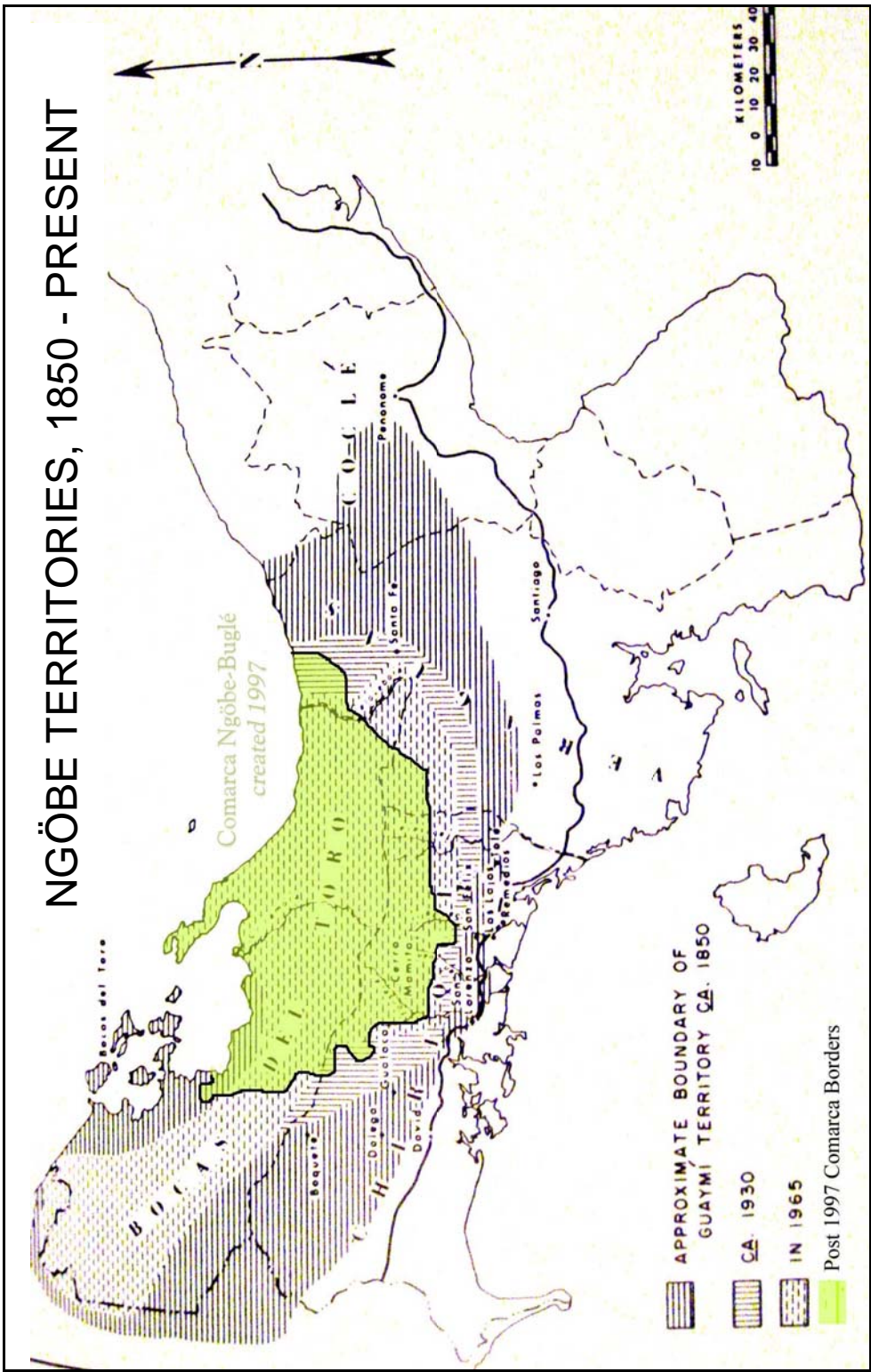


Figure 1.2 The Ngöbe, the largest indigenous group in Panama, once lived throughout most of western Panama and into Costa Rica. After hundreds of years of land encroachment and numerous unsuccessful attempts to legally protect their lands, they won the official creation of the Comarca Ngöbe-Buglé in 1997, which set fixed territorial borders. [map from Young 1971: 9, with simplified Comarca borders added by author]

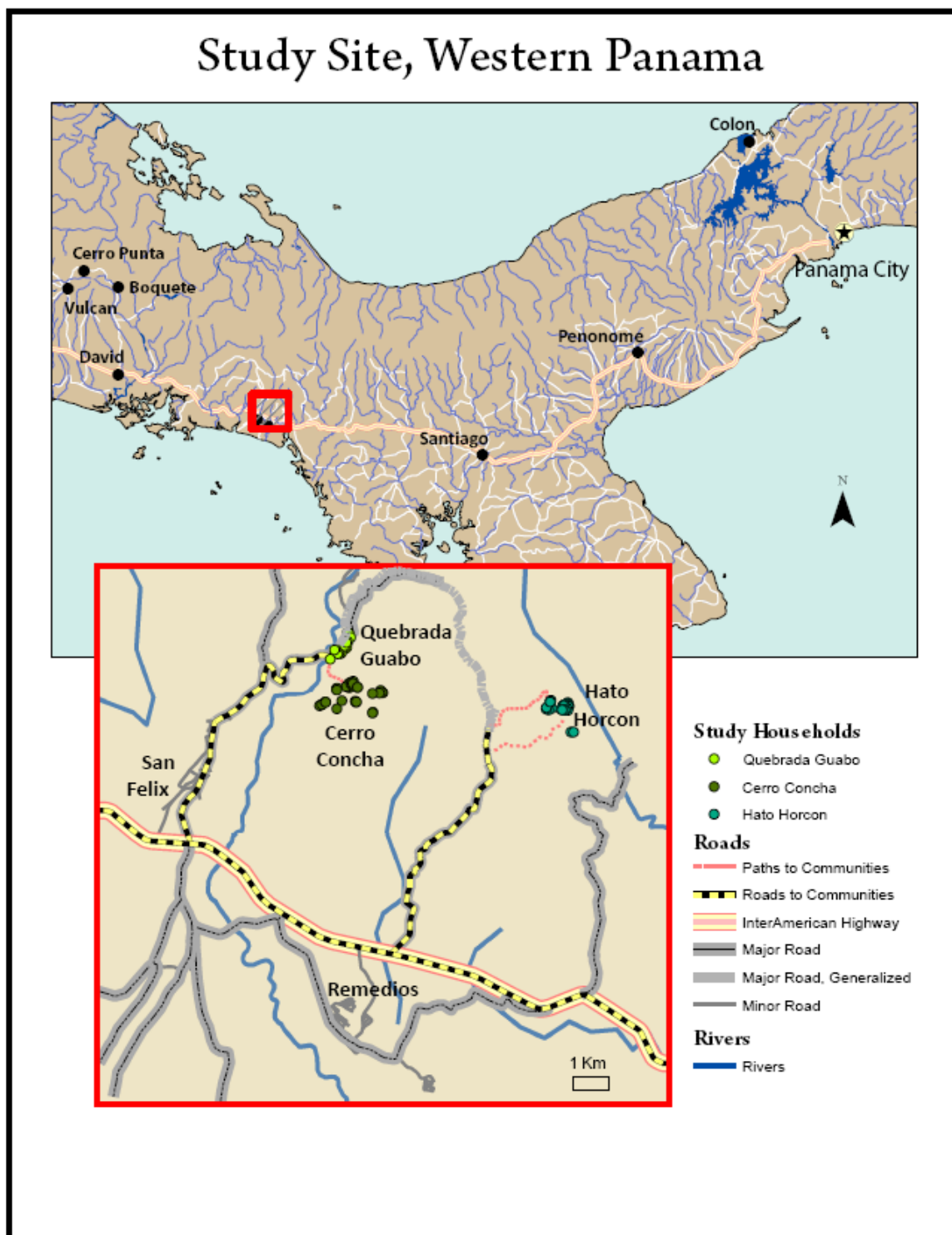


Figure 1.3 The three communities, Quebrada Guabo, Cerro Concha, and Hato Horcon are located close to the Inter-American Highway and just above the southern border of the Comarca Ngöbe-Buglé. [Map by author]

Research Questions

While I had hoped to explore how outside organizations changed patio management, what I found upon my arrival were two communities in which organizations were working and had worked to promote betterment of home gardens, betterment programs in which many adults were participating without apparent effect on the patio. Only in a third community, added later, did practices appear to be changing.

What, then, provided the context in which decisions about home gardens were made? How did urbanization and increased access to national markets impact what people were interested in and able to produce in their home gardens, and how did access to governmental and non-governmental organizations mediate or exacerbate these changes?

This exploration is divided into three parts:

In the first, I strive to lay out the human and agricultural history of the area and describe the function and form of the typical or “traditional” Ngobe home garden.

In the second, I explore how proximity to roads and markets alters the function of home gardens and circumvents some of their ecological limitations.

Finally, I examine how organizations can effectively “shorten the distance,” from markets and what factors determine their impact on individuals and on the community as a whole.

The Sites

The field work for this study took place in three trips between November of 2007 and January of 2009 in the southern part of district Nole Durma, Comarca Ngöbe-Buglé (Figure 1.3). The first two communities, Quebrada Guabo and Cerro Concha, were identified through contacts by the School for International Training in Panama and a two day visit in October of 2007. Quebrada Guabo is a frontier community on the main road that goes through the district and close to the small city of San Felix in the neighboring state, as well as the Inter-American Highway. Cerro Concha, an hour's climb on foot from Quebrada Guabo, enjoys very few of the services and little of the organizational presence that Quebrada Guabo has and, while able to participate in the national market by migrating to work, has very few options to buy or sell farm products nearby. The local women's organization ASMUNG, looking favorably on this project, was kind enough to support the study, providing host families in both Quebrada Guabo and Cerro Concha, as well as translators.

Hato Horcon, a nearby community about an hour's walk from another roadside community, Cerro Iglesias, was added to the study in July of 2008 with the direction of officials in the Ministry of Agriculture (MIDA) and the Ngöbe Buglé Project (PNB). It was specifically chosen because it is a community with similar ecological traits and proximity to roads as Cerro Concha but with a ten year history of working with agricultural organizations. The PNB provided introductions and contacts with a host family there, and two local agricultural organizations, looking favorably upon the project, provided support and guides.

Methods in the Field

Research was primarily conducted through semi-structured interviews and participant observation in each of the communities and with organizations working locally on home garden betterment, followed up by a household survey on the third research trip to collect a set of standardized information. Overall twenty households in Quebrada Guabo, twenty households in Cerro Concha, and fourteen households in Hato Horcon were interviewed and their home gardens mapped during the first two trips, while fifteen, fifteen, and fourteen of those (respectively) were administered oral surveys during the final trip.

For the four months I spent in the field between November of 2007 and January of 2009, I lived in host families in the three communities, eating two or three meals with them each day, accompanying them on occasion in their daily tasks, and attending special events such as meetings, parades, and celebrations. I lived most in Quebrada Guabo, which had better access to the organizations based in San Felix, and the mother of my host family there quickly gave me a name in Ngobere and from thereon out referred to me as her “light-skinned daughter.” I was incorporated into the family as if I were a daughter—the children of my “sister” were my “nieces” and “nephews,” her cousins were my “cousins.” We visited other families together, celebrated holidays together, and spent many evenings together. Day by day, friends and acquaintances in each community taught me patiently what was often obvious to them. While some were suspicious of my motives, accusing my translator of bringing in a spy who wanted to take over their lands or of making money by exposing their secrets, the vast majority were willing to answer questions and expressed their hopes that my findings would help bring a project to their

community. This was greatly aided by the introductions provided me by a respected member of the community, who always accompanied me on my first visit to a household, as well as my translator, who was from Quebrada Guabo but had family ties in all three communities.

Households, defined as a group of persons that lives in the same patio and shares meals, were chosen by snowball sampling, and interviews were conducted with the most senior member of the household who was present at the time and wished to attend me. Nonetheless, the entire family often gathered around to listen and chime in. Sometimes a later time was set for the interview, but most were conducted at the time that we passed by, introduced ourselves, and explained the research. Interviews covered (1) the use of the garden, including use for food, sale, recreation, and status, (2) the household's food sources and consumption patterns, (3) the presence and use of medicinal plants and the health clinic, (4) what other lands the family worked and other forms of income, and (5) which, if any, organizations they had worked with, especially as part of agricultural projects. During household interviews I also walked through each home garden with the caretaker, asking about the garden, species present, their uses, and related subjects. I noted the name given for each species, their comments, and my observations on the zonation (horizontal arrangement of plants) and stratification (vertical arrangement of plants) of the home garden, as well as GPS coordinates for each household.

While interviews were conducted in Spanish, it is common for elderly persons, women, and families living farther from the roads to be uncomfortable with their level of Spanish proficiency. In these situations, my translator explained the questions in Ngbere and repeated their answers back to me in Spanish, with any additional details I might

need to know. All interviews were noted by hand while we spoke, since most of the residents were extremely uncomfortable with the idea of audiotaping. For less formal conversations, often during other activities, I did not take notes but instead wrote down my best recollection of the conversation, along with any other observations, in my personal notes each night. In the bibliography, these conversations are marked as being recorded in “Author’s notes” as opposed to “hand-written notes.”

I also conducted semi-structured interviews with local, Comarcal, and national directors of the various organizations discussed here. I participated in and observed at least one meeting or community event of each organization and chatted with the attendees, in order to gain their confidence and to better understand how the local members relate to and work with these organizations. Organizations that no longer work in the area I learned about through interviews of past participants and employees and through a review of their reports. It should be noted that the stories here are not meant to be reports on the performance of the organizations themselves, many of which are still struggling to identify what strategies will prove most effective, but to provide guidance and insight into how different organizations function in the area.

Surveys, administered orally on the third trip to follow up household interviews, dealt mainly with land ownership and management, task breakdown in the patio and on the farm, migration, and family composition, in addition to open ended questions on adjusting to rising food prices and future plans. In addition to questions, someone from the family also drew a depiction of their lands, and the family placed cards with pictures of different plants and animals on top of the drawing where they would be located. This was particularly useful at identifying the plots of land used by the family, which tend to

be under-reported. At the request of the Ministry of Agriculture I also conducted brief surveys with all of the local *kioskos* (small shops) looking at the prices and quantities sold in a month of various indicator products.

Field information was supplemented by a review of published research, as well as government and non-governmental organization reports, to provide the base information on home gardens, Ngöbe history and agriculture, the current environmental and social situation in the study area, and past agricultural projects carried out by organizations.

In both Quebrada Guabo and Cerro Concha I conducted semi-structured interviews with twenty households during my first two trips, and on the second trip I also conducted semi-structured interviews with fourteen households in Hato Horcon.

Households were defined as a group of persons that lives in the same patio and shares meals. Households were chosen by snowball sampling, and interviews were conducted with the most senior member of the household present when we came by, although the family often gathered around to listen and chime in. Interviews covered (1) the use of the garden, including use for food, sale, recreation, and status, (2) the household's food sources and consumption patterns, (3) the presence and use of medicinal plants and the health clinic, (4) what other lands the family worked and other forms of income, and (5) which, if any, organizations they had worked with, especially as part of agricultural projects. During household interviews I also walked through each home garden with the caretaker, asking about the garden, species present, their uses, and related subjects. I noted the name given for each species, as well as my observations on the zonation (horizontal arrangement of plants) and stratification (vertical arrangement of plants).

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During the third and final trip, household interviews were followed up by surveys in fifteen houses each in Quebrada Guabo and Cerro Concha and twelve households in Hato Horcon. These dealt mainly with land ownership and management, task breakdown in the patio and on the farm, migration, and family composition, in addition to open ended questions on adjusting to rising food prices and future plans. At the request of the Ministry of Agriculture I also conducted brief surveys with all of the local *kioskos* (small shops) looking at the prices and quantities sold in a month of various indicator products.

Field information was supplemented by a review of published research, as well as government and non-governmental organization reports, to provide the base information on home gardens, Ngöbe history and agriculture, the current environmental and social situation in the study area, and past agricultural projects carried out by organizations.

Sources of Error

This study was designed to look in-depth at three communities, sacrificing wide statistical applicability for a deeper understanding of what is happening behind the numbers. Large sample surveys are the most common research method in the Comarca, and the government and organizations have collected large amounts of data that would benefit from further interpretation. To supplement this, I conducted a small-scale study that, like any small-scale case study, has some limits to how data can be generalized on a wide scale.

The first, and most basic, problem was defining and bounding the home garden. As Lok points out, *huerta* or *huerto* means different things throughout Latin America, ranging from vegetable gardens to fruits to mixed agroforestry plots with production for sale, and even sometimes the farm plot (Lok 1998). Many areas also use different words to refer to what we define as the home garden, including *huerto*, *solar*, *patio*, and *jardín*. This variety of terms can make generalization between researchers confusing, and as Niñez (1990) points out, the difficulty is compounded by the high diversity of forms, contents, and uses within home gardens in Latin America (Lok 1998). Some have characterized gardens by their area, labor, capital inversion, and diversity, others by the predominant structure and function; some have included the entire lands of the family, others only the area right around the house (Fernandes and Nair 1986; Hoogerbrugge and Fresco 1993; Mendez, Lok, and Somarriba 2001). In my areas choosing where the home garden ended and the farm began was particularly complicated because some families lived on their farms, in which case the home garden slowly transitioned to other land uses, whereas most lived in well bounded plots some measurable distance from farm

plots. To solve this dilemma, I depended on the garden caretaker's definition of the borders of the patio, which was somewhat fluid.

Data collection also posed unique challenges. On the most basic level, collecting data was complicated because I speak only a few phrases and words in Ngobere, and some residents of the area, especially older women, struggle with Spanish. Moreover, due to technical difficulties and time constraints, it was not possible to find enough literate and fluent Ngobere speakers to back-translate. In addition, the mere request of tape recording an interview made people very uneasy. Instead, I relied on careful discussion with the translator on the point of each question and as much detail as it was possible to collect in my handwritten notes. Nonetheless, the open-ended and conversational character of the interviews and surveys helped prevent serious misunderstandings. For two households in Cerro Concha, my inability to speak Ngobere made them uncomfortable enough that they did not want to speak to me, but I did not have this problem elsewhere and most of the interviews I was able to conduct in Spanish with only occasional breaks into Ngobere.

As a newcomer, there were also sensitive questions that I did not have enough trust to pose. For example, careful inquiry into health or income was not attempted, and such research would take a more extended period of time in the area to build friendships. From what I understand, sharing such information outside of families is unusual and reserved only between long-standing friends. Even in listing out exactly what land people owned there was a tendency to underplay land holdings, so instead I identified parcels by using photos of the common plants and animals and having them show me on a hand-drawn map where, if at all, they had them planted (see Figure 1.4). Due to technical

Land Mapping Method



Figure 1.4 To identify different parcels of land being used by each family, photo cards of common plants and animals were placed on and around a hand-drawn map.

difficulties and farmers' difficulty approximating patio size, I was also unable to collect a complete set of information on land parcel and patio sizes. With relative data and approximate sizes as measured by GPS unit, usually with 30 to 40 foot levels of error, combined with 2006 satellite imagery for Quebrada Guabo and Cerro Concha, I was not comfortable using this derived size data for anything except the most basic comparisons.

Moreover, in three short trips over the course of the year I was able to gain an understanding of seasonal patterns and trends over time, but keeping detailed logs of activities, purchases, or sales was not possible. Where applicable, these data were approximated based on indicators and people's recollections. This strategy provides a snapshot of one year in these communities, and as such, the time-sensitive data is more useful on an aggregate community level than on a family level.

Who was present at interviews and who spoke also impacted the kind of information I received. For example, in most houses in Quebrada Guabo and Cerro Concha I spoke with a head woman, while in Hato Horcon it was more common for me to be attended by a head male. A study by Natalie Lerch in 1999 in the Peruvian Amazon, for example, showed that when men were asked about division of labor in the garden they responded that both they and their wives cared for the home gardens, while women said just they cared for the home gardens (Howard 2006). Also, the opportunistic character of the sample—I spoke with those who were at home when I passed during the day and who were willing to respond—provides an additional, unknown, level of error.

Nonetheless, the many stories and interview results, combined with extensive observation, participation, and contextual data, provide a rich base for this in-depth case study that should provide useful insight for other communities in the area as well.

Important Terms

Like writing in the language of many colonized peoples, spelling in Ngobere, a language in the Amerindian Chibchan family, is fraught with confusion, history, and politics. Through the late-19th century, outsiders referred to this population inhabiting the states of Chiriquí, Bocas del Toro, and the western part of Veraguas in the Republic of Panama as *Guaymí*. The residents, however, generally prefer to be called Ngöbe, their word for themselves, which has been spelled Ngawbe and, later, Ngäbe and Ngóbe in an attempt to capture the vowel sound. Spelling in Ngobere is made even more confusing by the regional changes in pronunciation; within this single language subgroups speak Muríre, Buketa, Ngobere, and Movére. Walking from a house with my translator one day,

she commented how she could not understand the family when they spoke amongst themselves. Surprised, I questioned her as to why not.

“They’re from a different community, amongst themselves they speak Movére. My mother spoke it too, but I only picked up a few words” (Guía, V3).

Despite the confusion, though, recently I have seen *ö* used most to represent this rounded vowel, to emphasize the shape of the lips and make the writing system easier to learn for those already accustomed to the Spanish alphabet. For this reason, I refer to the people as Ngöbe and the language as Ngobere. In the text I will use the following letters to symbolize particular phonetic sounds:

ng = (voiced velar nasal)

ny = (voiced alveo-palatal nasal)

j = (voiced alveo-palatal grooved fricative)

ö = (rounded low back vowel)

Original spelling will be used, however, in direct references and in appendices. Due to the fact that I do not speak working Ngobere, most words used in the text will be the Spanish word used by bilingual Ngöbe in the research area. The colorful phrases and different ways of using the language come through even in Spanish. I choose to use the Spanish words instead of a translation for commonly used words that do not match up with the general Spanish usage or that are particularly important terms for local understanding. I will italicize these words the first few times they are used and include them in a glossary at the back, as well as a translation and, if necessary, explanation in the text.

All interview quotes have been translated into English for the purposes of this text and will not be written in the original Spanish, with the exception of an important word or phrase. For ease of reading, some composite quotes or dialogues recorded later in my notes have been put in quotation marks, but these are denoted in the citation as “composite” or “combined,” or in the bibliography as “Author’s notes.” Since it is impossible to know how the opinions and experiences here stated could impact individuals, communities, and organizations were they identified to a speaker, I have striven to maintain a level of anonymity for all respondents. For this reason, quotes are cited in the text either by a household identification code or the general description of the person, followed by a two letter code for the location and V1, V2, or V3 specifying whether the conversation occurred during the first, second, or third trip, respectively. To further share voices and stories without intruding upon family privacy, I have also created fictitious characters based on a combination of two to four individuals with similar characteristics, whose stories are italicized and begin each section.

The Woman of Two Worlds

I like eating rice this way, with my hands. It's faster and easier. The hands were meant for this, they were designed for it. Eating with spoons is so much slower. I know how, of course. I ate my rice with a spoon for a very long time. But it tastes better this way, from the hand.

I grew up afuera, you know. Away from mi gente, my people. My father wanted the best for me, they wanted me to go to school. But we didn't have any schools here. So they sent me to a latino town, I lived and worked in the house of a latina family there. In return for my work, that family was supposed to send me to school. I was only seven.

I remember I cried and cried when I first got there, and the mother of the house, she would yell at me. I didn't understand Spanish at first, but she would tell me how lucky I was to be living away from that place, that place where I grew up. She took away my nagua and dressed me like them. My people were dirty, she told me, because they walked around barefoot and ate with their hands. She slapped my hands when I ate with them. She told me my mother was dirty. I was lucky to be here, she said, away from that primitive place, away from the Indians. I should learn the right way to behave, to talk.

They were supposed to send me to school, but I only went two years, when I was older. It was hard, they had maybe a hundred chickens, all in the backyard. I had to let out the chickens in the morning, feed them, and then capture them all again before noon in order to be in school. I was always so tired. I got up early, and I washed, and I swept, and I chased those chickens around the patio. I went one year though, and then they sent me another year. Even there the other students made fun of me. It was too hard. I never

learned to read or write then. I learned here, when the program came, much later. Not then. I just worked there in that house, worked hard. And they were usually good to me, they fed me and told me how lucky I was. But sometimes she would hit me, the mother, when something wasn't clean enough or when I had done something wrong. When I was fourteen, I left. I ran away. I ran back to my people, I came back here. At first it made me uncomfortable, to see my mama walking around barefoot. I didn't like it. But I learned again, learned to eat rice with my hands. It really does taste better that way, you know.

I got married, I left that place, I never saw that family again. I had lived with them seven years. But I never finished third grade, not like you. I made sure my daughters could. My husband and I, we moved to Boquete, he worked in coffee and I cooked for people. That's where I learned to make hojaldres, you know. And eat cabbage and carrots and onions. And where I first found the Mormon church. When we first moved there, my sister and my husband and me with the little girls, my sister, she was scared. She didn't speak Spanish like me. One day she was in the market, staring at a white woman, so pale, and my sister she leaned over and asked me in our language, in the Dialect, "Who is this strange foreign woman?" And the woman turned to us, we couldn't believe it, she turned to us and smiled and said in a perfect accent "You don't have to be afraid, I speak your language." We didn't know what to say back, we were speechless. She spoke the Dialect, maybe better than me. We had never met any white person who spoke our language. She was from the Mormon church, she was a missionary. She taught us about Christ the Savior, about God, and what we should do. There was a Mormon church there in Boquete, I used to go a lot, but here there is no Mormon church so I don't go anymore, not much anyways.

The missionaries, you know, they're good people. Some stayed with us while we were in Boquete, they stayed with us and they were so skinny and I was scared, I didn't know how to cook for them. "Don't worry," they told us, "We'll eat whatever you eat, we're all the same." And they did, they ate everything, the boiled green bananas, they used their hands, and they liked it. They ate everything we ate, and when they left they were not so skinny anymore. They are good people. My daughter, you know, she spent a year in Guatemala as a missionary before she started University. She wouldn't tell me, when she called sometimes, but she almost starved, they spent more on the people there than on their own food. I was worried when I found out, but I was glad that we had fed those missionaries at our house.

But now that we're here, I don't go to church here. There isn't a Mormon church. I still try to do what I am supposed to do, but I have a confession. I can't give up coffee. I tried, you know, I tried so hard. I used to be addicted to coffee when we lived over there. I said I wasn't but I was, and the minister, he would tell me, "Celia, you're addicted, and drinking coffee is a sin." And I would just yell at him. One day he brought me a box of maizena, and he told me to make my coffee with this in the mornings. I tried it, and it tasted okay, but I got such a headache so I just made coffee again. And when I saw him and he asked me, I said that I wasn't using it, it gave me a headache. He told me it was the coffee that gave me a headache, told me I had to use maizena. It's toasted corn, have you tried it? It tastes close to coffee. It was hard, for weeks and weeks it was hard and I was angry and my head hurt. I had to make coffee for my husband every day still, and I would taste just a little bit at first. But I finally stopped drinking coffee. For ten years I didn't drink any, not one drop. But you know, I came back here, and I tried, but I would

go visiting my friends and if I refused coffee they would be so upset. I almost lost my friends. I finally chose, I chose my friends over the Lord's rules, I hope He understands. My friends were just so important, they saved my life, when my husband left me.

When he left me for that young girl I was so angry at her, so betrayed. He asked if she could live with us, if we could build her a house next to ours, and I said no. I wouldn't have that girl living in my home. So he left. I haven't heard from him since. I miss him still, that's why I get quiet sometimes. I loved him so much, I would make him dinner when he came home, and would be so happy. He worked hard on the farm, he always kept a shed filled with food, with rice, with beans, with corn. We always had food to eat. He always kept the shed full, and now I have nothing, I can't plant anything. I was so depressed the first year, I didn't plant anything, and now, well, it's my brother's land and sometimes it's just easier not to cause problems. Sometimes I pay him a little with the food checks the government gives me, he clears some land for me. I have some beans there this year, but not many. When it's time, we'll harvest them, sell some. We do the same with pixbae. But those are all small things. If my daughter, there in University, if she didn't work hard and send us money every month I don't know how we would live.

My daughter, she has been so good. When he left I lived alone on the farm for awhile, I didn't want to do anything. She was worried about me. He was so funny, my husband, and she just loved him so much, but now she won't speak to him. She is angry for what he did. My daughter bought me this plot in town, so I wouldn't be alone up there on the farm. I almost started drinking, I was so broken, but my friends, they saved my life. I almost took a very bad road. They said, "You can't do this, you have a life without him, women are strong." They taught me about my rights as a woman. That's why I stay with

the woman's group, because they helped me. They helped me choose to keep living. And when my daughter bought me this plot in town my other daughter sent me the three little ones so that I wouldn't be alone, so that I would have someone to take care of. These little ones here, my grandchildren, they don't know how lucky they are to have a school right here, in the Comarca. They don't have to leave like I did. You know, they are already learning to read and write? We didn't have schools here like that when I was young. No, I ran away from that latina woman, I married young. I didn't get to be educated, like my daughters, like my grandchildren. I never even finished second grade.

What would I do if he came back? I'm his wife still, I'd take him back. I'm still his wife. He's still my husband, no matter what he has done.

But here I have been talking all this time, and you with an empty plate! Would you like some more rice? Did you need a spoon?

Part I: In search of “Tradition”

“You want to learn about my patio?” A smile tugs at her face even as she tries to be serious. She surveys me, bemused, as if I’ve just asked her to teach me about her kitchen or her clothesline; the patio, as rural Panamanians refer to the underbrush-free, short-cropped, clean-swept area around their house, is as ubiquitous in a Ngöbe town as the driveway is in Suburbia, USA. Yet this “ordinary” space has become contested territory in a quiet, often unnoticed struggle for cultural expression and self sufficiency within a region that is rapidly changing.

Walking through a particularly large patio, I felt the tiniest bit like a kid in a candy store. I couldn’t stop staring. The jumble of plants follows a reason dictated by ecological niches, household aesthetics, and convenience. Nearly every plant has a use. My companion picks *chichica* and strips the tender spaghetti-like strand from the heliconia’s stiff stems. Hardly have I swallowed this delicious treat before I am happily squeezing the juice of a large green orange into my mouth and cutting the shoots off of the base of a palm to cook with dinner.

It is precisely this sophisticated management, coupled with growing doubts about the politics of development that seemed to be leaving out the needs of the growing rural poor, that turned the eyes of the scientific world toward the backyards of rural populations forty years ago (Nair 1993). With wonder, ecologists observed complicated vertical and horizontal structures created with a strikingly high diversity of plants. Despite repeated assertions that home gardens have been defined, attempts to use these definitions to demarcate the “home garden” have often met with difficulty, in part

because of the great diversity in home garden forms. Moreover, different groups of gardeners, organizations, and scientists see home gardens a little bit differently.

Yet the home garden is hardly a static fixture, especially during these times. The last thirty years have seen a flurry of building. Over 62 kilometers of road were constructed in the 1990s just within Nole Duima, as well as twenty-one schools with 84 classrooms, two health centers and two health posts (PAN-ANAM-GTZ 2001). Building has continued at a frenetic pace. Returning after a six-month absence, I would find a newly paved or graveled road, new stretches of electric cable, or an entire community of government-built cement and bamboo houses. The area has seen only twelve years as a Comarca, a semi-autonomous indigenous state. Countless organizations, countless programs, countless lectures and presentations, and countless people coming and going have left the local inhabitants balancing their own culture, wider Panamanian or, as they call it, latino culture, and the largely American, European, and increasingly Japanese culture of international development aid. Already, along roads and in areas with schools most of the inhabitants speak both Ngobere and Spanish and, despite having few people to practice with, are working to learn English. In many other parts of Latin America such rapid infrastructure development has led to a loss of structure and diversity in local home gardens as youth leave for outside schooling and the older generation ages and dies, taking their knowledge with them (Howard 2006; Steinberg 1998). Here, the future of home gardens is still being negotiated by local families.

“Now that I see what kind of person you are, I can tell you this,” the woman’s husband tells me as my visit winds to a close. “You see, I grew up *afuera*,” he said,

referring to the areas outside indigenous lands. Ngöbe use of language frames the way they split the world—everything that is not “my people” or of their own culture and ethnic group is latino, sometimes including Americans, and everything outside of their territories, especially with Spanish-speaking Panamanians, is *afuera* or simply outside. Their existence is increasingly bi- or even tri-cultural, though, and those Ngöbe who grew up *afuera* identify as Ngöbe but consider themselves just a little bit different culturally. He continued, gesturing towards his patio, “I learned to plant the way they do. The people here, they don’t plant this way.” We walk over to a parcel, in a flat part of the patio, neatly planted in raised rows of tomatoes, green beans climbing a lattice of posts, squash, and peppers. “All I lack is water to irrigate. If I had water, I would live perfectly happy” (CC20, V3).⁴

I hike down from their house, musing on the ways that the people here in Cerro Concha are integrating different practices and ideas, how they decide where to experiment and where to use traditional practices. An hour later, as I emerge from the path onto a paved street in Quebrada Guabo, darkness is falling. An overloaded *busito* trundles by, children scattering to the side of the road as the headlights approach. The streetlights flick on and the dramatic music of Panamanian soap operas floats into the night from the few houses with televisions as friends come by to visit, drink coffee, and watch. Above, where I just left, everyone will be preparing for bed by the light of kerosene lamps, quiet in the patios of their own families, but here night will not arrive for another few hours, and people walk up and down the street chatting in the safe yellow

⁴ Reconstructed quote.

light of the streetlamps. This is not the first time that this area has seen great change, and it will not be the last.

Over time, the Ngöbe home garden has been examined through many lenses: its ecological and social functions from the perspective of the natural scientist and the social scientist; its evolution through time and space from the perspective of a historian and archeologist; and, in the last fifty years, its significance through voices of the local people, as recounted through a mix of oral history and the reflections of those who worked with and listened to them. What follows is an exploration of these points of view. Our journey through time and space ends in three communities—Quebrada Guabo, Cerro Concha, and Hato Horcon—each full of families struggling in their own way to redefine their traditions and identities within an increasingly multicultural world.

Leaving Afuera for the Comarca

The bus pulls to a weary halt alongside the recently expanded stretch of the Inter-American Highway, which runs all the way from the eastern side of the Panama Canal to the United States. Just around ten years ago, they tell me, the trip from Panama City to this stop in San Felix lasted more than nine hours. Now, with new pavement and a second lane, I've made it to San Felix on \$10.35 in 6 ½ hours, including a dinner stop. I step off and hoist my duffel bag onto my shoulder to wait, but within thirty minutes a *busito*, akin to a fifteen passenger van, pulls up to the bus shelter. This road was paved within the last few years, but before that not even the open-backed trucks used in most of this area could pass reliably during the nine month rainy season. My destination: up. I climb in back and watch as we turn upward, motor roaring as it hauls its human cargo from the gently

rolling coastal lowlands into the foothills of the Cordillera Central, the mountain range that divides the Caribbean and Pacific sides of Panama and that creates a three-month dry season here on the Pacific side. We pass through town and through sun-laden pastures where Brahmin cattle quietly chew their cud, but soon pasture gives way to trees: pixbae (peach palms) and banana and cedar interspersed with a few I do not recognize. I crane my head to see the street. There is no government sign post but someone has scrawled on the pavement in spray paint “Welcome to the Comarca Ngöbe-Buglé.” I have left *afuera*.

Nole Duima, a 171.9 square kilometer district in the semi-autonomous indigenous state or Comarca Ngöbe-Buglé, rises steadily from the southern foothills, which lie 200 meters above sea level, to the continental divide at 1,000 meters above sea level (PAN-ANAM-GTZ 2001). The warmer lowlands are classified as humid tropical forest, although the view as we climb reveals a patchwork of human-made savannahs or grassy areas, swidden forests in various stages of regrowth, natural pastures, and plots of crops (PAN-ANAM-GTZ 2001, observations). Unlike their compatriots on the humid Caribbean side, though, the residents here enjoy a three-month respite from the rain. For nine months the Pacific foothills receive rain nearly every day, with somewhere between three hundred and five hundred centimeters of rain falling annually, but from mid-December through mid-April rainfall drops, replaced by a hot dry wind (Del Cid. Mendoza 1999). The mud dries and dirt roads are passable, albeit dusty. The stars shine brightly in the cool evenings. The rivers run calm and clear and at night the small spotlight of flashlights can be seen dancing along the shrinking rivers as men seek out fish, shrimp, and crab.

Topography and location of Nole Duima

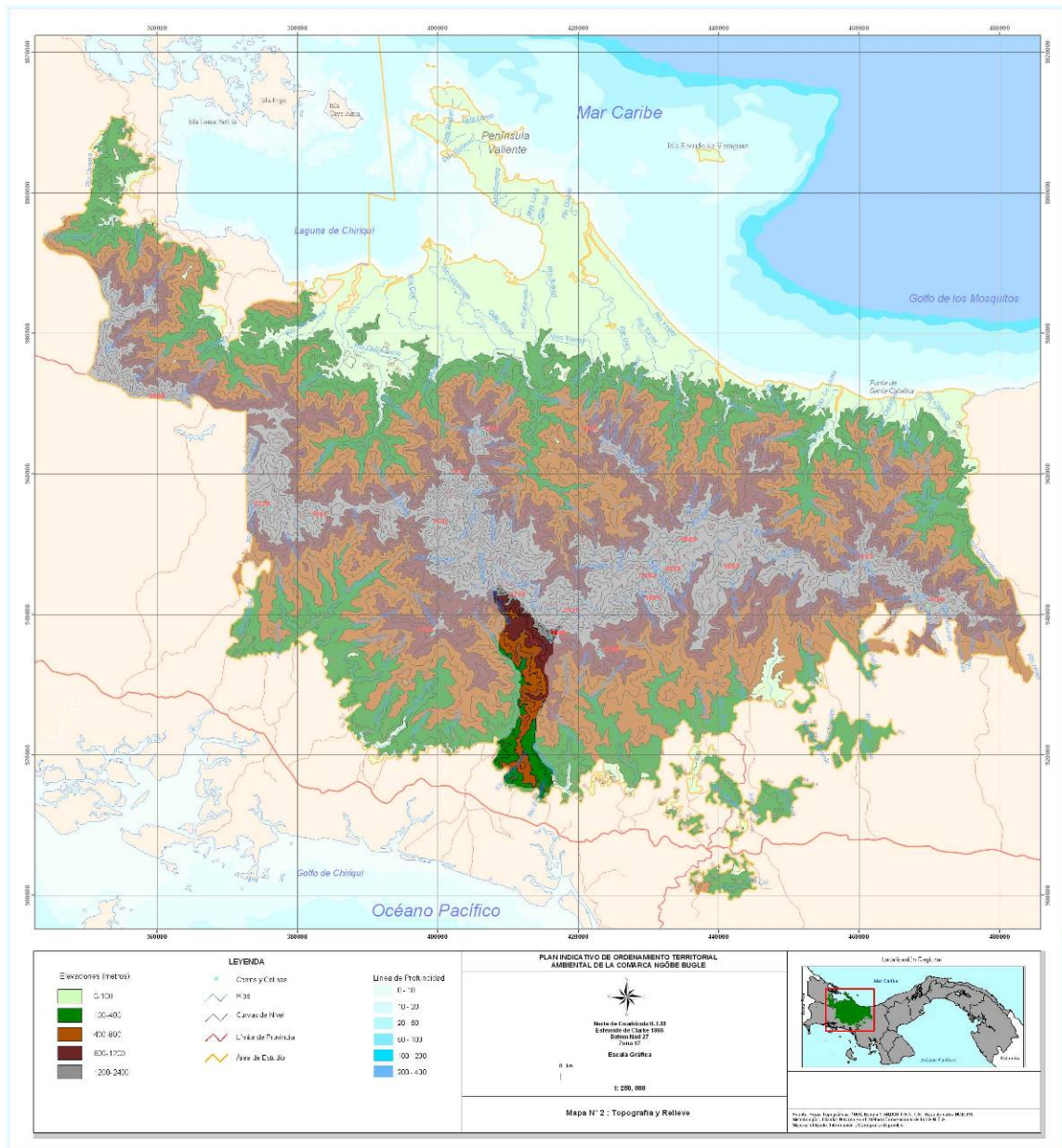


Figure 2.1 The district of Nole Duima rises steeply from 200 meters above sea level at its southern border with the state of Chiriquí to 1,000 meters above sea level at the continental divide. This study, however, takes part in the most southern part of the district.

However, the summer is a mixed blessing. The diminishing rivers make fishing easier, concentrating the fish in a smaller area, but also mean searching farther for water. Although the area is carved by many springs and streams, which drain the land into the San Felix River to one side and into the Tabasara on the other, respondents in one community commented that these streams and even the larger rivers are shrinking earlier every year because of deforestation upland. Even the flow of water through local *acueductos*, extensive systems of pipes that deliver water to houses from the springs upstream, dwindles to a trickle or dries completely. Recent changes in settlement patterns mean that not every family has a water source on their own land and, even with an *aqueducto*, 40 percent of the families in more densely populated Quebrada Guabo have to search for water more than fifteen minutes away for part of the year.⁵ Young plants shrivel unless water is thrown on them every day, and the hot dry wind can topple bananas, palms, and even larger trees if they are drought-stressed.

The distinct wind and weather patterns, combined with steep slopes etched by streams into multifaceted slopes, create a striking ecological patchwork. Sixty percent of the land in this district is considered very steep, ten percent rolling hills, and only thirty percent level (Proyecto Agroforestal Ngöbe 1995). Walking from the crest of a hill down and back up a neighboring hill, I am surrounded by deciduous hardwoods that turn to water-loving palms and tubers on the lower slopes, while the adjacent slope boasts thriving evergreen forest. In more exposed sections, the trail itself often cuts deeply into the earth from the wear of too many feet followed by too much water. These gashes quickly turn to red-stained streams during a downpour, leaving exposed the brown and

⁵ In Hato Horcon, 33 percent have to search for water seasonally and in Cerro Concha, where nearly half of the families have a stream within five minutes of the house, only 20 percent have to [field data of author].

red tropical clays or the rocky substrate typical of young soils (my observations, Young 1971). While these soils are considered poor—they are classified as Land Capability Classes 7 and 8, considered unsuitable as rangeland or for commercial cultivation⁶—local families have been farming here with success for over one thousand years (Linares and Ranere 1980; PAN-ANAM-GTZ 2001). On this side of the mountains they produce two main crops per year, as well as a variety of other produce year-round, by creating and by taking advantage of existing microgeographic variations in shade and sun, dryness and moisture, and of areas with rocky soils, silt, and clay to plant different types of cultivars (Bort and Young 2001). In fact, the landscape can hardly be imagined without their management—as they chose where and what to plant, to clear, and to leave *natural* or unaltered they enhanced the patchiness of the countryside.

Exploring through time

There is a reasonably good ethnographic account of the Guaymí [Ngöbe] from 100 years after first Spanish contact. It can be inferred from this account that many of the features of Guaymí social organization that are present today were present in similar form in the early seventeenth century . . . All early accounts indicate that the Guaymí were primarily farmers, but that hunting and fishing were also important subsistence activities.

- Philip Young, 1971

⁶ The Land Capability Class system groups mineral and organic soil into seven classes based on depth, texture, and reaction of the soil, slope of the field, and climate characteristics according to their potentials and limitations for agricultural use (Helms 1992).

I close my book and lean back, wishing desperately that I could go back in time and see for myself what this place was like five hundred years ago, two hundred years ago, even forty years ago.

The first signs of habitation in Western Panama date back to 4800 BCE in the valley of the Chiriquí River, less than four hours away by bus from where I am working. There, all evidence points to the existence of a hunter-gatherer people who lived in dispersed settlements, probably kin-based like today, clearing out parts of the understory to attract the animals that they hunted and to create space for the wild palms whose nuts that they collected (Ranere 1980). They lived in the perfect biological crossroads; about 2.5 million years before, the formation of the Isthmus had created a two-way highway for the migration of animals between the two continents, and somewhere between 3500 BCE and CE 200 the first seeds of agriculture followed this same path. From the north and from the south domestic plants arrived, taking root in new lands and forever changing the peoples and places along the way (Linares and Ranere 1980). Over the years, the diet of the inhabitants of Western Panama transitioned from the nuts of the wild ancestors of domesticated palms to soft starchy tubers and once again with the adoption of maize as a staple crop by CE 200 (Ranere 1980). The next great change in diet would not occur for more than one thousand years.

In 1502, Christopher Columbus made several stops in the Ngöbe lands on the Caribbean coast of Western Panama. He noted the people of Western Panama with only a few sentences, and during the next hundred years what anthropologist Philip Young referred to as European “wealth-seekers and soul-seekers” echoed this relative silence (2001:38). On the plains, the cultures of indigenous farmers and colonist farmers blended

together, but the jagged foothills and mountains of the Cordillera Central kept all but the most determined foreigners out. From these earliest accounts through the early twentieth century, the Ngöbe remained relatively isolated from the rapidly changing lowlands, living in the widely dispersed family hamlets still seen in more remote parts of the Comarca (Bort and Young 2001). The plants and domestic animals that the colonists brought with them, such as bananas, oranges, and chickens, made it to the farthest reaches of indigenous lands. In garden plots and patios throughout the mountains, these plants and animals adapted to suit Ngöbe tastes and lands. In turn, the Ngöbe adopted these newcomers into their production system and their culture. Today, the patio without its resident chickens is the patio of a desperate family indeed.

The Science of Home Gardens

Found all over the world, home gardens are one of the oldest land uses of humankind (Nair and Kumar 2005). The typical home garden has *poco de todo, nada en cantidad*, a little of everything, but not much of anything; studies in Guatemala have found over four hundred species of plants in a single town, along with different varieties and sometimes wild relatives (Gladis et al. 1998-2001; National Research Council 1993). This diversity provides a variety of foods, improving nutrition and supplementing household food supply (Wezel and Bender 2003). In fact, various studies have shown less incidence of protein malnutrition and vitamin deficiency in households that collect fruits and vegetables from gardens or the wild. Such diversity also makes these spaces perfect *in situ* seed banks, as well as *in situ* laboratories for breeding new varieties, and protects the garden as a whole against pests and environmental stress (Gladis et al. 1998-2001;

Miller and Nair 2006; Orlove and Brush 1996; Cleveland and Soleri 1994). Like ants swarming a loaf of bread, pests seek out areas in which their food is grouped together, especially if it stays in the same place over a few years. In the home garden pests encounter a bewildering array of strange or distasteful plants through which they have to search for their favorite food. Fewer pests find their way to each plant, and then they encounter slight variations between plants that might make a plant more or less tasty, or more or less vulnerable. As we walked through one community that has been wracked in the last few years by *Phytophthora* pod rot, caused by three fungi which leave most of the fruits on a tree black and shriveled, one respondent remarked to me with surprise that *cacao colorado* had fewer shriveled fruits than the more commonly planted *cacao blanco*. “Maybe I should plant more *cacao colorado*,” he mused out loud, surveying the plant variety. Like the proverbial eggs in a basket, counting on many different species and varieties of plant means that a drought, a flood, or a pest outbreak will not always leave the family empty-handed.

This high diversity of plants is made possible in part by creating variety within the plots themselves. Imagine a banquet table covered with food . In some areas there might be bowls of salad or mashed potatoes over hot plates, elsewhere perhaps there are nicely arranged slices of cake or tall cups of parfait. Just laid out across the table, only so many food items will fit. However, if the host places plates on stilts at different heights, he can double or triple the amount of food that fits on his table. In a home garden, this would be equivalent to vertical stratification, or growing a variety of

Vertical stratification of a home garden



Figure 2.2 Vertical stratification can be high in parts of the home garden, filling all available space in the air and soil with layers of leaves or roots and capturing a high percentage of the sunlight and rainwater. [Drawing by author]

plants of different heights at the same spot. In the most complex vertical structures almost every space is filled with the roots or leaves of some plant, with only a trail for human access. Such an arrangement allows for the highest density of plants and often mimics the shape of canopy layers in the surrounding forests, replacing wild plants with a number of useful ones but still retaining nutrients, protecting the soil, and holding water like unmanaged forests (Gladis et al. 1998-2001; Orlove and Brush 1996; Steinberg 1998). Still, from a human standpoint there are some drawbacks. In the banquet table example, foods that are under two or three plates might be hard for guests to grab. In the home garden, each layer of leaves filters out more of the sunlight, meaning that only shade-resistant plants can be planted in the lower layers. To strike a compromise between plant density and plant variety home gardeners use horizontal stratification. They clear out some spaces, plant some with just large shade trees, and plant others with plants of different heights, creating multiple mini-gardens or microzones with different levels of shade, soil humidity, even soil chemistry (Montagnini 2006).

I can see these microzones even from where we have taken refuge in the shade of a mango tree. I crane my head to look around the patio. The sun is unbearably strong. Still, the patio has its fair share of shady patches. My eyes move from the shimmering grassy space where earlier in the morning the kids were playing soccer to the deep shade of the venerable old trees that dot the patio and to the even deeper shade beyond where the heart shaped leaves of otee huddle between short cacao trees and beneath a canopy of oranges and umbrella-like membrillo. Over my other shoulder, beyond the clear area, a few thin-leaved laurels and tall spiny pixbae palms let just enough light filter through to glow, golden, from the backsides of tall banana leaves. It is into the patches of deepest

shade that all life seems to have withdrawn; the mutt stretches out under the eaves of the house, the lanky chickens *de patio* peck lazily around the base of an avocado tree.

Mendez's and Lok's conclusion from their work in Nicaragua that gardens need to be treated as a combination of microzones, not as a homogeneous unit, fits perfectly here (Mendez 2001).

It is not just humans that benefit from the carefully managed, complex structure of home gardens. By imitating the form of the surrounding forest, these areas also provide habitat for wild animals, especially birds, in an area where few primary forests still stand (Steinberg 1998).⁷ Larger birds, iguanas, and mammals attracted to the patio by the cleared-out understory and variety of vegetation once served as an important source of food (Smith 2005). Even today, in the heavily populated area of this study with little game left, garden hunting is part of the culture. Climbing past an abandoned patio one day with my host family in Cerro Concha, I am taken aback when conversation suddenly grinds to a halt. Everyone stands, frozen in place. Bewildered, I looked around and one of the older girls signals ahead of me into a stand of trees. There, perched on a branch about fifteen yards away, is a large shadow. Out of the corner of my eye I notice her father slowly bend over, brushing the ground with his hand, and before I process what has happened there is a slingshot and the stone is whizzing through the air. We watch with bated breath as the stone soars through the air, just missing the shadow, and with a squawk the large bird flies away. Instantly everyone relaxes and the chatter resumes, but I cannot help but ask, "What was that?" He turns to me, grinning as he slid his slingshot

⁷ In fact, many families in this study mentioned trees in their patios whose sole purpose was providing fruits for the birds.

back into his *chácara*, the ubiquitous traditional shoulder bag, and shrugs. “We almost had dinner.”

Of course, not all birds that visit the patio are a potential meal. Some are just pretty, one woman reminded me. Another respondent, while discussing animal damage in the field next to his house, mentioned problems with *pericos*, small birds in the parrot family. When I asked if he could at least eat the birds that had destroyed his crop, he paused, taken aback. “I suppose you could,” he said, with an inflection that implied, “if you were *really* hungry,” (CC2, V1).

For now, though, most families depend on domestic animals, an integral part of home gardens throughout Latin America (Wieman and Leal 1998). Thirty-eight of forty-two families in the three Ngöbe communities had chickens, ten had ducks, and another nine had pigs. As both a source of protein and a savings account for cash needs such as school fees or a hospital visit, small domestic animals reign in the home garden, eating food wastes from the family, pests from the garden itself, and occasionally any seedlings the family might have planted.

Seeds of Change: Recent developments

Societies are in constant flux, coming into contact with new ideas, technologies, and landscapes and readapting their particular way of life. These tumultuous times of cultural negotiation hold a particular fascination for social scientists, and it is in these periods in which the cultural patterns that can last for the next few centuries are formed. Throughout the world these times of change are expanding as communities become increasingly interconnected through cell phones and the internet, roads and airways, and

an ever growing movement of people, goods, and cash. As communities are increasingly interlinked with one another and with distant places, ideas of space and time can shift. Meanwhile, they are increasingly subject to decisions made by “powerful market agencies” like governments, companies, and speculators (McMichael 2004). Even as faraway decisions have more of an impact on them, individuals, families, and groups struggle to maintain control over their lives, often reframing events or integrating different ideas, tools, and practices with their cultural values and identities to make them their own (Cornell and Hartmann 1998). In this, the Ngöbe territories are no exception.

For nearly three hundred years after the first colonial contact, Ngöbe society seems to have remained relatively unchanged (Bort and Young 2001). In the mid-nineteenth century, however, involvement in a cash-based economy and land pressures began a new period of adjustment. Anthropologist Philip Young wrote during 1964 and 1965 when he lived in the Ngöbe lands of the San Felix area that “Ngwabe subsistence activities include farming, hunting and fishing, the raising of a few domestic animals, and a small amount of collecting of wild fruits, seed pods, and leaves. Of these, swidden agriculture is most important to their livelihood” (Bort and Young 2001:57). In Young’s view, as long as this subsistence structure, which he called the “man-land relationship,” remained stable, so did many aspects of Ngöbe social organization (Bort and Young 2001).

Already in the early 1960s, though, the inhabitants of this area reported to him land shortages and spoke “nostalgically of the days of their grandfathers, when there was supposedly much land around that could be had for the taking” (Bort and Young 2001). Between likely land grabbing by latinos before the 1930s and subsequent population

growth, from 16,000 persons in the Ngöbe territories in 1930 to about 122,000 in 1990, families were beginning to struggle to find enough land to cultivate (Behmel and Palacio 1996; Bort and Young 2001). Often, they complained, they had to clear and cultivate land that had lain fallow for half of the ideal twelve years. Land disputes filled the agenda of the local authorities. No longer could groups leave the family *caserio* (hamlet) and strike out on their own, they said; instead the opposite began to happen, with different kin groups living together (Bort and Young 2001). Some members of the family moved permanently to latino areas to work, others found paying jobs nearby, and still others moved or cultivated supplementary plots on lands of the spouse's family (Young 1971, my observations).

Meanwhile, the cash economy had very slowly extended into the Ngöbe lands. Perhaps as early as the mid-19th century cattle ranches employed Ngöbe labor and by the end of the 19th century Ngöbe employees were working on coffee plantations around Boquete and El Volcan, usually only seasonally (Bort and Young 2001). External goods became a staple of Ngöbe life, even in small quantities; cloth and sewing machines to make *naguas*, now considered the traditional women's dress, rubber boots, soap and medications, metal tools such as machetes, axes, and *pailas*, and kerosene lamps (Behmel and Palacio 1996). Even food tastes slowly changed, as rice, sugar, oil, coffee, and iodized salt made their way into the Ngöbe diet.

One latino Ministry of Education official, who served for seventeen years as director of a primary school in a slightly more isolated part of the Ngöbe territory, told me stories of this transition in the community's diet in the late 1900s. A smile tugged at the corner of his mouth the whole time. "Once," he said, "the teachers managed to get

ahold of some tomatoes, beautiful tomatoes. Excited, they prepared omelettes for the students, the way we [latinos] eat them, with the chilies and tomatoes cooked into the eggs. The students wouldn't eat them." He laughed. "They saw the red spots and said the eggs were damaged. They wouldn't even try them." Another time the teachers prepared Panamanian rice pudding, a soupy mixture of sticky rice submerged in milk, sugar, and cinnamon. "We all loved it, and we thought they would love it too. They just thought rice in milk was strange, and wouldn't eat it." Perhaps most indicative of the subtle but powerful changes that have swept the region in the last few decades, though, is the school director's story of the introduction of cooking oil. "When we first started cooking with oil in the school, all of the children got sick. They couldn't digest it. We had to give it to them, a little each day, until their stomachs got used to it" (regional director of MEDUCA, V2). Now, it is few meals indeed that do not use oil, and every family that I spoke with buys it regularly. Even a basic breakfast, fried yucca with salt, uses ingredients that were not available ten or twenty years ago and represents a regular cost for families that live from the land and do not always have a steady source of cash.

In the late 1900s the government embarked on a school-building and road-building campaign as part of the effort to better incorporate indigenous areas. While roads allowed the arrival of the Panamanian economy, through external products and small, cash-only stores, schools have acted as the carriers of latino culture.⁸ With few local teachers, the laws that all teachers should wear traditional dress and speak both Ngöbere and Spanish have been generally disregarded, and even now only one of the twenty-six teachers in Quebrada Guabo is Ngöbe (author's conversations). Schools are

⁸ When Philip Young was in the area in the 1960s, cash rarely exchanged hands between Ngöbe. This is certainly no longer the case in lower Nole Duima (Young 1971).

important recipients of many government agricultural programs and offer basic agriculture classes to students. Through the schools the children all learn the Spanish language, Panamanian culture such as poetry recitation, and Panamanian folk dancing. Nonetheless, schools are not merely centers of latino acculturation. At the Panamanian-style Independence Day parades, I watched school after school march by, playing their instruments, twirling batons, and outfitted in western-style dress designed with a distinctly Ngöbe flare and decorated with traditional Ngöbe patterns. The local political representative spoke from the podium, commending the communities for their work to make this event happen, praising the newly-graveled road built by the government that allowed them to gather from so far, and asking them, why do we not have a day to commemorate the formation of our Comarca? Why do we not also come together to celebrate our own culture? Even in the kitchen, latino and traditional Ngöbe meals mix, since mothers of the students take turns preparing school lunches.

In this context of change, how can we identify the “traditional”? What time frame should we use as the baseline? After all, the *nagua*, considered traditional Ngöbe dress, has been part of Ngöbe culture for just around one hundred years. Before that they wore just coverings around the waistline. “Our ancestors made underwear from this bark,” one woman shows me, smiling slyly as she scratches the fibrous bark of the *cortezá* tree that adorns her patio (QG6, V1). Yet it is not this woody underwear but the *nagua* that nearly all of the women and girls wear within the Comarca, and it is the *nagua* that has become a symbol of their Indian-ness (for better or for worse) when they leave. As my translator explains, “I didn’t used to like to wear the *nagua*. It was hot and uncomfortable and tripped me up. But in the Association for Ngöbe Women (ASMUNG) they told me I had

to learn to wear the *nagua*, and always wear it when out, especially when outside of the Comarca, because we had to be proud. I wear it everywhere now. We have to be proud of our culture” (Guía2, V2).

In the arena of food, such ambiguity is even more apparent. Rice, which was only introduced to the area in the early 1900s, constitutes the base for most meals if a family can afford it. However, Philip Young reported that for his research in the 1960s, his informants considered bananas a traditional crop, even though the fruit was brought over post-contact, but they “still retain[ed] a memory of having learned to grow rice from the latinos [shortly after 1900] and . . . do not consider it to be a traditional crop” despite its importance as a staple in their diet (2001: 26). Coffee, which first arrived as a commodity, was adopted with such gusto that families began to plant their own; by the late 1900s migrant workers to the coffee plantations had returned with their knowledge of how to efficiently care for and cultivate coffee, and certain areas today produce and sell their coffee (Behmel and Palacio 1996). It is not unusual to have coffee with every meal, as well as when one goes visiting, household supply and supplementary cash permitting. What is considered traditional, versus new or foreign, is bound to keep changing as more and more Ngöbe live at least part of their lives in latino areas.

Given the fluid nature of “tradition” over time, there are several frameworks to use. In his work, Philip Young referred to traditional practices or culture from the viewpoint of the local Ngöbe inhabitants. He defined traditional as “what contemporary [Ngöbe] consider to be aspects of their society and culture which were not learned or borrowed from latino (or any other alien) culture” (2001:15). This local definition is not always identical to what was “present in pre-contact times” based on “archaeological or

historical evidence,” which Young refers to as aboriginal (2001:15). However, so much has changed in the last half-century that his information can only be seen as a reference. Instead, I depend on local views of “traditional” when available and rely heavily on the research carried out by the Ngöbe Agroforestry Project (PAN). Their manuals and research papers, created through extensive collaboration with communities across what is now the Comarca, aimed to capture the typical home garden of the time, and it is against these results that I compare communities in the following two sections. What, though, does this “traditional” patio look like?

Nurä Jubäre: The Ngöbe home garden

As he draws his lands for me, he explains. “In the patio, this is a mango, this is marañon curazao, over here is an orange and a coconut. We’ve thrown ashes on the bananas; they’re the only ones producing. All of the bananas on the farm have some sort of pest, a worm. This area of the patio is all timber, down to the stream and pixbae on this side.”

“In the patio?” I ask.

“Yes, these are all the patio. I only have one parcel planted, over here. This belongs to my brother. All of that is swidden. And coming back up this side in the patio, more timber and pixbae.”

His brother speaks up. “Those aren’t in the patio itself.”

He thinks about it for a moment. “Around the patio, then, but they aren’t the farm” (HH12, V3).

The Ngöbe agricultural system is a set of small plots that, laid alongside one another, create a working whole. Like a kaleidoscope, lands are in constant flux, changing land use types most rapidly where annual crops are being cultivated and even in more permanent areas as families move house sites or as trees age and the family replants in a different area. They refer to the patio as the clear area around the house, often including trees and perennials planted along the edges of the clearest space. A parcel is an area of cultivation of staple crops, usually annuals, and a farm is a larger area that can hold multiple plots of annual crops alongside plots of slower-growing plants such as timber, palms, and fruit trees. “I don’t have a farm, just a small parcel planted with beans,” they often told me. Areas are referred to by their most important crop—usually coffee, bananas, yucca, rice, maize, beans, pixbae, oranges, or timber—and the invite “Do you want to come with me to look at the bananas?” often led me to a slope covered by bananas under the shade of timber and palms, sometimes with otoi planted below. Indeed, in more “traditional” household setups, like the family above, the house site and surrounding home garden are embedded within and blend into the entire patchwork of farm and fallows of the family.

Based on these local names and their ecological traits, explored during a year’s work in the San Felix area during 1996, then-Masters student Gilberto Samaniego-Peña identified six distinct parts to the Ngöbe agricultural system: the mixed home garden, permanent crops under shade trees, short term crops interspersed with trees, swidden or old fields allowed to grow back as forest, pasture with living fences, and conserved forests (see Figure 2.3). By rotating through these areas, each provides useful plants while using the land in a different way and allowing it to recover.

Parts of the Ngöbe Agricultural System

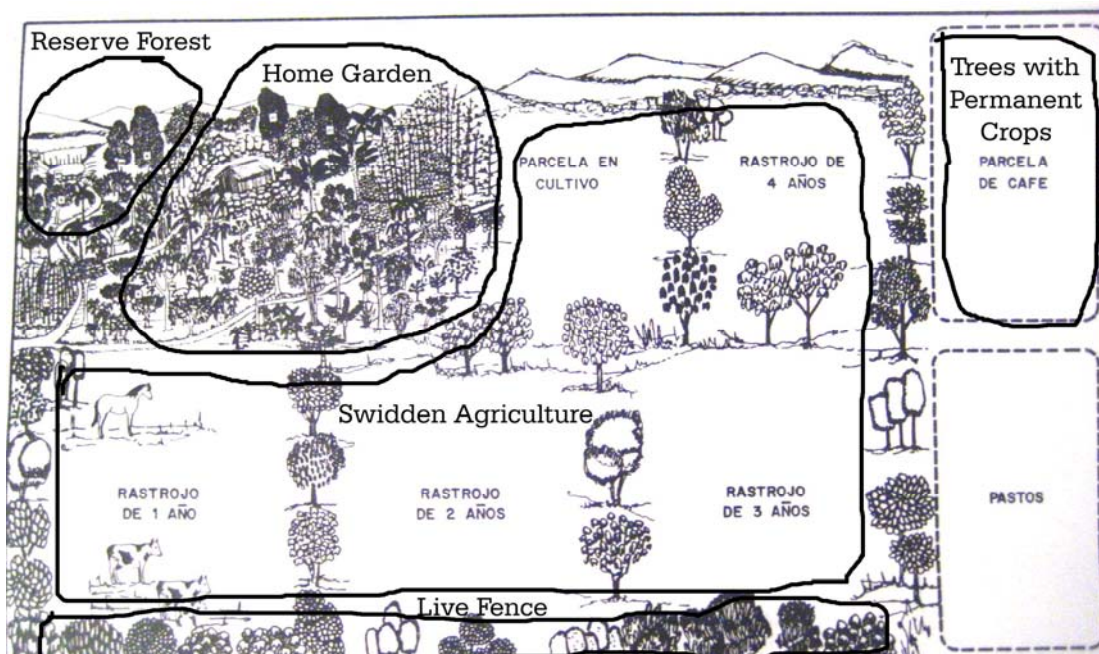


Figure 2.3 Krebs's Ngöbe agricultural System 1, characterized by clear definition between patio and farm parcels, can be regrouped using Samaniego-Peña's classification of land use type. [Figure Krebs, 1994:28, with land use groupings added by author according to PAN figures]

In his field work, Samaniego Peña found a home garden and permanent crops on the lands of every family. Despite being the smallest piece of the agricultural pie, the home garden produced two to three times as much product per hectare than any of the other land uses. Its value, though, extends far beyond its productive capabilities.

“This was my father’s site,” she said, looking around nostalgically. “I grew up here. It’s an old site. This mango was here when I was born. During the summer we would sit on the roots, in the shade, and my dad would tell stories. On pretty nights we would sleep there. I really love this tree.”

She paused, staring into space. “When my dad died we all scattered.”

“Why?” I asked.

“That’s what you do, you leave a site when someone dies. The family all dispersed, we lived other places for awhile. My brother came back, he cut down that tree. Now my sister lives here. She planted this row of flowers. I don’t like the changes, though, I like it the way my father had it.”

Six months later, when I return for another research trip, we pass by the grand old mango again. “Laura,” she says to me hesitantly, “can I make a request?”

“What would you like?”

She pauses. “Can I have a picture of me with this mango?” (Guía, V2 and V3).

The patio is more than the area around the house; it is *part* of the house. With small, crowded houses, the patio becomes a fair-weather living room. In the summers, when the rain stops, women drag sewing machines and chairs outside to work under the trees, the children play in the shade, and guests are received outside. The kitchen even moves outside every summer since no roof is necessary, and the cook receives a respite from the smoke. As an extension of the house, most of the patio is kept as cropped as short as any carpet—they use *limpio*, the word for clean and clear—and well shaded by large trees. A dirty patio is a patio where snakes and other biting creatures can lurk, awaiting their unsuspecting victim (Samaniego Peña 1997).

In this area, a clean, productive patio means a family that can take care of themselves. Unlike other types of production, the food and goods of the patio are almost exclusively for the family. It is rare indeed to plant anything in the home garden that is meant to sell. One day I asked a woman who often sells a few sacks of pixbae or bodá from her farm whether they also sold products from the patio. She sat up a little straighter and looked me in the face. “The patio is for the family,” she said sternly (QG6, V1). Yet,

when avocados are falling to the ground and spoiling, cashew fruits are producing, lemons hang full and ripe from the branches, it is easy to walk up and offer to buy a bag's worth; surplus doesn't seem to fall under this rule. This can even be a regular exchange; for some products, such as cashew nuts, latinos arrive every year to purchase a few sacks full and sell afuera. The only people who claimed to plant in their patios with the express purpose of selling a product were widows, especially older ones, who were caring for younger children. "She can't move well, she can't see well, she's sick" a friend said in defense of one older widow. "They need to live somehow. She works hard," (Guía1, V1).

Patio production being exclusively for the family, however, does not extend to domestic animals. Because small domestic animals need constant surveillance, raising chickens or pigs in the patio for sale is acceptable and, in fact, desirable. "I have only one chicken left," said with head hung and a small, sad laugh encapsulates, in just one line, a bad year. It is often said that domestic animals are the savings account of rural families, and pigs are certainly kept around to pay for next year's school fees. Sometimes this is even more pronounced; a few Seventh-day Adventist friends raise pigs even though they don't eat pork.

One woman sought me out to ask why I had not come to her house to talk to her. When I explained that I could not survey everyone, but that I could listen, she nodded and asked, "But we can still tell you what we want most here?"

"Of course."

"I dream of raising chickens. This chicken *de granja* [commercial breeds]. I have six that I bought and am raising in the patio, and they're beautiful, these white ones. But I can't raise more, they need a house or they will get sick. I would love to have many;

people in this community would buy eggs. The people with stores, they carry down a *bandeja* [30 eggs], on their backs from above [at the road, where they buy eggs that come from commercial farms]. I could sell so many eggs” (sister of HH12, V3).

Another time as I was walking through the community with a friend, she kept stopping at houses with chicks to inquire. “Are you selling chicks?” she would call. “No,” responded the first woman, and my informant thanked her and began to walk away. After a few steps she cast a longing look over her shoulder. “She has so many, why isn’t she selling any? I so want one.” And so it went, house after house. Finally, in one household where the mother wasn’t selling, a young son said he would sell one of the chicks that belonged to him. He quickly caught the belligerent chick, tied the feet together, and passed it to her, inspecting his cash excitedly. As we walked away, my informant turned to me. “I have always dreamed of raising chickens, not those chickens *de granja* but chickens *de patio* [local breeds]. They say I have a way with raising animals, once I had pigs and they grew so quickly, so large. I dream of a patio full of chickens,” (Guía2, V3). While most of the patio is jointly directed and worked by men and women, depending on other commitments, chickens almost always fall to the care of a woman of the household and provide not only food and money but great satisfaction.

Surplus from the patio is not completely free for sale, though. In Ngöbe society, gifting is the glue of social life. Courtesy dictates that visitors are usually given drink and sometimes food, and in a day’s work I am lucky enough to sample fried yucca and freshly brewed cacao, a bowl of boiled pixbae nuts with salt and *chichema* of yucca, followed by a clear soup with chicken and buttery chunks of a shockingly purple variety

of local tuber and, at my last visit, tea made from young orange leaves.⁹ At their parents' behest, the children scramble to pick fresh coconuts, oranges, avocados, or ripe bananas, depending on the season, and the visitor always leaves with a few stuffed into his or her shoulder bag.

Thus the best of the surplus is reserved not for sale but for friends and guests. One year, for example, we came home from the beach with three bunches of coconuts. The next day when I was craving a snack of coconut, though, I could not find even one. Perplexed, I sought out the mother of my host family. "Oh," she said, looking downward, "they are already gone. We gave a few to friends here, a few to friends there, and then visitors came and we gave away some more. I didn't even get to taste one," (V3). Another time we were talking about her idea of building a small area to refrigerate and sell juice when she made clear to me this priority. "Would you have to buy the fruits from other people or would you use these?" I ask, pointing at the few fruit trees in her small patio. "Of course I could use these, I already sell the extra fruit from this tree as *chicha*," my host mother explains, then thinks for a moment.¹⁰ "But not from this tree. These fruits are much sweeter, some of the best in town, and these I save for my friends as gifts" (V1). Gift giving and hospitality are incredibly important to social life in these communities, and the ability to gift produce from the home garden is both a source of pride and an economic aid in being a good host.

⁹ Chichema is made from pulverized peach palm, yucca, or maize, combined with water to make a beverage. The purple tuber referenced here is a variety of ñame called ñame morado, or purple ñame.

¹⁰ *Chicha* is fruit juice with water and sugar. An alcoholic version, called strong chicha or *chicha fuerte*, is also used for celebrations and for field workers during a *junta* or work party.

Here and Now

Home gardens now, however, exist in an even more stratified, changing world. Land shortages have created a vicious cycle of overuse of the land and underproduction. In 1961, families in the area reported to Philip Young that land should lay fallow for twelve years to regain full productive capacity, and bemoaned that they were sometimes forced to clear and cultivate land that had only rested for around six years (2001). My respondents said that three or four years was optimal, but many were cultivating land after only one or two years, out of necessity. Subsequent drops in productivity have been drastic. One family planted many pounds of rice, only to harvest one *manoteada* or handful, a story that is becoming more common. Where, they asked me, were they going to get seeds to plant next year if they couldn't even produce enough to replace the amount of seed they had sown?¹¹ At the same time, reorganization of spatial patterns removes people even farther from farms and changes the social and economic context of the patio.

A number of respondents in all three communities told me that they no longer had access to any lands of their own, all they had was their patio, and even when they were able to borrow land from family or friends they had no other place to plant perennials. Even in 1996 Samaniego Peña calculated that some 80 percent of households had to borrow land from family or others; my calculations were 40 percent, 21 percent, and 50 percent that rented or borrowed at least some lands in Quebrada Guabo, Cerro Concha, and Hato Horcon, respectively, with thirty-three percent, seven percent, and eight percent renting or borrowing but not owning (Samaniego Peña 1997). Especially as families depend more and more on borrowing farmland or purchasing food, the home garden is

¹¹ Although I do not have numbers, I suspect that recent declines in productivity have continued to intensify land shortages even after population growth stabilized.

the only place where a variety of slower growing and shade-loving plants can be cultivated.

Variety is often considered the surest route to good nutrition and I'll never forget the multi-colored breakfast that my host mother cooked for me at the end of my trip with plants from her patio: vibrantly purple ñame, buttery yellow ñampí, bleached white yucca, green chunks of the melon-like chayote, khaki shoots of the slightly bitter bodá palm. Elsewhere fresh and varied food can be hard to come by, but the home garden produces a small quantity year-round: timber and fiber, various fruits and edible leaves and even small patches of tubers, beans, or yucca (Montagnini 2006). Proudly patting a tree in his garden, one man explained that during the avocado season this tree alone produced over two hundred pounds of avocados, enough for the entire family and to fatten the pigs as well (QG7, V1). During both orange seasons, the orange trees seem as filled with children as with oranges, scattering peels and seeds across the ground.

As the struggle to negotiate the changes in how they define their homes with relation to the landscape, their neighbors, and the world outside these networks, families choose what will be best for them from the available options. Those options, however, are created or restricted by what is available within the community and how that community is linked to others. Roads, steady water sources, electricity, schools, opportunities to buy goods and to earn cash, and organizational support have arrived in each community at different times and in different ways. This variance creates a patchwork of socioeconomic, cultural, information, and infrastructure relations that shape families' options and, thus, local ecology and production. We have identified the

“traditional” garden, and now it is time to understand how gardens deviate from this under different circumstances found from community to community.

The Worker

We do things on our own here, we don't live under anyone. We depend on ourselves, because if we don't, there is nothing.

We don't have any other land than this. I'm not from here, I came here for my wife. This cuadro here, from down where the trail is to up above, you see those laurel trees? There. We plant here, bananas, beans sometimes. And we help her mother; you've met her, up above? Her mother is getting older, and my wife is the one who helps her most. Sometimes we plant crops up there, but her brother is the one in charge of the land. We don't get much to plant on. Things are hard. My daughter, she's so smart, and she's graduating primary school this year. She wants to go on to secondary school. I want to send her. I want to, I am just not sure how, I don't know where the money will come from. My son, you know, he couldn't continue. He wanted to. We needed him to work or the family would not have had food. Times are hard, food has gotten so expensive, everything has gotten expensive, and with my health. . .

It has been a few years now, and my son finds work around here, day work around here or afuera in San Felix or Remedios, throwing the machete around, clearing land, fixing fences in the pastures. Work of the Indian. I go sometimes too, for one day here, four days there. I come home at night, but I have to leave in the dark, at four in the morning. I need an alarm clock, sometimes I don't wake up. I've seen them, they have them in town, to wake you up. It's not regular work, though. We Indians, we don't have a lot of regular work. We live by earning a little here, finding a little there, plant some food, sell a hatful of pixbae, work a day's job here or there, sell a bracelet or bag or

chicken every once in a while, and when there's nothing we go without. No sugar in our cacao, white rice plain without anything. We make do.

My son, though, he helps the family a lot. Especially with my health, I don't know how we would eat without him. Other than him, I have only daughters. One, my oldest daughter, she makes bracelets to sell sometimes, but she has two young children, she has to take care of them, nurse them, cook, wash clothes.

My son? He's not here now, that's why you haven't seen him around. It's funny you ask, I'm actually walking down to meet him at the road. He's coming home for a few days, for New Years. Then back to the coffee plantations, throwing the machete around, chopping, harvesting the berries, working in coffee. I would migrate too, if I could, I would leave and in a few months I could make a few hundred dollars, maybe send my daughter to school. I don't drink, that's the way people really lose money when they go to earn a salary, they drink and in a few months they come back with some food, a new machete, maybe some shoes or shirts, and nothing else. They drink away their money, it's a problem for many who leave. Or they leave their wives. My second daughter, she has a baby and her husband left to work, we've never heard from him again. Not me, though, I would go for my family. I wish I could. I can't though, not with my health. I have epilepsy, like my wife's cousin, it's not as bad but I still can't leave. I used to, when I was younger. Even when I go on my own to collect firewood, sometimes it happens.

My wife, she is good, she takes care of so many things. She works hard. She is the mistress of this household. She so wants a new house. Our roof leaks, but we don't have enough palms, no one in this area has enough. We'll have to walk three hours to get

them, buy them there, they are expensive. This roof, this house, though, it's old. It needs new thatch.

And I'm lucky enough, the government just contracted my son to help with the road building project, contracted him for two years starting in June. They'll train him, and he'll have work, he'll be able to come home at night or every week. It is good work. He still wants to continue school, though, wants to go all the way to University, study construction or agronomy. The organization you mentioned, you've seen their logo? They used his picture. They told him they would give him a scholarship, something, since they have his picture everywhere. But nothing. Maybe you could ask them, ask them about the scholarship, why they have forgotten him when he is on all of their buildings, all of their posters.

That's why I tell you, we're on our own here. They have forgotten us, no one is coming to help us. We take care of ourselves. If we don't, no one will.

Part II: Going the Distance

We trundle up the gravel road, holding on for our lives to the railings behind us as the back of the truck tips towards the sheer drop-off where a road shoulder should be. I'm convinced that, if we were not packed so tightly together, we would fly right out of the truck bed. The truck is full, though, even carrying a man on top of the framework that serves to brace a tarp on rainier days. As his booted feet dangle in front of the sweeping mountain views it is hard not to be nervous, and with each bump that I am sure will soon become a bruise I wonder how I will last three hours. Behind us, I nervously watch two teens on top of the truck bouncing back and forth while the band instruments take the prime spots in the truck bed. To my surprise, though, the nail-biting trip rolls to a close after only an hour and a half. The old, muddy road had been graveled over, in a government infrastructure project for the area, cutting travel time in half.

Roads are often conduits for great changes. They carry people, plants, animals, and products along their routes to new and old places. They restructure the way humans conceptualize and use space, and even the way we think of "home." For someone who is used to travelling by air, a two-hour airplane ride from home is a reasonable place to visit or even move to for a job. Such a person does not gauge distance in the same way that someone travelling by horse along muddy trails might. For the horseman, reaching this same destination, two hours away by plane, would be the end of a long journey and dauntingly different from the place called home.

By shortening these distances roads help bring in foreign influences but they also connect once scattered members of the same group, allowing them to meet, organize, and

mobilize. Still, the arrangement of a road network alters how it impacts these spaces. For example, most roads on the Pacific side of the Comarca Ngöbe-Buglé run north-south, from the highway in Chiriquí upwards towards the mountains. Very few run east-west and none connect the Comarca from one side to the other.

On the one hand, this reflects the geographical difficulty of traversing the foothills; most valleys or crests run north-south along rivers. On the other hand, any roads through the area must be built through difficult, mountainous terrain. The lack of roads passing from one part of the Comarca to the other also reflect, in some ways, the government's priorities of linking the indigenous area to the rest of the country, as opposed to creating internal networks within the Comarca. Passing from one side of the Comarca to the other, for organization or the creation of internal services or markets, is not possible by car without leaving the boundaries of the indigenous state, making the latino border towns service providers to their northern Ngöbe neighbors and not the Ngöbe themselves. In fact, most of the government offices for the Comarca are located outside of the Comarca, to simplify this transportation dilemma, and those offices that are not outside of the Comarca in San Felix are located right on the border, in and around Quebrada Guabo.

The construction and improvement of roads, then, completely changes the dynamics of an area and the way its residents see and connect with other places. Imagine that, as the first part of Figure 3.1 depicts, before the construction of large roads the main influence on a family's subsistence was the home garden and the family's access to farmland.

Hypothetical influence on the patio as roads are constructed

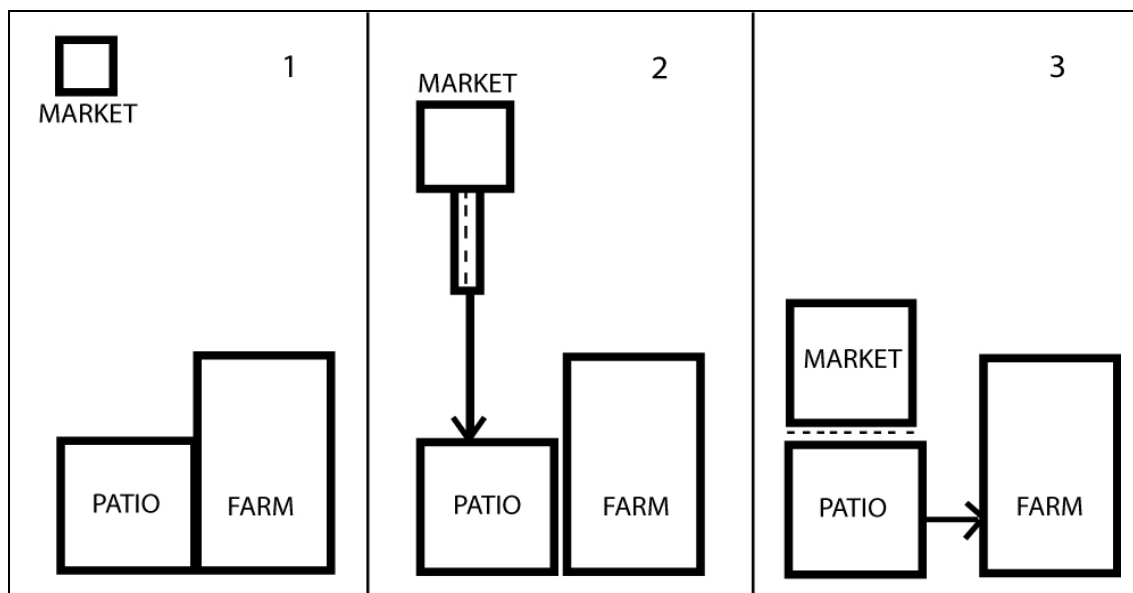


Figure 3.1 The construction of roads allows families to access goods, and sources of income, that were once distant, making the market ever more important and lessening farm importance slightly.

With the creation of roads nearby, as depicted in the second part of Figure 3.1, participating in the market by traveling and buying goods or finding temporary work becomes an option and, subsequently, influence on life in the patio, and with the construction of a road through town (final frame, Figure 3.1), like in Quebrada Guabo, the restructuring of the physical and also the effective space is major.

Unlike Cerro Concha, which merely uses the road, Quebrada Guabo is in many ways defined by the road. Quebrada Guabo and Cerro Concha, the former on a main road and the latter an hour's hike away, provide a view into the way that roads restructure space and create new limits and opportunities, especially with regards to the two main sources of production: the farm and the market. Constructing roads changes not just the physical distance to farms and market centers, it also alters the effective distance.

Closeness: Quebrada Guabo

“I lived here as a child. This was my mother’s patio. From the first time I can remember, all of this was farms and swidden, to that hill there,” (QG1, V1).

“There was [no road, just] a tiny footpath to San Felix,” her sister recalls. “We didn’t buy as many things then, we produced what we needed. We only had to go to San Felix to buy clothing, machetes, axes, other materials for work. We didn’t buy food from *afuera*, no outmeal, sugar, coffee. We drank *cacao*. We still drink *cacao*,” (QG5, V1).

“Then we went dividing the land, creating the town. But all this area, from Nutrehogar below to here by the school, all of this land belonged to my family.” (QG1, V1). She gestures widely, encompassing the very different place that surrounds us now.

Surrounded by the trees of her patio, I can almost forget that less than a minute away trucks and *busitos* trundle along a paved road. The houses here, off of the main street, are connected by thin footpaths that wind through patios, and we call out “*Permiso!*,” excuse me, as we pass through. Sometimes a dog comes toward us, growling, and if it seems particularly fierce we pause and call out to someone in the house to call it off. On hot days the banks of the river that curls along the southwest side of town comes to life with families, older children soaping up and jumping from the rocks to swim while mothers wash laundry and lay it out on the rocks to dry.

Still, the time when San Felix was a day’s trip away is hard for me to imagine. Now, not including the wait for a seat on a passing *busito*, which can be a few hours on school mornings, the trip to town only takes fifteen minutes and costs fifty cents each way. Even by foot, down the new road it only takes an hour. The residents of Quebrada Guabo inhabit a true border town, straddling the boundary of the Comarca and just up the

road from San Felix, a small border city in the neighboring state of Chiriquí. The asphalt strip splits Quebrada Guabo down the middle, shuttling goods and people up and down through the long, narrow district of Nole Duima. At the base, the road begins at the Inter-American Highway, the main highway that runs through from North America down past Panama City and the only road connecting Panama City to western Panama. It ascends, passing San Felix, entering the Comarca and Quebrada Guabo, continuing up over a recently re-graveled surface two hours more to the next major town center, and finally reaching the pass to the Caribbean side as a small, barely passable dirt road.

Quebrada Guabo, a local depiction

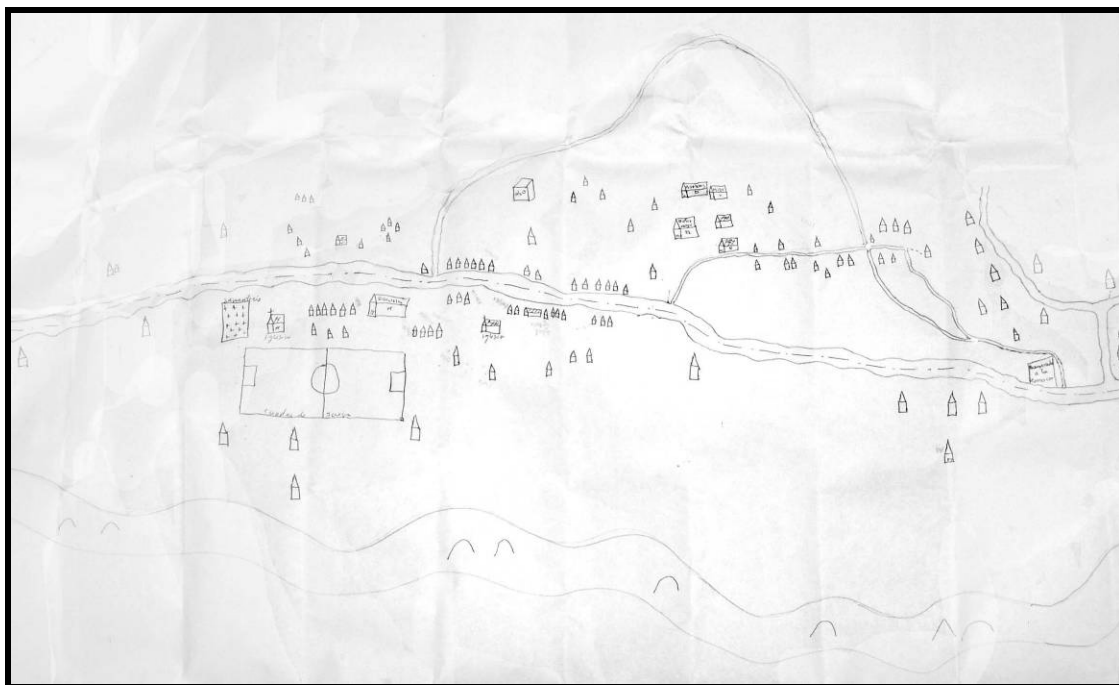


Figure 3.2 This drawing by a resident shows the centrality of the road, which crosses horizontally through the middle, and the paths going out from it. Also depicted is the grouping of the town around the school, pictured here with a large soccer field on the left of the drawing. [Drawing by member of ASMUNG, Quebrada Guabo]

Quebrada Guabo is centered around the street (Figure 3.2). The road is always full of children playing and people walking by. The children have already adapted to roadway play; over and over, they scatter to the shoulder shouting their refrain “*Viene un carro,*” a car is coming! At night, the streetlights flicker on with a low hum and people take turns riding a bike back and forth along the road, teenagers lounge on the rocks and along the shoulder, and couples walk with their kids. Houses line both sides, closely spaced. Every few houses there seems to be a *kiosko*, a small shop that consists of a small window, name painted above, opening into a small room with shelves for merchandise.

Up the road, they have just built a new classroom and a roof for the asphalt volleyball court at the growing primary school. Already, the school serves over five hundred kids in their first six years of school. Down the road a few minutes kids bat at a piñata in the wide courtyard formed between the offices for the Comarcal branch of the Ministry of Social Development (MIDES), the local women’s organization Association for Ngöbe Women (ASMUNG) that has expanded into twenty-six other communities since it began, a regional center for a national child nutrition organization Nutrehogar, and a state-of-the-art computer laboratory with internet in which, when there is someone there to teach, they hold nighttime university classes. Just below, at the bridge which marks the entrance to the Comarca, another office draws its daily government workers and a few local individuals, as well as the women’s organization, have taken advantage of this daily influx to sell hot lunches for the workers. Even more workers will be passing by soon, as the Comarcal offices for the Authority on the Environment are in the process of moving up from San Felix to just past Quebrada Guabo, where they will be situated in the Comarca .

Quebrada Guabo, in fact, is accustomed to visitors, government workers, government surveys for their programs. “How long is your survey?” a friend asks me on my third trip out. “You know I’ve done four already this year?” (QG12, V3).

The residents of Quebrada Guabo have mobilized to bring two agriculture programs from different government ministries for the primary school, and are fighting to get plans for a high school moved from a town just up the road to their town. As a whole, the community has a strong voice in local politics. Even though it was identified in 2001 as a “provider of services” to the area by PAN-GTZ, though, Quebrada Guabo still lacks some basic services itself (PAN-ANAM-GTZ 2001). There is still no upper level of high school in the entire district, and anyone from Quebrada Guabo who wants to go past primary has to leave the Comarca; some move temporarily but most travel each day down to San Felix for day classes or, for the young adults that need to take care of their families, to night classes after the day’s work is done. The nearest health center is in the hospital down in San Felix, a common destination, and shopkeepers and residents travel to San Felix for goods, or send money with another person. One day a friend who bakes breads and sells them around Quebrada Guabo showed up empty-handed. “No donuts?” I asked, half joking and half serious. He made the best donuts I had tasted in a long time, and the only ones to be had anywhere nearby. “No, the person who went down to San Felix got me the wrong kind of yeast.”

Still, the creation of the *pueblo* in Quebrada Guabo has not been without its problems for a people accustomed to a more dispersed settlement. The patios here are smaller than in Cerro Concha, the smallest ones clumping all of their trees into the fence and the larger ones boasting small sections of banana or coffee under shade trees. Few of

the families have gardens of farm crops; none had rice, maize, or vine beans, one household had a small patch of yucca, and four houses planted a patch of guandú (pigeon peas). On the other hand, twelve of the fifteen houses had planted bananas. Some of these patches are fenced in by pieces of tin, mesh, and string. Without some sort of fence there is nothing to keep out the domestic animals that run freely through the patios of neighbors, wreaking havoc on young plants, eating seedlings, and rooting up any yucca or otoo that a resident was foolhardy enough to risk planting.

Residents still experiment with ways to plant these crops that are traditionally grown on the farm, especially since 27 percent had no land outside of their patio and another 33 percent borrowed or rented all of the land they cultivate beyond *cuadro*, or house lot. Others have changed their focus to commercial ventures; nearly everyone who has managed to put in electricity (at an installation fee of US\$70) and purchase a freezer sells homemade popsicles, cold juice, or cold soda pop, while others open small *kioskos* or build a chicken coop, buy chicks from commercial farms, and purchase feed specially formulated to develop the young animals so that their owners can sell the chickens or their eggs.

Farm and market access in Quebrada Guabo

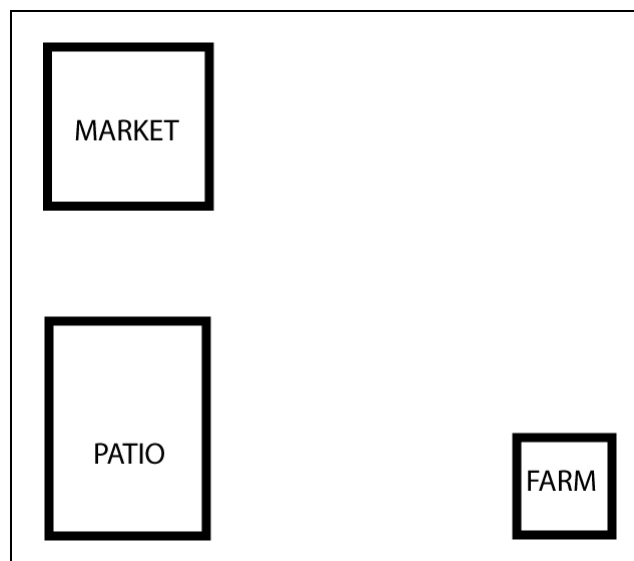


Figure 3.3 The patio in Quebrada Guabo, which is itself medium-sized, tends to be farm from what little available farmland there is, but is accessible to the market.

The physical layout of access in Quebrada Guabo, then, is a situation in which the home garden is small and bounded, the market is nearby and an important factor in daily life (see Figure 3.3).

Just a Bit Farther: Cerro Concha

Change has not arrived everywhere at the same pace, though, or through the same forces, and these differences are apparent even in neighboring communities.

In the dim light of dawn, I grasp for the hollowed out half-gourd and, bracing myself, scoop up the cold water and douse myself. The teeth-clenchingly cold water shocks me out of my morning grogginess, and as I shiver slightly I laugh to myself. People bathe twice a day here, once in the morning and once in the afternoon to wash off the sweat and grime from the day's work. Even when I leave at dawn, a shower is

expected. My translator and I set off for Cerro Concha just after sunrise, admiring the morning light that glistens of nearby foothills and shimmers in the mist. I like to leave early, but not just for the view. The climb winds mostly through fields, not forest, and in a few hours the sun will already be blazing down and baking the red trail. Even in the cool morning air we pause every so often to catch our breath, wiping the beads of sweat off of our foreheads, and my translator is wheezing. Women from Quebrada Guabo don't walk as much, especially not like this, but she is originally from Cerro Concha and is surprised at her difficulty. "I used to come up here all the time, to visit my mother, and I walked so fast," (Guía, V2). The first few times it takes us an hour and ten minutes to climb to the first house. By the end of the month we can make it in fifty minutes. The permanent residents here walk even faster, and often joke with me when I ask how far away something is, asking "For us or for you?" They make this walk often, for various necessities, and the kids make it every day down to the primary school. Unlike in Quebrada Guabo, few things come to the residents of Cerro Concha; most often, Cerro Concha's residents are the ones who travel to attend events, access services, and make purchases. It's a one-sided flow.

As the trail flattens out and enters the shade of a tumbling mass of swidden forest, we heave a sigh of relief. A few hours later a family moves some stumps into their patio for us to sit on. I explain why I have come, and the woman cocks her head as she listens to the translation—it is slightly more common here that women are uncomfortable speaking Spanish—then responds animatedly in Ngobere. After a moment, my translator turns to me. "She says they're a forgotten community. Sometimes politicians come, they

speak with them, they vote for them, and then the representatives are never seen again. She says they're poor. They're on their own. No one helps them," (CC6, V1).

The wind whistles quietly over the top of the hill and, from where we sit, I can see the road snaking below, tiny and gray and unassuming. We seem closer to the clouds. The bustling world of Quebrada Guabo, of life along the highway, of comings and goings and plans and programs and cash, disappears in the cool morning breeze that blows up this ridge to Cerro Concha. Later that afternoon my translator turns to me confidentially. "You're the first person from outside who has come to talk to them, no one has come through there before with questions," (Guía1, V1).

The woman had explained, "They ride up and down that road in their cars, but they never get out and walk," (CC6). Yet, only an hour's walk away, four surveys had been conducted in Quebrada Guabo.

While Quebrada Guabo is a growing community of, often, transplant families, Cerro Concha is a community where families still live together in small hamlets, spread across the hillside. In each house, at least one of the household heads was born there or came as a young bride. "What was it like when you were a kid here?" I ask a young father, and he responds firmly, "Nothing has changed. We have always been like this," (CC3, V1).

Claimed by one *corregimiento* (political subdivision of a district) but provided services such as school, goods, and a transportation hub from another, the inhabitants of Cerro Concha have little voice or power in bringing about political change. They live in their kin-based hamlets across the hill, separated from the next group of houses by the farmlands and swidden that surround them, and their isolation from the world below in

Quebrada Guabo has consequences for the children. The oldest child often waits an extra year or two before starting primary school, so that he or she is big enough to make the trek alone down to Quebrada Guabo, although one small area has managed to build a kindergarten for its children with funding from Cercle Feminin pour l'Action Sociale et l'Entraide (CEFASE) and, for now, one of the mothers volunteers to teach there. There is a subcenter of Nutrehogar, the nutrition organization with its regional center below, but low interest led to the program cutting out most of the supplemental feeding programs and there are not even always nutritional cookies to hand out. A few women, all family, pertain to the women's association below in Quebrada Guabo but, other than that, few organizations have reached the area. Visiting neighbors takes special effort and, as night falls, we retreat to our own patio and chat by the light of kerosene lamps before retiring at nine. Outside, the only sounds are the wind and the chirps of insects beneath the starlight.

Even surrounded by their farms, though, there is not enough land, not enough production. Only two of the nine households that I talked with said they bought less food than they produced. "Before," one young woman tells me as I leave, "the yucca, they threw out so many little yuccas from their roots. You would plant one and, when you went to harvest it, all of the yuccas would fill your arms, there would be so many. Now, it throws out a few, three, four, five little skinny ones. The earth is tired," (CC3, V1).¹²

¹² Recalled from conversation.

Cerro Concha, a local depiction

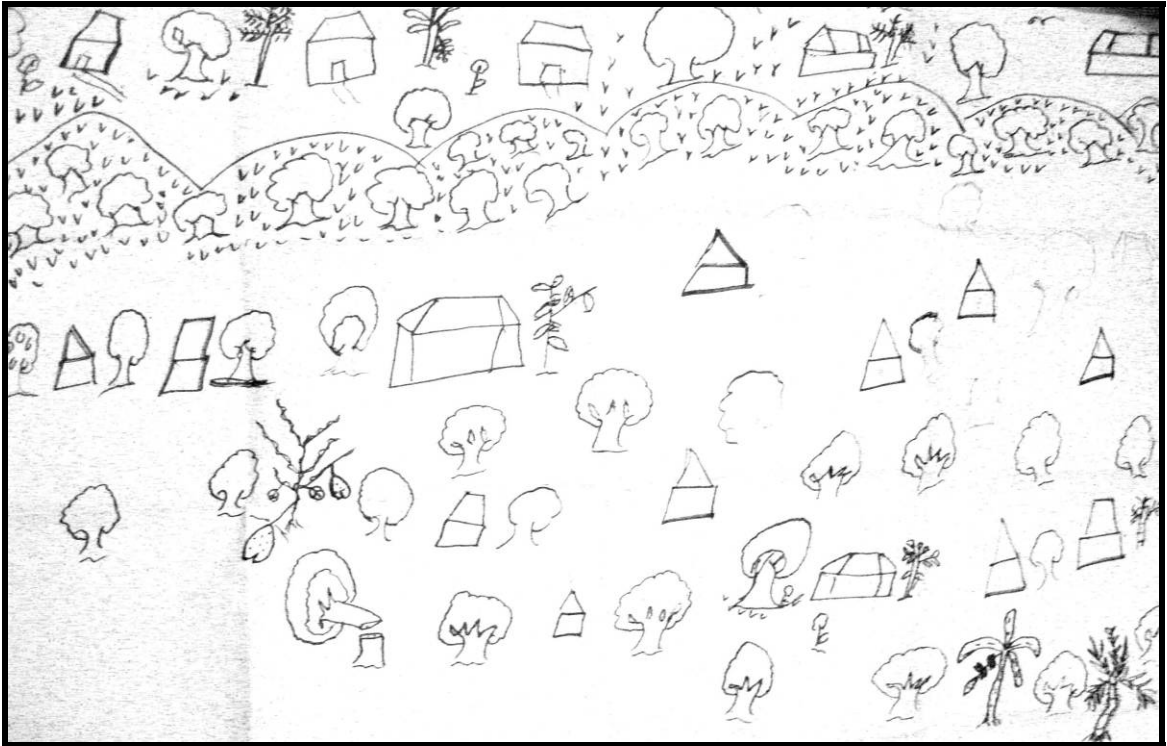


Figure 3.4 This drawing of Cerro Concha is dominated by natural landmarks such as six hills or a broken tree, and shows the dispersed houses. No paths were drawn. [Drawing by member of ASMUNG, Cerro Concha]

Land access is far from homogeneous, though. The range of patio sizes and number of different species here is the largest, partly because political land rights in the area do not match up with traditional rights. Some people migrate to work for long enough that they lose rights to the land, others are subject to the decision of whether to let the land rest or to cultivate, made by the *dueño*, the person in charge of the land, in a hereditary kin-based system. If it is large enough, the patio serves as a space for the timber, fruit trees, coffee, and bananas that do not fit on the farm. This same space is packed tightly with all manner of foods and spices. When patios are small and when there

are not enough adults home to manage many plants and keep the household running, the bare clay patio is merely shaded by a handful of fruit trees.

As far as physical access to farmland and to the market is concerned, as depicted in Figure 3.5, Cerro Concha is almost the opposite of Quebrada Guabo.

Farm and market access in Cerro Concha



Figure 3.5 The patio in Cerro Concha is often close, if not adjacent, to family farms, and many of the families have some access to land. To access the market, however, most residents have to walk at least an hour, and few goods or buyers arrive in Cerro Concha.

Ecology alone cannot explain these differences between families and between communities. Both communities fall into the same cultivation division in the lower third of the district, as defined by the Ngöbe Buglé Project (PNB), and slight changes in soil and slope between the hilltop and the valley below do not explain why certain plant groups, such as timber or tubers, are more common in one area or why some gardens are simple and bare while others are complex. However, when the ecology of each area is examined from a human perspective, it becomes clear that a suite of other, human, factors

mediate or exacerbate the ecological limits of the home garden. An *acueducto*, or water delivery system, that delivers water to the patio and does not dry up in the summer allows tomatoes or beans to be cultivated during the dry season, for example. The ability to sell products from the patio creates incentives to plant those products. An influx of cash can be used for fertilizer or to build a chicken house and buy commercial breeds, an influx of building materials and synthetic materials along the roads can render timber species less necessary. These human factors are intimately linked with, among other things, the effective access of each community to farms and to the market.

To have a Farm

I record each plant as she explains it to me, squinting against the reflection of the sun on my white notebook paper, then sketch out a quick map of the different microzones in the garden. It is a typical home garden in many ways, with mixed timber, palms, and fruit trees on the edges and below the house where the slope is greater, interspersed with shade-loving climbing tubers, ñame and ñampí. Around the house are scattered round-crowned fruit trees, mango and avocado and orange and the long-leafed membrillo that is sporting its round fruit that, inside, I know, is segmented, bright orange, and vaguely reminiscent of sweet potatoes in flavor. These trees shade the hard bare ground in the area that serves as an outdoor living room. A small herb garden goes to seed in a sunny patch alongside the house, culantro (a local cilantro-like plant) and a type of wild mint and some others I do not recognize. Yet one part of the patio does not match. She has a small patch of maize just above the house, planted with scattered small-leafed timber trees, a miniature farm plot of sorts.

Small plots of beans, yucca, banana, and even maize, may not be “traditional” for home gardens, but they were not uncommon, especially in Cerro Concha where seven households had small these small patches of rice, beans, and maize. In Quebrada Guabo, only one household had these crops. As Figure 3.6 shows, where families could find space, what were “traditionally” considered cultivars for the farm have made their way into the home garden. Twelve of the fifteen patios surveyed in Quebrada Guabo and eleven of the fifteen patios surveyed in Cerro Concha had bananas, four and six guandú, respectively, and one and four sun-loving yucca.

Frequency of short cycle crops in the patio

Plant	Quebrada Guabo	Cerro Concha
Rice	0	0
Maize	0	5
Yucca	1	4
Guandú (Pigeon peas)	4	6
Vine Beans	1	3
Ñame (Climbing yam species)	4	5
Ñampí (Climbing yam species)	7	5
Otoe (New World taro)	4	5
Banana *2 years to produce	12	11

Figure 3.6 Number of patios, out of a survey of fifteen in each community, in which each short cycle crop was found. Of these, rice, maize, yucca, and vine beans are most strongly considered farm crops. However, these farm crops were found in one third of the patios in Cerro Concha, and other short cycle crops were prevalent in both communities, especially bananas.

My host in Cerro Concha explained to me how she experimented by rotating crops through parts of her patio. “I am planting banana here now, to see how it does. If it produces well I’ll plant more next year,” she explained, motioning to a clear plot in her patio where she had planted beans the year before (CC5, V1). They had fallen to disease and she was now planting them in a different corner of the home garden.

In both Quebrada Guabo and Cerro Concha, producing enough food for the family has become difficult. Farmland loss is worst in Quebrada Guabo, with 60 percent of the families landless outside of their patios and a little more than half of these families able to rent or borrow land for cultivation. In Cerro Concha only twenty-one percent of households did not own land outside their patio, with seven percent of otherwise landless families renting or borrowing farmland, (see Figure 3.7), but severe drops in production have often rendered their traditional amount of land insufficient. For those forced to rent or borrow, there is rarely assurance that next year they will have access to farmland, and important slower-growing field crops such as yucca and beans are often prohibited by the landowner. Longer term plants such as bananas or trees are never allowed; planting trees, according to traditional land rights, is one way of claiming land. Those with cattle-owning friends, often but not always in the neighboring state of Chiriquí, are sometimes allowed to clear and cultivate an area of their friend’s land for free in order to help convert it to pasture.

Land ownership in Quebrada Guabo and Cerro Concha

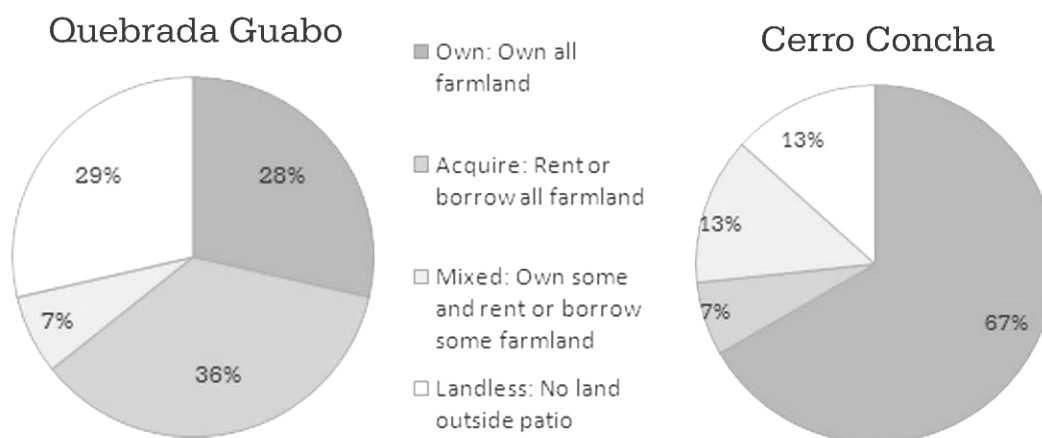


Figure 3.7 The difference in access to land outside of the patio, or farmland, in the pueblo of Quebrada Guabo and more dispersed Cerro Concha is striking. While almost one third of Quebrada Guabo has no access to farmland and another third have to rent or borrow any farmland, almost two thirds of Cerro Concha own their own farmland.

However, landless and land-strapped families are not merely the result of population growth, which according to a PAN-GTZ report stabilized in the district by the twenty-first century (Plan de Desarrollo del Distrito de Nole Duima 2001). Other forces have contributed to the loss of access to farmland.

In areas like Cerro Concha, loss of sufficient farmland has been due to declining productivity, making more land necessary, and to subsequent disputes over land rights. Traditionally, a family's land is controlled by one person, the *dueño* of the land, usually the oldest male but on occasion the oldest female of the family. While permanent cultivars belong to each individual household as long as the trees stand, the *dueño* distributes the land for annual cultivation each year. Often this land is not distributed to those who have left or, more recently, to women who have moved to live with their husbands (Martinelli 1993). In fact, this could be one of the reasons why matrilineal

residence, or switching, is becoming more common as families look in for any possible opportunities to cultivate.

One friend explained why she had no farmland: “My mama is the dueña of the land and even though I’m the oldest she prefers the boys, she lets my brother distribute the land. They won’t give me any to farm, they say now I live down in the pueblo, I don’t live there anymore, I can’t farm there,” (Guía2, V2). The dueño decides who can cultivate what crops in which parts of the family’s land each year, and what will lie fallow. If families split, the dueño decides how to split up the land, and claims are made by planting trees and cultivating part of the farmland each year. In fact, in some areas people who move away to work come home for a few weeks each year or send money for someone to plant annual crops.

Officially, however, all of the land in the Comarca Ngöbe-Buglé is “communal” to the entire Ngöbe people. While, day to day, duenos and families and strangers negotiate land swaps, even buying plots in town, this ownership is not always recognized officially. Disputes are common and fierce. However, unlike farmland, the patio can never be taken away. In some instances patio plots were left for years to the encroaching forest before the family returned to clear and rebuild.

Buying and selling of land has become more common as *pueblos* form around schools. In fact, in large part the construction of schools has reshaped the countryside. In one town that we visited, Soloy, in a different region of the Comarca Ngöbe-Buglé, the construction of the equivalent of a high school actually created a tent town, where families came from all over the surrounding valley system and set up residence with their child during the school year. In subsequent years the tent town transformed into a shanty

town, but the purpose remained the same. Already in the 1960s Young observed that, due to land pressures, different families were beginning to live together in a settlement, what he termed “fusion,” instead of parts of families splitting up and striking off on their own, or “fission,” (Bort and Young 2001). Some have even pursued this new living arrangement; one man in a different community, who moved into town about ten years ago, added, “We decided to come up from our farm to live here and create the population center, form the community,” (HH9, V2).

However, this trend seems to have accelerated with the construction of schools, as families moved closer so their young children would not have to make a long, dangerous walk every day. As these population centers formed, others moved in simply to “form the *pueblo*.” Suddenly families’ farms were separate from the household, sometimes hours away, and if a family moved far enough they might lose all rights to their land. It was not a shanty town, exactly, but it shared some characteristics with the shantytown of Soloy. One such family explained, “We have no land to farm, just this square here with the house.”

“None? And the lands of your family?”

“No, we lived two hours away, but the kids had to cross a river to get to school, it was dangerous, so we moved here.”

I look at the school, a stone’s throw away. “Now they are quite close. You can watch them leave the house and then arrive at the school,” I joked. She laughed, then spoke loudly over the deafening thuds of the drummers practicing in the schoolyard.

“I didn’t used to like it, I thought it was too noisy, but now I like the noise and all of the people,” (QG7, V1).

Sometimes it makes sense to give up the farm, and even a sizeable patio, in order to invest in education. One successful organic farmer from another community, Hato Horcon, explained why farming was not enough. “I have land, I can sustain myself, but there is not enough land to go dividing amongst my children. Education is all I can give them,” (HH11, V3). He is lucky enough to have a house on his farm where they live during vacations and, fifteen or twenty minutes away, a house in town where they live during school years. The first time we talked, his wife explained, “We moved to this site [in town] a year ago, it is closer to school for the kids.” (H11, V2). Months later, at their summer house on the farm, he smiled broadly at me and gestured widely to the landscape spread before us and the new bamboo bed he had built in the shade of a tree. “Isn’t this beautiful?” he asked. “It is quiet, and we have our own water here, we don’t have to pay,” (HH11, V3).

Most are not so lucky as to be able to enjoy both worlds, and moving to a community like Quebrada Guabo has its advantages and its disadvantages. In Cerro Concha, families have the freedom to be much more mobile, moving houses to different sites in the patio or, occasionally, to a different part of their lands. In the space of one year, five of fifteen in Cerro Concha moved their houses, two to a new location outside of their old patio. The reasons are varied. “We built the church in our old site, so we moved up here,” one explained (CC4, V3). The other told me, “I was by the school. I don’t have any kids in the school, and they started a chicken raising project with the Padres Familiares (parent teacher association), and it smelled like chicken crap all the time, so we moved up here,” (CC2, V1). While establishing a mature patio takes years, the transition was smoothed by the ability to still collect the fruits and products from their old

sites. Within the patio, old house sites were often planted with beans or another crop to take advantage of soils that had been enriched by years of living on that piece of ground. This movement changes the nature of the patio over time, facilitating a rotation in what is planted where.

As access to farmland decreases, the patio not only becomes more important as a safety net but also as an area in which to plant supplementary amounts of sun-loving farm crops. Could changing cultivation in the patio, then, make up for loss of access to farmland (Figure 3.8)?

Possible compensation within the patio for farmland loss

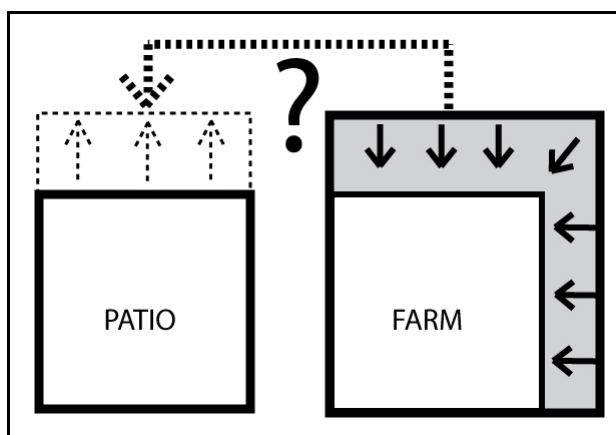


Figure 3.8 As families lose their ability to produce food, either because they do not own farmland or because farm production falls and existing farmland does not produce enough, can the patio provide surrogate farmland in which to continue producing farm crops?

The small space and presence of domestic animals, though, provides a challenge to such an arrangement, even more so in Quebrada Guabo where houses are so tightly packed. In Quebrada Guabo the patio is squeezed into a tighter and tighter space by the growing *pueblo*, often losing area that might have been dedicated to layers of low-labor, slower-

growing, high-output perennial plants, yet planting farm crops is challenging. In Cerro Concha a gardener has to manage his or her own animals and the occasional pest animal such as *aradores* (literally plowers), small mammals which eat the roots of plants, or *gatos del monte* (wildcats) and *zorras* (opossums) that prey on the occasional chicken. In Quebrada Guabo, a gardener has to protect against the domestic animals of the entire *pueblo*.

There are limits, then, to what aspects of the farm can be recreated in miniature within the patio. In Quebrada Guabo town life not only leaves many without farmland, it hinders what they can successfully cultivate in their patio. While families in Cerro Concha and Quebrada Guabo raise similar number of domestic animals, as seen in Figure 3.9, the overall density of animals is much higher in Quebrada Guabo. These chickens and pigs often wander freely around the town in search of food—tying them up means they have to be fed, something that is not always possible. This means, though, that the food animals find may be planted in the patio of a neighbor.

Frequency of small domestic animals in Quebrada Guabo and Cerro Concha

Community	Chickens		Ducks		Pigs	
	Households	Average per household	Households	Number per household	Households	Number per household
Quebrada Guabo	13	9.7	4	2.3	3	3
Cerro Concha	13	8.6	5	2.4	6	1.7

Figure 3.9 While small domestic animals are found in similar numbers of the fifteen houses in each community and with similar numbers of animal per household, the dispersed living arrangement in Cerro Concha means that animal densities are much lower there than in the pueblo Quebrada Guabo.

Quebrada Guabo is full of such stories. “I planted guandú, but the chickens got to it, they didn’t leave it to grow,” (QG7, V1). “Yucca I have farther down the slope, not

here in the patio. It has to be farther away or the neighbors' pigs eat it. Sometimes they still go out that far," (QG1, V1). "We tried to plant otoo, but the pigs rooted all of it up. We can't plant any tubers here," (QG2, V1). "See this young banana plant? It keeps getting eaten, the pig won't let it be," (QG7, V1). "We keep our pig tied up. There are so many dangers to pigs, if they run across the road and get hit by a car, or if they encounter someone who doesn't like pigs. . . dead," (QG7, V1). "I don't raise pigs anymore, it's too much trouble. You have to keep them tied up. If you don't, then they get into the neighbors' patios, you have to pay a fine," (QG5, V1).

"Wait, so you can't raise pigs anymore because you had to pay, but you also can't plant yucca because other people's pigs eat it? That doesn't seem fair!" I exclaim. She shrugs back at me. "What do you do, then," I continue, "if a neighbor's pigs are eating your yucca?"

"Well, first you go and talk to them. You should do that first. If they still don't tie the pig up, it does it again, you go to the *consejo*, you report it and they have to pay a fine. But you don't always see the pig, sometimes it comes at night, or runs away before you see whose it is. Easier not to plant yucca."

"And with chickens, if they are eating your plants?" She laughed.

"For little things like that, just talk to the owners. It's not enough damage to go to the *consejo*," (QG1, V1).

If farm access drops in communities like Quebrada Guabo which boasts both a school and a road, and at the same time the ability to plant annual crops in the patio is reduced by domestic animals, the opposite of what was postulated in Figure 3.8, then how do families survive?

This question received a variety of answers from respondents, but most often people emphasized that they make due by earning or producing a little here, a little there, and going without when they had to. Changing patio techniques alone is not enough to undo the loss of farmland. Even non-farming families need cash now, for medicines and, most regularly, for school, and the lower effective farm access is, the more cash families also need for food. The options for generating cash change, however, depending on the community's access to the market.

The Many Faces of the Market

While dependency on cash earning for food has eased since the national government, through SENAPAN, began distributing food checks to women, a family's cash needs and the ways they have of producing this cash play a role in how they relate to their homegardens.

Unlike Cerro Concha, roadside town Quebrada Guabo has easy access to products ranging from the local "fast foods"—bread, candy, cookies and soda pop—to plastic chairs or cinder blocks for the house. Regular costs of living tend to be higher as well. For example, with firewood becoming more difficult to find, families either have to buy firewood regularly or switch to using propane stoves. However, there is also better access to steady work in Quebrada Guabo than in Cerro Concha. Along a short stretch of the road there are two teachers, a firefighter, three government workers, a construction worker contracted for the next few years, and a woman commuting more than four hours a day to her job with a nonprofit in the nearest big city, as well as an older student who works at a clothing shop and a young mother with a year-long job at the local women's

organization. With transport easier to catch, the person can usually work in nearby towns of Chiriquí and return home daily by public transport. There are also more opportunities to make money from home, by washing laundry, baking sweets, or selling merchandise, homemade popsicles, hot lunches, and extra produce or animals to passersby and the residents with regular salaries. Cash-earning opportunities that require products from outside the area, such as raising commercial chicken breeds, which require obtaining the chicks, buying formulated feed and sometimes medicine, and when possible installing an electric light to keep them eating and growing during the night.

Influence of market access on buying and selling in Quebrada Guabo

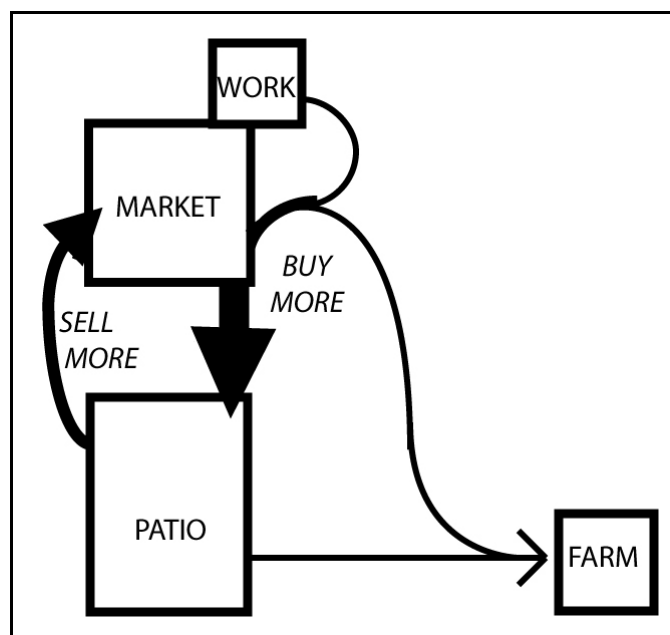


Figure 3.10 Poor access to farmland and easy access to the market means that residents of Quebrada Guabo are more dependent on buying food, but also have more opportunity to sell merchandise or services, or work nearby for cash.

Loss of access to farmland and simultaneous improvement of access to the market, as shown in Figure 3.10, means that people from Quebrada Guabo buy more, but

they also can sell services or non-farm products, providing more money which then can be used to continue to buy food and goods, often from local kioskos.

In Cerro Concha, I encountered only three families with regular work, contracting as physical labor nearby, and in two of the three they were only able to come back once a week. Cerro Concha is also just far enough from the market that they cannot take advantage of salaried passers-by. Merchandise often, although not always, costs a quarter or so more, since it has to be carried up, and when it is cheaper it is because no one can afford it at a higher price. Goods are sold in smaller quantities and are less consistent; passing by three small kioskos five or six times, I only twice found one open. At the same time that outside goods cost more, produce and animals sell locally for five or ten cents less than below in Quebrada Guabo, and can earn even more in urban San Felix.

Nonetheless, families in Cerro Concha have learned to take advantage of Quebrada Guabo, often sending money with the schoolchildren to bring back goods and, if they do have surplus produce to sell, carrying it down to sell in Quebrada Guabo. Unless they have a horse or enough produce, it is rarely worth the bus fare to sell for a slightly higher price in San Felix. In Quebrada Guabo at least there is a demand for Cerro Concha's tubers, along with other locally unavailable produce. "I sell the otoi down in Quebrada Guabo, they buy it there," a widow explained, adding, "Yes, carrying it down on my back. The children help," (CC1, V1).

Cerro Concha is richer in land, in many farm products, and in timber than Quebrada Guabo, but rarely has surplus to beyond family needs. One household head commented, as he led me under the tall laurels that shaded the banana and otoi below, "I don't sell these trees unless I have to. They are for the future and for my children,"

(CC12, V1). Still, just like in food, the area is not completely self-sufficient in building materials. “No one around here has palms for thatch, we have to walk a few hours to buy them, then come back carrying them on our backs,” a friend explained (Father of host family, CC, V1). A year later, with their new house still roofless, his wife leaned over to me confidentially, “I so want a new house,” (Mother of host family, V3). They didn’t have enough materials in their own yard, and needed to earn cash to buy them.

If both communities need cash, although to differing extents, and both spend cash, also at different levels, it is possible that the creation of an internal market could supplement or replace the external market that follows paved roads, as in Figure 3.11. However, at this time the internal market is still not sufficient to be a major influence.

Possible influence of the creation of an internal market

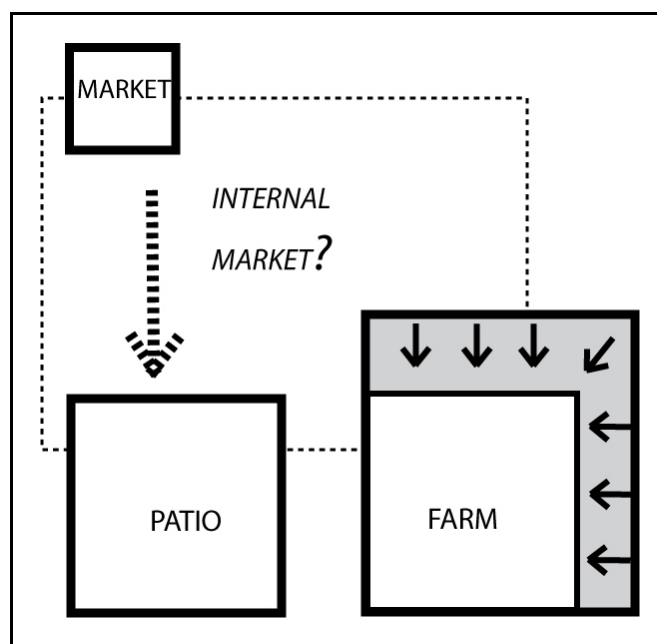


Figure 3.11 In a community with low market access, such as Cerro Concha, and falling farm productivity, some money is already being spent on food. Could the creation of an internal market tap into this cash flow, bringing some of the benefits of market access such as a local way of producing cash?

Despite the constant need for cash, though, the cash economy is still relatively new within the Comarca and the local market still largely informal (Bort and Young 2001). PAN-GTZ researchers Cheryl Behmel and Cecilia Palacio complained in the 1990s that a lack of community unity led to difficulty setting fixed prices for goods produced within the Comarca, and that there were no local markets of any sort as are often found in other regions (1996). Very rarely indeed do *kioskos* sell local products; people prefer to sell directly and not lose a part of what they could have made on the sale. Finding a local product usually means taking the opportunity of it when someone walks by selling. Wondering how this informal market worked, I set out in search of something fresh and local to contribute to our Christmas dinner. First, I asked my friend if anyone was selling any tubers or chickens. She had been looking for chickens for weeks, she told me, and hadn't heard of any tubers either, but she didn't know. "How do you find them, then?"

"Well," and she cocked her head sideways, "You just see someone with a lot, and you ask. Or they come around. Or you hear about it," (Guía, V3). I was miffed. I asked around for a while, did anyone have *culantro*? *Uyama* leaves? *Najú*? *Ñame*? No one was selling. I began to walk around, but still with no luck. Did anyone have *culantro*? *Uyama* leaves? *Najú*? *Ñame*? Nothing. Then, when I had very nearly given up hope, we passed by a woman's house in Cerro Concha and my friend and her spoke rapidly in Ngobere. "What did she say?"

"She's selling coconut, I told her we'd buy six on the way back." Sure enough, an hour later when we passed by, six coconuts had been cut down from the tree and were waiting for us, spread in a neat row across the patio. Coins changed hands. We walked

on. Stopping to visit another woman on the way down, I inquired as to the source of the dried fish on the tin roof and the pile of onions and cabbage. “My husband came back to visit this weekend, from Boquete. He brought these.”

“The cabbage is beautiful,” I said, forgetting that here this was a request, not mere admiration.

“Oh, would you like some?” As I walked back home, coconuts and a cabbage in my bag, I mused at the difference between what I had set out to buy and what I had actually found. The next morning when some kids came by our house, selling *hojaldres*, the typical latino Panamanian breakfast accompaniment of fried dough, I just smiled and bought a few. Who knew when I would get the chance again.

While the informal market is not inherently bad, especially if no one expects to be able to have whatever he or she wants whenever he or she wants it, it does prevent price fixing by producers. Listing prices of ñame, when it is available, one household owner in Quebrada Guabo explained that it costs fifty cents per pound normally, forty cents if it is bought from someone local, and thirty-five cents when there is a lot around. Moreover, it means that the only dependable source of food and other useful items is from outside, even when those items can be and are produced locally.

It is true that fewer people in the area have a steady source of cash to be spending. However, every single family buys food sometimes and 93 percent and 78 percent had to buy the majority of their food in Quebrada Guabo and Cerro Concha, respectively, which means there is cash going towards food (see Figure 3.12). When inhabitants spend that money, it goes to faraway companies instead of not internal markets.

Percent of community that buys versus produces most of their food

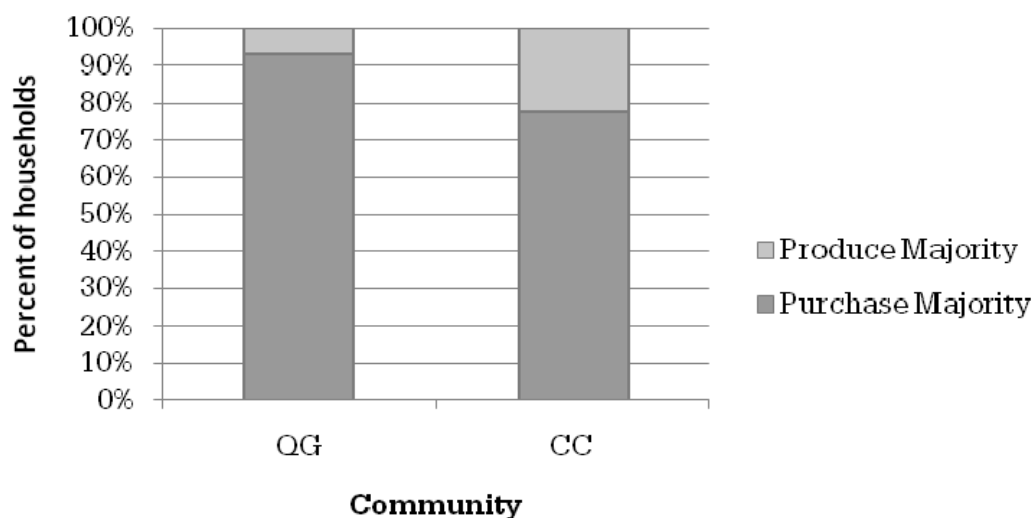


Figure 3.12 Quebrada Guabo, which has very poor access to farmland, has a correspondingly high percentage of households that are net food purchasers. Cerro Concha, which has better physical access to farms but low production, has a slightly lower percentage of households that are net food purchasers but still the overwhelming majority buy most of their food.

A friend who observed this told me, “For a long time I have wanted to have a market at the woman’s organization, maybe on Sundays, for people to come and sell their goods and buy. I don’t know how to start it, but I think it would be good,” (Guía, V3). This was the only instance I ever heard someone talking about the idea of a central market, although families are generally creative in their own money-creating projects.

Migrancy, Gender, and Labor at Home

Access to farmland, regular cash needs of the family, and access to ways of making money have another important side effect: whether a family’s best option might be migration (see Figure 3.13).

Migration as an option for families

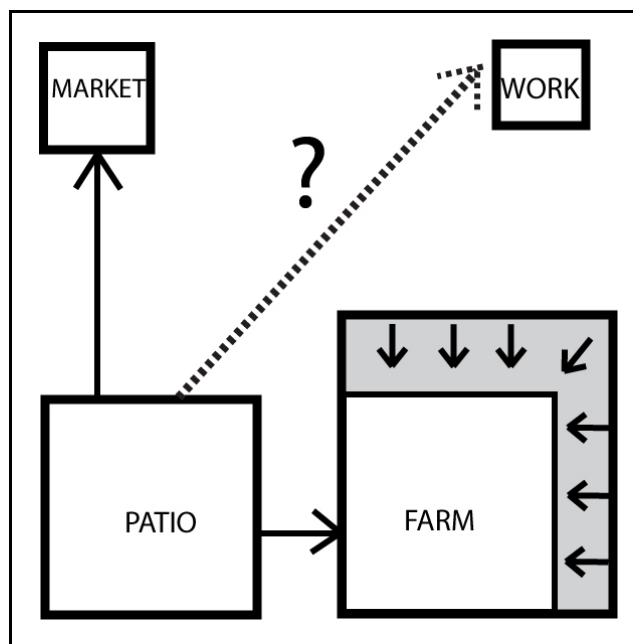


Figure 3.13 If farm access and market access are low, such as in Cerro Concha, sending members of the family away to earn a salary might be the best option for a family to meet its needs.

Temporary migration has often been written about in a negative way, with much-told stories of unfaithfulness or precious wages squandered on alcohol (Behmel and Palacio 1996). To mitigate the family strain, some families migrate together for the few months of the coffee harvest, but this means paying for food and lodging for more people and leaving the house and farm unattended. Given these factors, migration is a complicated choice made by each family, and there is no significant correlation between number of people in a household, land ownership, and whether members of a family decide to migrate. As Robert Stimson and John Minnery pointed out, push-pull factors in migration are more important in setting the context in which a family makes the decision (1998). For example, in a landless household in Quebrada Guabo with seven children, most in high school, the father very rarely leaves to work, while in some households with

their own farmland and only three people to support, none of which were in school, the father migrated regularly. My host in Cerro Concha explained to me, “I used to migrate. I wish I still could, but I can’t because of my health.”

“You want to migrate?” I asked, surprised. They had a farm to take care of, and he often was able to find a week or two worth of day labor nearby.

“Yes, you can make a [few hundred] dollars in just a few months. I wish I could go,” (Father of host family, CC, V2).

Migrancy in Quebrada Guabo and Cerro Concha

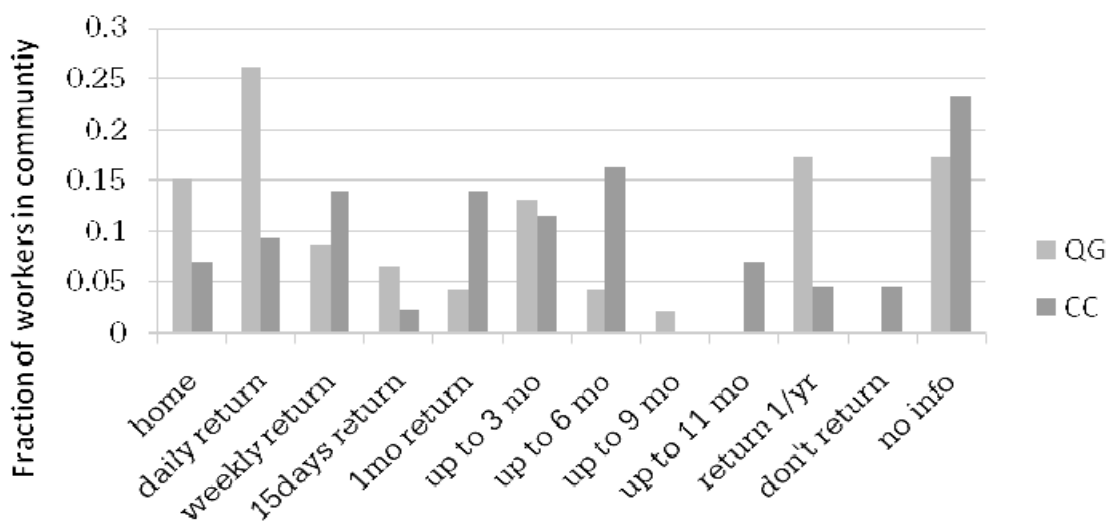


Figure 3.14 While both Quebrada Guabo and Cerro Concha have a similar percentage of their working members that leave for up to three months—the duration of the coffee harvest in the highlands to the west—Cerro Concha has more of its workers that leave for longer, with a much higher percentage leaving for up to six months at a time or migrating permanently and only returning once a month. In Quebrada Guabo, a much higher percentage of workers in the community work from home or return home each day.

In Cerro Concha, 50 percent of the workers leave for between one and six months, and only 21 percent work from home or come home daily, while in Quebrada Guabo the

opposite is true: 50 percent work at home or come home daily, while 26 percent leave for between one and six months (see Figure 3.14).

Migration, however, has side effects on the amount of labor left at home.

Cultivation is a family affair. The father of the family with seven children spoke with quiet emphasis as he answered my questions on who worked in the garden. “We work in the patio together, my wife and I. We work as a family,” (QG7, V1). They had no farm, but as we walked through the small patio he proudly showed me the fenced in patch of *guandú* he had planted and his chicken house, where he was raising *chicken de granja*. His wife chimed in on occasion when he did not have an answer. Still, he had told me, it was difficult, he worked hard. He had six daughters and only one son to help work, and they were sending all of the kids to school. As I got up to leave, he called his teenage son over. The boy climbed up an orange tree and, using a long bamboo pole, shook loose a green coconut for me from the neighboring palm. On another occasion, I asked who harvests from the garden “Whoever is hungry,” they had laughed, “everyone helps collect fruit!” (V3).

Household labor constraints may be one of the more important limitations on what families can do in their farms and home gardens, especially with regards to gender. While care of the home garden and farm are split, men traditionally work more on the farm and women more in the home garden, simply because women maintain the domestic sphere. Men always clear the patio and farm and cut down any trees, and while in the farm women tend to plant, help weed, and harvest tubers, their responsibilities of daily maintenance fall into the home garden, from which they also draw medicinal plants and spices.

The mother of my host family had taken me and the children up to see their farm, to spend the day there playing. As we passed her brother's fields and began to walk through young, dense forest she began to talk. "My husband, he always kept the shed full of food. When he left me I was too depressed to plant anything. He had always taken care of it. But this year I'm thinking of planting, I'll just have to hire some *peones* (people to work) to chop down the trees here. The rest I can do," (Mother of host family, V1). The traditional breakdown of work may be becoming more fluid as women step into farming and household support roles while men are away working, but it does impact how a family can cultivate. As the light faded, I thought about all of the men who migrated to work, coming back after months, or once a year, or not at all. What happened to the women, the farms, and the patios left behind?

"When he's home he clears [chops down weedy plants] the patio for me," the women told me time and time again. Some of these women had taken over roles as primary farmers when parents had died, husbands had left, or sons had migrated. In one household in Cerro Concha they laughed when I asked who farmed. "It's pure women here now, all of us. The men, they're off working. Sometimes they send money, maybe once a year, or they visit. Other than that we're on our own. Of course, when they're home they help out, but usually it's just us. We all go to plant, to harvest. It isn't far. We do it," (CC6, V1 and V3 composite). Others merely hired *peones* if they had the money, to do all of the work or the heaviest work.

Women, as the main food preservers, cooks, artisans and also the caretakers of children, tend to have more control over the home garden, which is in the domestic sphere. Women also focus on different aspects of biodiversity than men (Howard 2003).

The medicinal plants that they identify are different, the types of food plants and artisan plants they care for are also often different. Jiggins (1986) showed that in the Peruvian Andes women differentiated more varieties than men, based on taste and post-production properties such as which pounded into powder best or which kept for longest (Howard 2003). However, when women have to split their time with an additional site of cultivation and manage any farmlands, a study by Karl Zimmerer in 1991 in the Peruvian Andes showed that sheer labor limitations can reduce homegarden diversity since there is simply not enough labor to retain all of the cultivars (Howard 2003).

Ambiguous effect of male migration on female work in farm versus patio

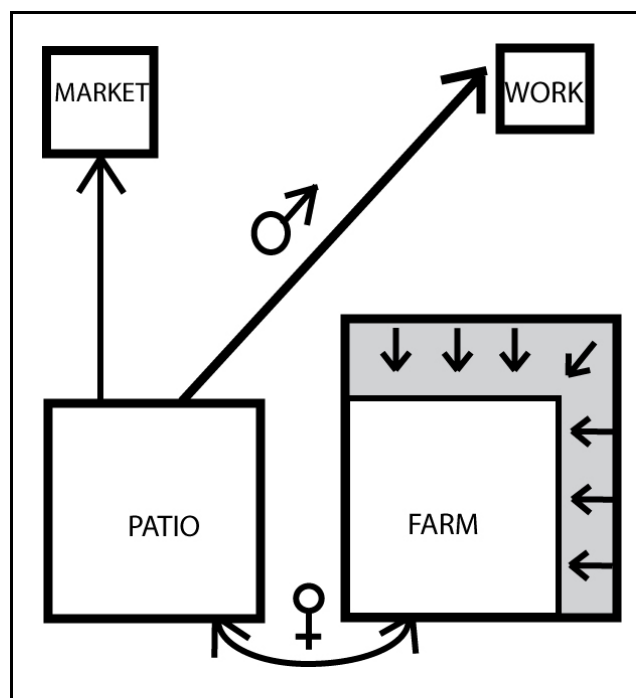


Figure 3.15 Migration to earn a salary is overwhelmingly male. In households where most adult males were gone for months, women can choose to switch some of their efforts to the farm or to dedicate more energy producing foods in the patio.

The shift of women into farming is more common in Cerro Concha, probably because fields are closer to the house and men tend to migrate for longer. This shift puts more of a strain on women's time in general. In some parts of the world, such changes have actually led to reduced nutrition in children because the mother has less time to cook and care for children (Staatz, D'Agostino, and Sundberg 1990). Here, it at the very least is one more task that comes before intensive home gardening, but whether women choose to focus more on the farm, plant farm crops in the patio, or find alternative sources of income such as artisanry, depends on the individual case (see Figure 3.15).

The role of women may be changing, as they assume responsibility for activities once loosely considered part of the men's sphere, as well as through the work of the local women's organization. One husband's comments revealed how previous constraints to women's productive activities outside the household may be loosening. "Many men, they get jealous, if their wife walks around during the day. They hit their wives. Not me, I would never strike my wife. She can go where she wants. Women have rights, women should be able to walk around without their husbands," (Father of host family, CC, V1 and V2 composite). Still, those attitudes do exist, and an administrator from the women's organization explained to me that some women do not come because their husbands don't like it. Still, the complete effects of migration on women's roles in Quebrada Guabo and Cerro Concha, and also on how they manage the home gardens themselves, remain to be seen.

With the recent provision of the *bono* (literally, bonus), government checks supposedly awarded to all women without sufficient cash flow and either elderly or with children in primary school, some have commented that women are choosing not to

cultivate anymore (comment by Doris). Age makes a difference in how the *bono* is used, though. One woman rocks back in forth in the hammock as she talks in Ngobere, staring politely in a different direction with her clouded eyes. “I’m old, I don’t see well anymore. I don’t move well anymore. I’ve been abandoned. My sons, they live right next to me, they farm this land and bring me nothing. We, me and these children, we’re on our own. Things are hard, everything is expensive. I used to sell things, *chacara* [bags] and cacao, but I’m old now, it’s hard. I don’t see well. The kids, they help me. Their mother died, and their father, he’s not around. Just us. Last year I planted otoi, to sell in the summer, but this year everything is so expensive, we live by the *bono* [government food check]. When it comes, we buy fifty pounds of rice, chicken, eggs, canned sardines. We live like kings. It doesn’t last us hardly fifteen days, and then we’re back to *comida blanca*. Rice, bananas, plain with nothing else,” (CC1, V1 and V3 composite). I think of her old frame, forced to work the fields, and gain a new understanding of what it means when she says, “We live by the bono.”

Still, others use these checks like coupons to pay someone to work their fields, especially paying men to help chop down trees or build new structures, the tasks that households with no older boys or men living there permanently struggle with most. Whether this will lead to more time for women to turn to other productive pursuits, or will lead to increased dependency on purchased food, remains to be seen. Even with that, the *bono* follows political allegiances. “My wife just started receiving the bono last month,” “I only just started receiving the bono,” “I filled out the survey but they didn’t give me the bono, I don’t know why,” the voices refrain. “We were passed over.”

The Organizer

We started working together when we were still young, all of us brothers. We all worked the same land, side-by-side, brother with brother, from the time we were young.

Then the project came, and we were beneficiaries. They taught us about cultivating organically, how to make bokachi and how to build these ponds for fish and rice. It takes some practice, you have to know how to dig the walls, how deep, or they slide in when it rains. I would love cement blocks to line it with, so the walls didn't cave in, but we're very good at it now. We've had a lot of practice. I build it this way, in terraces, so the water runs through all three. I've just harvested the rice, though, that's why that pond is empty. It will be a month or two before this second pond's rice will be ready to harvest, and then we'll eat new rice. Over here I keep the snails, in this pond. You feed them whatever you can feed humans; I usually feed them yucca leaves. They produce well. It's like the local ones you find down in the river, but they're larger and softer to chew. New rice with snails. It's delicious.

I have to be here every day, to check the tubing, the plants. We make natural repellents but you can't let a pest population establish, you have to catch it early. And if the tubing comes apart, you have to fix it right away, or it goes wasting water and the tanks dry out in the midday sun. You see how the water is lowering? I just have to angle this tube and I can drain the water into the next pool down, when I want to harvest snails. Can you see them now? They burrow into the mud as it dries up. There must be thousands, and people love them, they buy them.

The tubing is expensive, though. After the project left, we got a grant from a faith organization and expanded our irrigation. I'd like to irrigate the whole farm, but I don't

have enough tubing. We got another grant from another organization, and worked with a different one after that, they supported us so we could continue to better our farms.

Afterwards we worked with a different faith-based organization, they support projects like ours. We divided the land between us, each brother now has his own farm, two hectares each, and we work our farms independently, but we still do everything big as a group. We're together.

That other organization? They come around, sometimes they show people what we are doing. We don't get money from them. They did help us start our new project, we're teaching organic agriculture. We had twenty farmers from surrounding communities last time, we're teaching them. They'll be part of the organization too. We've built a classroom in my brother's house, and a meeting room, we need a better one but that is what we have and he's generous enough to donate his space. We also need more tools, wheelbarrows and shovels, for everyone. It's going well, though. We teach them to dig the fish ponds, how to plant rice in the paddies. They come to our farm and learn how to contour plant, how to build ponds and terraces, how to make bokachi. We make bokachi once a year, and spread it on our farms when we plant. You can see, this corn, it has bokachi, that other corn doesn't. Do you see how much greener and taller this one is? We don't put bokachi on the patio, though, it's for the farm.

We rotate the crops, and plant different ones together in the same plot sometimes. Here is a patch of beans, they'll be ready soon, and here is corn we planted recently. This one is a little experiment I am conducting, I want to see if chilies produce well under the shade of bananas. If it works I'll plant more that way. Combination planting keeps pests down. I like organic production, I feel healthier. The chemicals, they aren't good for you.

And burning kills the soil, kills everything good in the soil. Do you see this dirt? It's black, it's alive. I've never used BioMM, I've heard of it, beneficial bacteria. I don't need to, though, this land has come back to life. We stopped burning and all of the good insects came back, the earth gets a little darker each year.

I think that everyone here will eventually produce organically. Change is slow. Chemicals, they give you something right away, but when you stop burning the earth gets better slowly, it's a gradual process. Sometimes it is hard to see. People are interested, though, they want to learn. And the farm is so beautiful.

We've been thinking about bringing tourists, people like you, foreigners. They could stay in cabins, we could cook for them and show them the farms, the community. We've asked for money from a few different institutions, we're getting enough to build the cabins, the water system. We could have our meetings up there, to, right by the river. It really is beautiful.

The One Left Out

There's something I have to tell you. We were left out. Left to the side. We weren't part of things. Oh, we participated still, we didn't miss a meeting, but we weren't beneficiaries, see? We were left out. We didn't get what everyone else got, and we worked organically, the same as them.

Organic, that's how we produce here. We haven't burned the land with chemicals for six years. We haven't burned the land with flame in eight. We don't work that way anymore. It kills everything good, the soil, the good bugs. We plant in combination, everything mixed together. I've had problems, though, my bananas are all full of a

disease. They grow just so big, and then they rot from the inside out and fall over. I think it may be a fungus, and I had the técnico from IDIAP check the soil for me, but I haven't heard back. It might be low in something, I don't know. The only bananas that are producing are right here, and I throw ashes and fruit peels on them.

See this insect? It eats the pixbae fruits before they mature. Watch, I'll break the seed case open for you.

You see? They fill it, they eat their way through it. There are so many. The farm is full of diseases, I don't know why, there has to be something wrong with the soil but I don't know how to fix it. I asked the técnico. Repellent? I've heard of it, I don't know how to make it though. Even my seedlings aren't doing well, I've planted them twice now in the seedbed, and something is eating them. I think it might be this beetle. I asked about that, too. I still don't know.

I told you, I was never part of the Project. Sure, interested people could sit in on meetings, could learn, but we were left to the side. I'm not part of either of the organic organizations now, either. I don't want to choose sides. I make bokachi with that group, we just help buy the ingredients and we can use it. Sometimes I print papers over where their office is. I thought about joining, it's six dollars to join and then two dollars each year, and I don't know if I want to be in the middle of the two groups, you see, so for now I'm not affiliated with either. We'll see how the election goes, though, if I like the president I might join that group.

I'm friends with both groups. Still, we were passed over, and now they get money from organizations, for community projects, and it stays up there. I just heard, though, I don't know about it. Do you?

What, you like those? They're just tomatoes planted in bags of bokachi. No, not that, the top half is soil. They grow well that way. And the iguanas, well those were at the Nutrehogar center until some dogs attacked the cage, they ripped the mesh and most of the iguanas got out. Only these two were left, so we're starting over, but now I keep it here by the house so that I can watch it.

What else I'm involved in? You'll laugh. It's a lot. Well, you see, I'm director of the water board, and I am vocal for the Padres Familiares, and I just became a citizen reviewer for the health posts, we make sure they are working the way they are supposed to and that the money goes where it should. I was just in a meeting down in Las Lajas for that. I travel all over this area. I keep my farm as well.

We're a little behind on farmwork right now, I was sick and then I had so much to do, the bananas need clearing underneath and the beans need to be weeded too, they're getting taken over. It would produce better if I had the time, but it's just me working there, the kids are too small. My shop? That's to sell my produce here in town. In a week or two we'll have pixbae, if the insects leave me any.

What could we do? I'm doing a lot, with the store, the farm, but I have always had a little dream. You see those flowers? I collect them from all over. See that one? It's a double-layered papo bloom! I've always had a little dream of bringing tourists, having a small botanical garden, with little signs. I love flowers.

PART III: Organizations and Shortening the Distance

We gather outside the Nutrehogar of Hato Horcon, a colorful whirl of *naguas* and bright slacks and button-down shirts. The kids are running around, but quiet a little as the president steps forward. “Thank you everyone, for being here today for our small celebration of the children. Mothers, if you could please nurse so that the babies quiet down. Thank you. Welcome everyone to our small *brindi* [celebration and gift giving], welcome to the mothers and the fathers, the girls and the boys, our visitors. It’s after Christmas but we wanted to make sure that this year didn’t pass without a small celebration for the children,” (Nutrehogar event, HH, V3) The parents shift in their seats as the secretary, the treasurer, and the *vocal* all speak, and then give the community a chance to do the same. “It is good that Nutrehogar is here,” one woman stands up and says, “it is good work they are doing and here we are doing much good for our families.” No one else wants to speak, so the chairs are cleared and small tables set out for the children. Everyone waits patiently, expectantly, as first the children, then the mothers, then the fathers are served plates of steaming food—heaped rice with a juicy piece of local chicken. “We killed seven chickens for the lunch,” the director told me (Nutrehogar director, HH, V3). I had heard them, four or five brothers working last night, the low sounds of their conversation and the higher ripple of accordion that was playing from their radio had drifted through the open window as I slipped into sleep at the late hour of 9:30.

“From ASAEVI?” I asked, referring to the local women’s association and their new two-sided chicken-wire enclosure, taller than me, that they had shown me the first

day of my return. The women of ASAEVI, which essentially had become a women's organization for just the extended family, had been raising chickens *de engorde*, commercial fryers, to generate funds.

“Yes, those.”

I thought to myself, that's one way to build a local market. The food was delicious, and everyone seemed to be there. There wasn't enough room under the roof ledge; people spilled out into the grass and under the trees on the other side of the trail. I thought about many times I had visited the bigger Nutrehogar center in Quebrada Guabo to chat with the mothers in the kitchen as six or eight children played in the learning room, or the many days I had passed by the Nutrehogar subcenter in Cerro Concha to find it closed or with just one or two women and without hot lunch for their two or three children. Even on a normal day, Nutrehogar here in Hato Horcon has around fifteen children in attendance to play and eat a hot lunch, more children than at the centers in Quebrada Guabo or Cerro Concha even though the community is smaller. Even without including all of the families with school-aged children that help cook or clean at the school on occasion, and without the women who receive the *bono* from SENAPAN, 51 percent of the contributing members of the household over age fourteen are involved in some organization, as opposed to 31 percent in Cerro Concha and 26 percent in Quebrada Guabo.

A short walk through the community and short talk with the inhabitants show that there is something different here. We pass a field and I can't help but stop and stare: the whole family, women and men, old and young, walks slowly through rows of what must be thousands of hot chili peppers, a plant I had never seen in Quebrada Guabo or Cerro

Concha. They bend down, picking them by hand, and an older man walks up to me. We ask if there is anyone at the house for me to talk with, and he shakes his head.

“The whole family is here harvesting,” he tells me, “but I will walk back with you, it’s my house.”

I can’t contain my curiosity any longer. “What is this chili? I haven’t seen it anywhere else. Do you eat it?”

He laughs. “These are chilies from the Company. We grow them and sell them, they make hot sauce with them.”

“Do you eat them?”

His grimace answers for him. “You could. They are very spicy, I don’t like them.”

“And this tree here [planted amongst them], what is it?”

“This is balo, it drops its leaves, they have a lot of nitrogen.”

“Where did you get it? I haven’t seen this either!” His whole farm was unlike anything I had seen in Quebrada Guabo or Cerro Concha.

“I was a beneficiary of the Project, ten years ago. They were a program of the Spanish Embassy, they taught us organic agriculture, how to contour plant, make *abono orgánico*.¹³ These trees were from them. They left years ago.” He pauses, surveying his fields. “I wanted to keep cultivating organically, but we had a sickness in the family this year, we couldn’t. I used *abono orgánico* [commercial fertilizer] on these chilies here. The other part of my farm, though, it’s still organic. And we haven’t burned here for six years.” He walks back to his house with me, detouring for a moment to show me a fish

¹³ Contour planting is a technique of planting along the curve of the land to lessen erosion. *Abono orgánico* means, in this case, bokachi: the compost created by a temperature-controlled, fifteen-day Japanese method, which is particularly high in nitrogen.

pond dug into the ground and regulated with plastic tubing so that he can drain it to harvest snails. Above are small rice paddies, the water from each spilling into the next one slightly below, and planted with a rice imported from Japan along with the technique. He surveys the series of square ponds, which they call *tinas* or *tanques*, musing, “Some people like to grow rice and fish together, for me it’s better to keep them separate. It just makes more sense,” (HH1, V1 selections).

On the way out we pass his relative’s fields, tall with corn and rice and with ñame growing throughout on tall posts. “These are beautiful,” my translator says wide-eyed, and I nod. Just like the farms I saw in Quebrada Guabo and Cerro Concha it is traditional agriculture, which here means slash and burn agriculture with crops planted by *chuso*, a stick used to make holes, or broadcast, one or two species per plot. Yet here the stories of failed crops are less common or dramatic. Is the land so much better naturally, or could a prevalence of organic agriculture in the landscape actually be bettering the land for everyone? Butterflies flit through the glades and tiny frogs hop across the trail. This land is alive, in a way that Cerro Concha, even with its occasional bird or crab crossing the trail, is not. There, most of the insects I encounter are of the crop-eating variety.

Even in his garden, new and interesting varieties of plants are tucked in amongst the more familiar patio plants: ñame de diamante (“It grows large, but the local wild variety is still better”) and grafted oranges. The words of the program director from PNB who had suggested I visit this place rung through my ears; “It’s our model of what a successful agriculture program can look like,” (V2).

Hato Horcon is just as long and steep a walk from the road as Cerro Concha, but the hike is all downhill from a roadside town on the top of the hill, instead of the uphill trudge from Quebrada Guabo to Cerro Concha. The roadside town, Cerro Iglesias, is similar to Quebrada Guabo. Both are providers of services, centered around a road, and have a number of people passing in and out, but Cerro Iglesias is slightly farther than Quebrada Guabo from the highway and nearest latino city. Nonetheless, Hato Horcon is similar to Cerro Concha in most physical aspects (see Figure 4.1).

Farm and market access in Hato Horcon

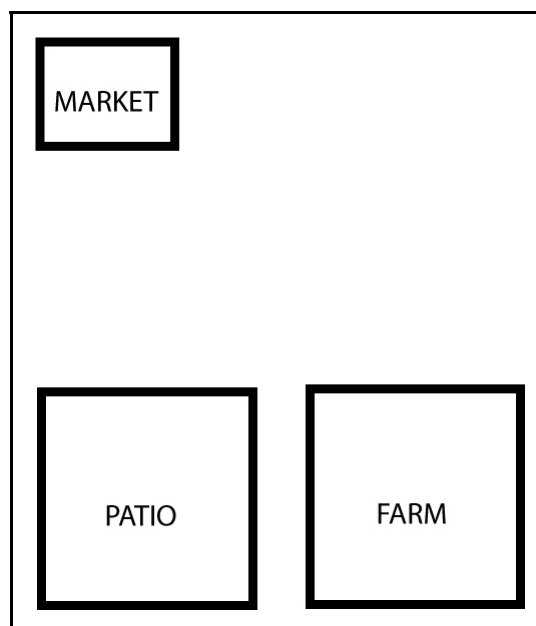


Figure 4.1 Similar to Cerro Concha, the patio in Hato Horcon is relatively close to farmland and is farther from the market.

Hato Horcon also has a small primary school in town that serves the children of the approximately twenty-nine families in the community,¹⁴ many of which have moved

¹⁴ Based on household count by the Nutrehogar director.

closer to the school, but most of the children go to Cerro Iglesias for the equivalent of middle school and, like everyone in the district, have to leave the Comarca to finish high school. The community itself is small; nearly everyone is related, and almost the entire town population has the last name Guerreros. Trails meander through the stream-laced valley, crossing through patches of forest so green they seem to tinge the air itself, and a fast moving, steep-banked river crashes through one side of the valley, separating some families from their farms and sometimes claiming lives.

Many residents complain that there is not a market for their goods and, like most of southern Nole Duima, few people are completely food-independent. However, only 38 percent have to buy the majority of their food, 92 percent own some amount of farmland, and 41 percent also rent or borrow more. Another eight percent have access to some farmland through renting or borrowing, leaving only 17 percent or two of the fourteen houses with no access to land outside of their patios (see Figures 4.2 and 4.3). Perhaps most strikingly, the attitude of the community as a whole is different from Cerro Concha.

Talking to the president of Los Hermanos Guerreros, one of the two local organic farming organizations in Hato Horcon, he was surprised at my questions. “Food prices? I hear that they’ve risen, on the radio. We grow our own food here. I don’t pay attention, it doesn’t affect me,” (Hermanos director, HH, V3). So many conversations about the patio seemed to drift toward the farm, perhaps because people here had land, perhaps because for the first time I was speaking with mostly men, perhaps because for over ten years organizations had supported a strong focus on intensive agriculture. “I don’t have that type of plant here, but I do on the farm. . . would you like to come see? It’s not far.”

Often I did.

Land ownership in all three communities

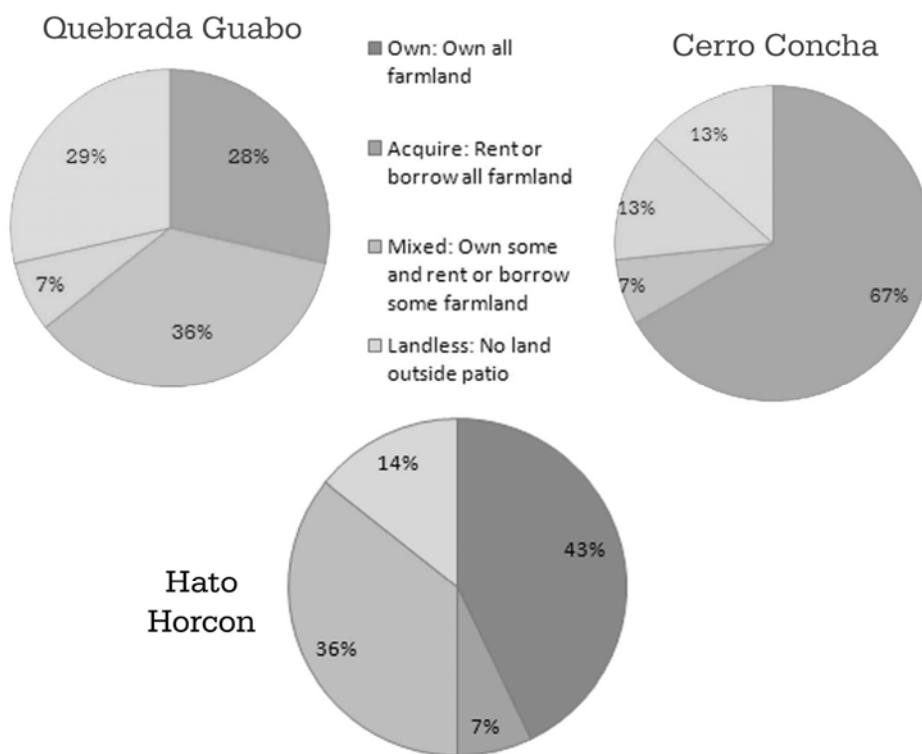


Figure 4.2 While the percentage of families that own all of their farmland is lower in Hato Horcon than in Cerro Concha, this is evened out by the higher percentage of families that own and rent or borrow.

Main household food source

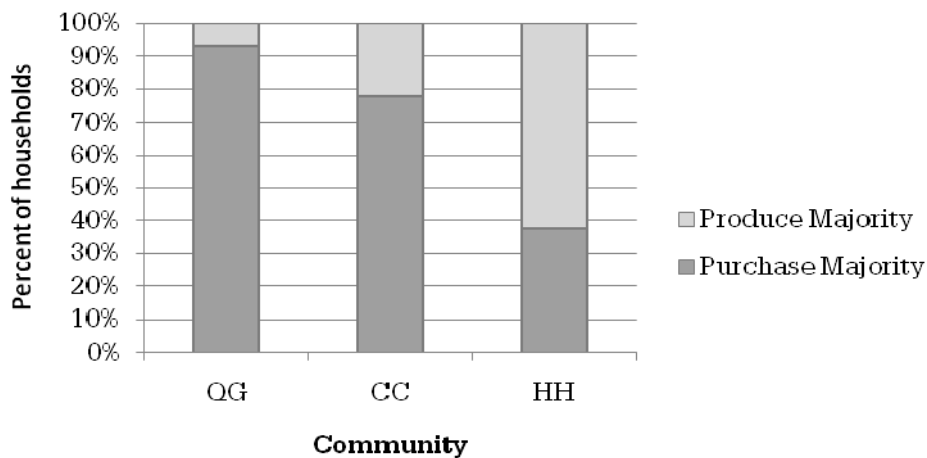


Figure 4.3 Despite similar levels of farm ownership, however, Hato Horcon has a much higher percentage of households that are net producers of food than Cerro Concha.

Histories of Organization

Organizations come in all shapes and sizes, from small family groups to community or regional to national or international, for political, educational, or livelihood goals. They may raise their own funds through dues or earn money from national or international donors. Each comes with its particular philosophical background and its particular style. Some have great impact, some small.

In the Comarca Ngöbe-Buglé, however, organizations have had a particularly noticeable impact on agriculture. As a subsistence area with serious drops in production and some of the highest levels of chronic malnutrition and lack of basic needs, by government indicators, in the country, as well as a lack of general infrastructure like roads or schools, the Ngöbe territories drew organizations with different overarching goals that promoted agriculture. For some organizations the environment was a primary concern and, in pursuing conservation in the area, agriculture was seen as an integral part of the landscape. For others, nutrition was the primary goal, and bettering agricultural practices was tailored solely to improve family food availability and food types. Finally, some arrived to promote agriculture for economic reasons and aimed to make the area self-sufficient by harnessing the market and bringing it fairly into the region. These overarching goals impacted the focus and techniques each organization promoted.

The first massive agricultural effort from outside the region came through a long term partnership with environmental priorities that worked in the area. For eleven years, from 1993 to 2004, the massive Ngöbe Agroforestry Project (PAN), carried out research and *capacitaciones* (capacity-building trainings) in fifty-two communities with the aim of “contributing to the availability for and successful application by the Ngöbe of the

technical, organizational, and administrative basis needed for the sustainable management and conservation of natural resources,” (translation by author) (Monográfico Administrativo, PAN GTZ). PAN-GTZ set about to create an extensive knowledge base of the history, customs, and current challenges in the entire region, then set up numerous pilot programs aimed to build social capacity in local areas, make current agroforestry and agricultural practices more efficient, and experiment with national commercialization of products such as coffee or artisanry. During their program the area won official status as a Comarca and, as the program came to an end, many of the researchers and extension workers who had been part of the program continued on as employees of the new branches of the Ministry of Agriculture or National Authority of the Environment, or with the new nonprofit Ngöbe-Buglé Project.

“You can still see many of the programs we started, they are still going,” an ex-worker of PAN-GTZ and current employee of the National Authority of the Environment explained, and in ASMUNG the women who have been there for longer remember those first *capacitaciones*.

“The first time I went to Panama City was with the Ngöbe Agroforestry Project,” my translator told me as we walked back to Quebrada Guabo from Cerro Concha one day. “I remember, they took twenty of us women from ASMUNG, all of us walking down the streets of Panama in our naguas. It was so different. One day, the women who took us decided that they wanted us all to learn to take the bus, so we all got on. They gave us each our fare separately and we each paid the driver on the way out. It took so long! I’ve been back, of course, but that was my first time,” (Guía, V2).

Just five years after the program had ended, though, it had nearly faded from the local memory in Quebrada Guabo, Cerro Concha, and Hato Horcon. Most locals look blankly at me when I ask if they ever worked with the program. One woman, after thinking for a moment, responds, “I think my dad worked with them, a long time ago.”

“What did he do with them?”

“Something in coffee cultivation, how to do it better. We already had coffee,” (QG1, V1).

As I walk by coffee planted under the shade of stands of trees, or a double pit for organic and non-organic garbage dug into the backyard of a house, or someone sprinkling ashes and fruit peels around their newly planted banana, I cannot help but wonder what subtle effects a program of this scale might have had in the area. Not having been there fifteen or twenty years ago, it is hard to know beyond the occasional hints, the occasional memories by someone who has.

The Ngöbe Agroforestry Project ended with the release of development plans for each district and for the new Comarca as a whole, announcing that after eleven years the Ngöbe people had advanced and were now capable of making decisions and searching for solutions to their own problems. If they stayed much longer, the technical assessor of GTZ explained, they ran the risk of making the associations too dependent on outside support (translation by author) (Rosario, 2004). “They still haven’t put the plans into effect,” added one woman in Quebrada Guabo who had helped PAN with some of their research and who still does regular capacitaciones throughout the country (QG10, V1). She was running for *corregimiento* representative at the time.

History of Organizations: Cerro Concha

Since that time, organizations have had different levels of success in the different areas. In Cerro Concha few have arrived (see Figure 4.4).

Access in Cerro Concha, with organizations

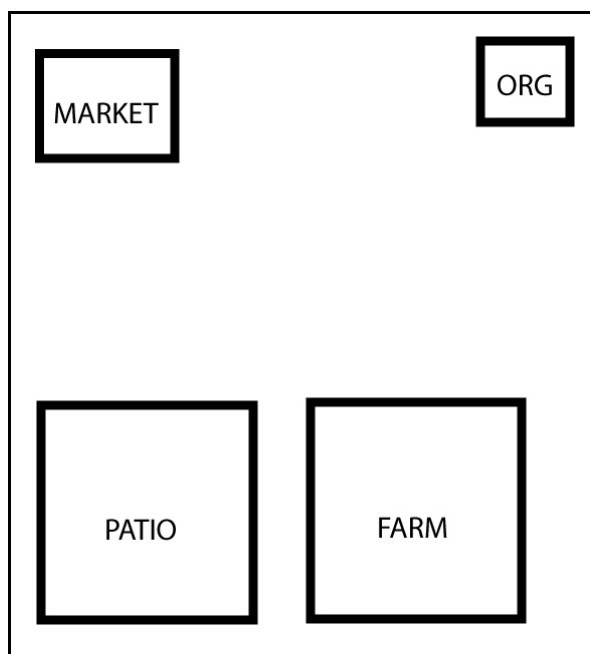


Figure 4.4 There are few organizations in Cerro Concha and they tend to be far from houses, making access to organizations low in the community. .

Some women from one extended family walk down to Quebrada Guabo to participate in ASMUNG and sell their artisanry. The Cerro Concha subcenter of Nutrehogar stopped being provided *crema*, a nutritional hot cereal, but still distributes nutritive cookies and boasts the model garden directed by a man from Quebrada Guabo who still has extensive land holdings in Cerro Concha. The center is built on his land, and his interest in alternative agriculture practices is made clear by the terraces, something

not seen anywhere else around. Each terrace is held in place by the tall-growing grassy Carnavalia and mulched by hand by him and a few women.

“I love learning about new techniques,” he tells me. “I’ve gone to many meetings and conferences, just to learn. I tried to get Nutrehogar to send me to more but they wouldn’t.” When I ask if he uses terracing or any of these techniques on his farm, though, he says no. “It’s a lot of work,” (Nutrehogar director, CC, V2).

His opinion seems to be shared by most of the women who work in the garden. “I worked there for awhile, in cucumbers and tomatoes and ñame and green beans . We produced beautiful vegetables.”

“Do you ever plant those varieties or use those techniques in your own patio?” I ask.

She shrugs. “A person could,” (CC9, V1).

Most days there are not even nutritional cookies to give out, they tell me, so women do not come. Still, women who live closer to the subcenter will sometimes walk over with their infants and young children to get them nutritive cookies or help out in the garden, and if a child is sick they will walk down to the center in Quebrada Guabo. In severe cases, the regional boss will come by and take very malnourished children to their health clinics a few hours away in Santiago or even to Panama City.

The tendency to live in groupings of houses with family, spaced apart from other families, creates sub-areas within communities that can have very different connections or levels of participation than others, probably because most social ties are established through families. This pattern is particularly obvious in Cerro Concha, where hamlets are spaced apart and one area is most involved in ASMUNG and Nutrehogar, another with

just Nutrehogar, some with no organizations, and one small area with CEFASE. Through CEFASE, which funds the building and basic materials for kindergartens throughout the Comarca, they built and maintain a kindergarten. They even put in a request to have it extended by the government to third grade, but were not able to find more land donated by a family quickly enough to expand the school. Kids go to kindergarten for a few years until they are big enough to walk down to primary school, an hour and a half walk for a longer-legged adult. Even there, though, the volunteer teacher complains that it is difficult to get the families together for meetings or to work on the school. The chicken coop that, seven months ago, was full of its first batch of growing chicks now stands empty; the money from sales went to repairing the school building, and there was none left to buy more chicks. It is a common story, projects that do not continue from year to year.

“I called a meeting today,” she told me as we sat outside the one-room bamboo kindergarten, “and you can see, only one person came. It’s frustrating,” (kindergarten teacher, CC, V2). When her own children graduate to primary school, she added, she’s not sure if she’ll keep volunteering to teach the classes.

History of Organizations: Quebrada Guabo

In Quebrada Guabo, with its advantageous positioning, there have been many more programs and organizations. Nineteen years ago the Association for Ngöbe Women (ASMUNG) formed in the community as a way of marketing and selling artisanry, later expanded to teach about women’s rights. Over the years they also received capacitaciones and lectures from PAN-GTZ, ANAM, and MIDA on the environment,

conservation of natural resources, composting, and farming practices, as well as basic administration. For a few years the women cared for a model garden, and tried to start a program in which they distributed bean seeds and the women planted them, then paid back the original seeds at the beginning of the next year.

“The program didn’t continue. Some women didn’t pay back the beans,” an administrator explained. “And now we focus more on sexual health; the government provides a lot of our funding and that is what they want us to focus on,” (ASMUNG administrators, QG, V1). Unable to find a steady market for the artisanry that the women make, the organization provides some monetary security but not a steady income, and is also largely dependent on outside funding. Nonetheless, with four paid employees and substantial volunteer work they have managed to extend into more than twenty communities throughout the Comarca and the women who participate most have gotten to travel throughout the country and even to different countries for conferences and to sell artisanry.

Quebrada Guabo also boasts a small cooperative, which owns a kiosko and a busito. However, the cooperative has relatively few members; I only saw three or four different people working the store, and met one other who said she belonged. A friend added, “I used to belong, but then fighting began, so I left. I still go to their meetings sometimes.” While it may provide a way for those without resources to make some money, it seems the political strife within the organization makes it easier for families to go forward on their own.

There is also a center for Nutrehogar in Quebrada Guabo which serves sixteen satellite sub-centers like the one in Cerro Concha. The center’s day to day operations are

run by a locally elected volunteer director that tends to change every two years and, when they can find one, a local volunteer to teach early stimulation activities to the kids. They serve a hot meal to the kids every day, rice and beans or nutritive crema or soup of beans and bananas, and raise money on the side selling popsicles to buy meat for some of the meals. Like many residents of Quebrada Guabo the center has very little land of its own for a model garden. Around the buildings there is a small space to make compost, to plant in bags, and to raise chickens and iguanas.¹⁵ An employee from Cerro Concha makes the compost and does the heavy work in the compound, but, as he explained to me, he doesn't make compost at home. For one, he said, "You have to get the manure, everything, it's a lot of work," (father of host family, CC, V2).

Perhaps one of the most interesting programs, though, is at the primary school. Almost three years ago they won a pilot "sustainable gardens" program from the Ministry of Education, receiving two goats, two iguanas, laying hens, and pigs, as well as different seeds (school director, QG, V1). One of the teachers took on the project and they began to give the students agronomy classes once or twice a week. Three years later the goats were gone, and the iguanas disappear between my first and second trips from the heat in their enclosure, but the hens have been replaced and still provide eggs for school lunches in Quebrada Guabo and occasionally other schools as well, and piglets fill two pens in their cement house. Boys rake out the rice husks from the floor of the henhouse and the girls spread it through the rows of the garden, later they grab hoes and begin to plant, green beans and other vegetables. On one side there are newly planted bananas, and in a

¹⁵ Every Nutrehogar has iguanas, which are hunted locally for food, but because of their slow growth and loss of the iguanas to thieves or dogs they have had little success except in Quebrada Guabo, where a fence protects the establishment.

shady corner there is ñame and pineapple under pixbae and fruit trees. “You have to plant what they plant locally too,” the teacher adds (agronomy teacher, QG, V2).

When I returned in June there was a new agronomy teacher, a *técnico* who had worked in banana plantations for many years. His curriculum, based loosely on national guidelines, included a range of activities from what to consider when planning a garden to learning about industrial agriculture such as the parts of a tractor. “It’s hard to teach them about these things when most of the kids have never even seen a tractor,” he comments (Agronomy teacher, QG, V2). While tractors are clearly useless on such steep ground, I can’t help but wonder whether large cement pig pens with drainage systems and hoses, or huge wooden henhouses, are out of the reach of the resources most of these students will have. Then again, one never knows what might prove useful.

During my final trip the school won a second agricultural program, with chickens and their feed, seed, watering cans, and wheelbarrows, from the Ministry of Agriculture.

“Two programs?” I asked a local official, smiling. “Quebrada Guabo tends to get things, they have a loud voice. They also work for it, though. You know they weren’t supposed to get the first sustainable farms program? The school that was, though, didn’t get the chicken house built or the land prepared in time, and when it was offered to Quebrada Guabo the parents got together and everything was prepared within eight days,”

(Regional director of MEDUCA, San Felix, V2).

Access in Quebrada Guabo, with organizations

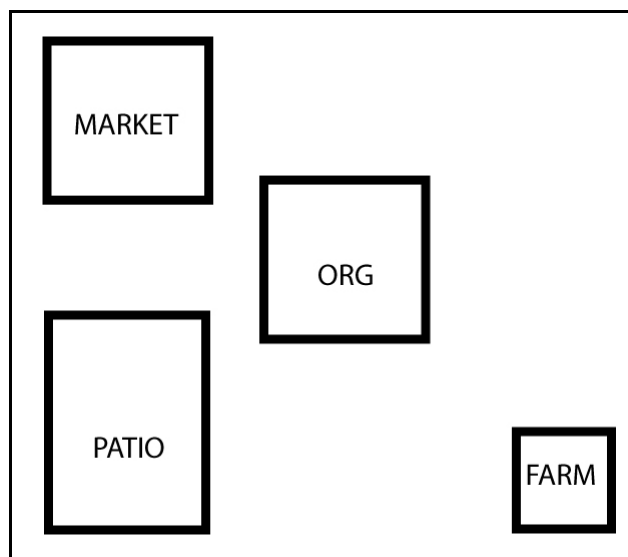


Figure 4.5 There are numerous organizations, some local and some national, with headquarters or programs in Quebrada Guabo, making physical access to organizations high in the community.

As Figure 4.5 depicts, Quebrada Guabo, at least physically, has a number of organizations based in the town and a long history of organization as well.

History of Organizations: Hato Horcon

Ten years ago, a sustainable agriculture project of the Embassy of Spain began working with ten families in Hato Horcon, eventually expanding into communities throughout the Comarca Ngöbe-Buglé. Part of a watershed improvement program, they worked with these families to stop burning their fields, instead using intensive organic agricultural production. In addition to technical support, the organization provided tin siding for farm sheds, tools such as axes and wheelbarrows, wood-efficient stoves, and plants such as four hundred *caoba* for timber, *balo* for its nitrogen-high leaves, grafted oranges, or different varieties of ñame. Unlike in Cerro Concha and Quebrada Guabo,

these plants found their way onto farms and into patios in the area. The Project, as they fondly term it in the area, taught crop rotation, mixed cultivation, how to make bokachi, contour planting, and integrated pest management, often using natural repellents. Families that were not part of the ten beneficiaries were free to participate in workshops, they just did not receive any plants or materials.

At the end of the project, all of the participating communities formed local chapters of a new organic production organization, Asociación Mixta, a loose network of organic producers that is politically organized and has won national recognition.¹⁶ While they mainly work individually, the Hato Horcon chapter does make bokachi as a group, and occasionally provides technical support by more experienced farmers for its members.

However, a family feud between the president of the organization and his nephews in Hato Horcon led to a split in the organization, with eight brothers who had been cultivating together since before the Project splitting off and creating their own organization, Hermanos Guerreros. Each brother had an administrative position. They continued to cultivate organically as a group, eventually dividing their land so each could independently work his two-acre plot but still sharing a single water delivery system from their stream above. They have perhaps been less experimental than some members of Asociación Mixta but, by working communally and helping one another out, they have been able to produce steadily more. Gaining the attention of various organizations, they have won a number of grants for their organization to improve infrastructure on their

¹⁶ The name “MIXTA” refers to the inclusion of both men and women

eight farms, and with a grant from PNB they have begun teaching and mentoring in neighboring communities in the last year.

Meanwhile, the women in the families belonging to los Hermanos Guerreros founded ASAEVI, a women's organization which originally included women from the entire community but went splitting as friction between the respective men's organizations grew.¹⁷ Within a short time, only the women from the families of Hermanos Guerreros remained in the organization, and as one explained to me, "The men in our family have their organization, and we have ours," (ASAEVI administrator, HH, V3). They meet every Sunday to make artisanry, which they occasionally sell above in Cerro Iglesias, and recently received a grant to build a chicken house and purchase chickens. They have raised and sold them three times, using most of the money to buy more chickens and putting the rest in the bank. It is the only chicken project I have seen, outside of the primary school, that has consistently reserved enough money to buy more chickens and keep the project going.

Hato Horcon also has its own Nutrehogar subcenter, administered by a locally elected director who is also one of the organic producers. Like Quebrada Guabo, though, they had to ask for their center. "We were always walking an hour up to Tolote or Quebrada Vuelta, it didn't make sense," the director explained. "So we did a count, and petitioned Nutrehogar, and they built us a center down here. Now women go every day," (Nutrehogar director, HH, V2). The center has operated successfully, with a teacher for early age stimulation lessons, hot meals every day, and a productive albeit small terraced model garden.

¹⁷ ASAEVI is an acronym based on a Ngobere word.

Attracted by the community's success and organization, PNB and IDIAP have established a presence in the area, and IDIAP has built a classroom for lectures near the primary school. The PNB works most out of the Cooperative Moctezuma, a successful cooperative they helped start to aid in coffee processing and national sales which now administers a small store, a garden, a chicken raising program for local sale, and runs a number of commercialization support programs from PNB. While few residents of Hato Horcon are members of the Cooperative, it still serves as a center for commercialization on a national level because of its location on the main road.

Access in Hato Horcon, with organizations

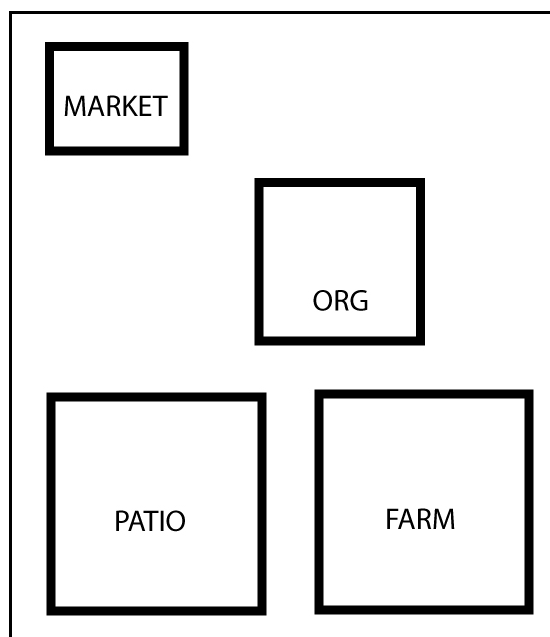


Figure 4.6 In access to organizations, Hato Horcon is similar to Quebrada Guabo in that there are numerous local, national, and international organizations working in the community, making access high.

If Hato Horcon's physical layout of organizations is similar to Quebrada Guabo's (see Figure 4.6), why has it attracted so much attention as a successful and particularly organized community?

Moreover, Hato Horcon has attracted organizations that support commercialization, not just health and rights. A recent project by "the Company," as they refer to it, has involved families in the area in producing chilies for Panamanian hot sauce. A longtime migrant worker for the company had approached the administration to ask if they could start a production program in his home area, and they agreed to a pilot. For the first year, which began just before my first arrival in June, farmers were given all seeds, *medicina* (literally medicine, referring here to pesticides and sometimes herbicides), and chemical fertilizer to produce the plants, and in exchange they sold all of the chilies back to the company at a discount of two cents per pound. The following year they can continue using seed, fertilizer, and pesticides from the company and selling for a discount, or they can provide everything themselves and sell the chilies back to the company at market price (PNB técnico, CI, V3).

A guaranteed market, help with startup costs, and the possibility of cash have created numerous chili producers in the area, with six of the fourteen houses in Hato Horcon alone involved. In some cases, it has even replaced crop production and changed field management. "I haven't burned for years, and now I don't even clear swidden to plant, I have involved myself in chili production and plant there. I have hundreds of plants, although they all have a disease, and the *técnico*, gave me medicine but it didn't work," (HH12, V2 and V3 composite).

A Reason to Stay Home

These monetary investments do much more than carry out projects, though. When they are continued over many years, when they can be counted on, they create an incentive to stay home. In Cerro Concha, for example, migration is one of the best, and only, options to make a large sum of cash. The strategy is a trade-off, though; migration makes productive cultivation more difficult, especially if there is no one at home who can take care of the fields. One who had migrated for six months the previous year explained why he couldn't go this year. "I planted things here this year, you can't leave them for months like that or the weeds come in, you lose it all," (CC2, V3). Leaving to earn a salary is a surer choice with production levels so low, but working on the farm provides more freedom. A woman in Hato Horcon was explicit that agriculture, not migration, was the way to support a family. "That's how a family sustains itself. You can go to the coffee plantations, buy clothes and some food, but then you're left with nothing. If I plant my own crops, I have food for the whole year," she told me (HH2, V3).

In Hato Horcon, however, organizations such as the sustainable agriculture project and the contract with the chili company have created another option, improving production and effectively bringing the market closer (see Figure 4.7).

Impacts of organizations on the effective access in Hato Horcon

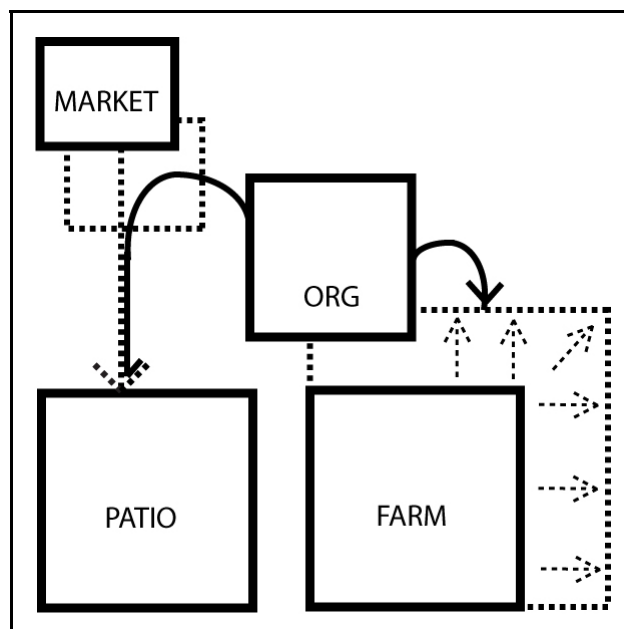


Figure 4.7 The organizations in Hato Horcon have changed effective access to both farms and markets, the former by increasing production levels and intensifying agriculture so that the same amount of farmland produces more, and the latter by creating direct marketing agreements with buyers and by bringing in monetary resources.

“I don’t leave to work, my work is here, on the farm.” Especially with the intensive agriculture that the Project helped institute, the farm is a full time job. “I have to go to my farm every day, to check the tubing, weed, and check the tanks,” (HH14, V2). Yet, it produces enough to sustain the family. Only two of the nine families that were involved in an agricultural organization such as the sustainable agriculture project, Asociación MIXTA, and Hermanos Guerrero, had to buy more food than they produced, and one said their family bought and produced even amounts. Three of the four families that were not involved in any agricultural organization had to buy the majority of their food. Rice grown in paddies, for example, is ready to harvest in three months. Fish and

snails in the tanks are a constant source of protein. All that is required is the initial investment in tubes and the “seeds” for fish, rice, and snails.

In addition to producing more food, these organizations and subsequently the chili company have supported local and national commercialization on a small scale, enough to provide the necessary cash for non-food needs. There is interest in developing a local, national, and even international market, and this was a frequent topic in interviews. One person had opened a shop to sell his own produce, and another had opened a shop to sell snails (*cococho*). “This is my little business, with this I get the money for other needs,” (HH13, V3). One woman plans to raise laying hens and sell eggs locally. One *kiosko* in Cerro Iglesias, the hub town on the road an hour above, even purchases local produce for resale. “I like to support the community,” he explained, “so if people have extra they want to sell, I’ll buy it,” (Kiosko owner, CI, V3). Still, while some have begun to sell their products regularly in surrounding Ngöbe and latino communities, and the chili producers are now involved in the national market, unusual products such as snails or fish sell best. A few producers explained that, for most of their local products, there is no market. “We have a lot of *pixbae* during the season, it falls and goes to waste, we can’t eat it all. But everyone here has it, we can’t sell it,” (father of host family, HH, V3).

With a way of producing sufficient food and also of creating a small amount of cash, there is less need to migrate and greater consequences for intensive cultivation on the farm. For traditional agriculture, three months is not prohibitive to also cultivating crops, although it does pose serious challenges for intensive organic agriculture. While in Hato Horcon overall migration was slightly lower, at 15 percent as opposed to 24 percent

in Quebrada Guabo and 23 percent in Cerro Concha, the most notable difference was the length of immigration (see Figure 4.8).¹⁸

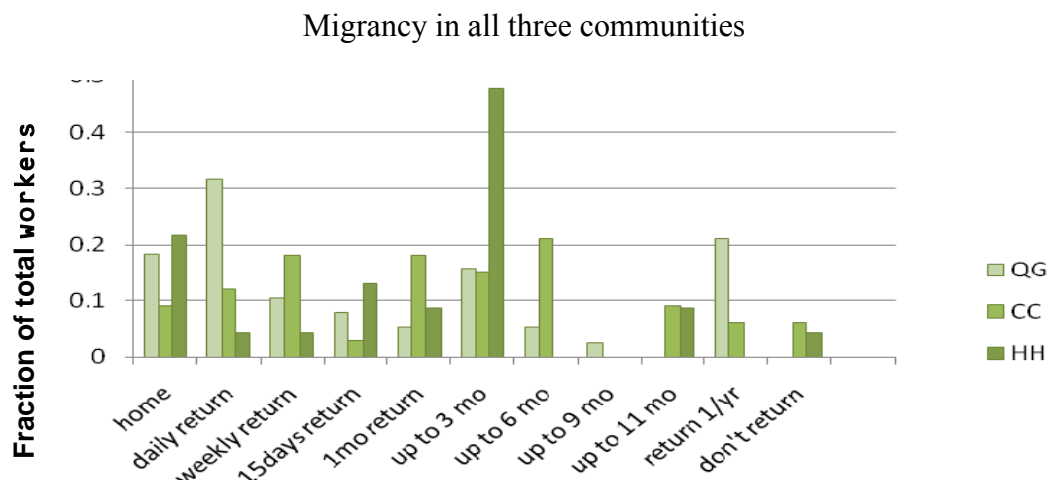


Figure 4.8 This figure shows three trends. 1) Similar to Cerro Concha and unlike Quebrada Guabo, the fraction of Hato Horcon’s working population that can return daily is low. 2) However, direct marketing and higher production means that more of the workers from Hato Horcon work from home, like in Quebrada Guabo. 3) The overwhelming majority of workers in Hato Horcon that do leave to work are gone for only two or three months—the duration of the coffee harvest—as opposed to the higher fraction in Cerro Concha that leave for up to six months at a time.

In Hato Horcon migration tends to be short term, with 92 percent of those who work migrating for two or three months.¹⁹ Even a few of the families that participated in agricultural organizations chose to migrate for a short time, despite the impact of leaving their farms. Two of the families of the association Hermanos Guerreros had left for the coffee harvest, and another farm-dependent family as well, when I returned in December.

¹⁸ These numbers are percent of contributing members, with migration calculated as contributing workers that are gone for at least a month

¹⁹ This number does not include the four people for whom there was no information.

This pattern was similar to the numbers of entire families that had closed up their houses and migrated temporarily in each of the three communities.²⁰

The focus on farms, however, is strong. Unlike in other communities, two families in Hato Horcon cultivated from a distance. One brother, who works permanently in Panama to support his hospitalized daughter, comes back a few weeks each year to plant and sends money to pay for labor to maintain at least some production (Father of host family, HH, V3). Another, when his family moved up to his wife's home town for a few years, returned every so often to care for his coffee and other perennial crops (HH3, V2).

Transition from external organization to local organizations

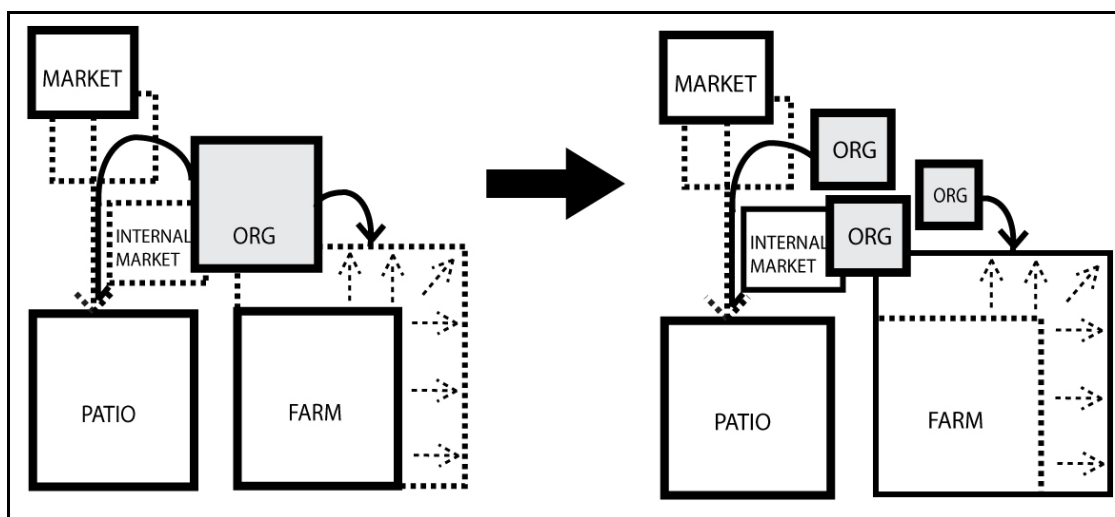


Figure 4.9 Hato Horcon showed that, even after an external organization leaves, if that organization has altered effective access these changes continue to intensify through local organizations.

²⁰ Future research might explore whether the number of entire families migrating found here is normal or is higher than normal due to the elevated food costs this year.

As Figure 4.9 illustrates, the benefits of the sustainable agriculture project extend to new community members long after the external organization has left, at least as long as there is still an advantage to them. One now-organic farmer explained. “I wasn’t part of the Project because I wasn’t here yet. . . . When I came back two years ago, I liked what they were doing, and I started cultivating organically as well. . . . It creates healthier vegetables. I lived for many years in Volcan, I worked in the fields there. I always was sick, I always had a cold or a cough five or six times a year, there were so many chemicals we used. When I came back here, that got better. Besides, people who use that type of production have a lot of land. Now, though, I see changes. Before, there was no way to make money here, you had to leave. Now, with a little savings, I was able to come back. . . . I haven’t had to leave to work for three years, since I started farming here,” (HH7, V2).

Thinking Like an Organization

Resources, however, are not the only things that organizations bring; they bring their own ideas, values, priorities, and assumptions. How these values and priorities match up with local values and priorities, and how they are presented to the community, determines in large part how families choose what to adopt and implement. Work with organizations over time can create a new culture of organization as a way of overcoming limits of distance, and also infuse the area with new ideas.

She sits, eyebrows drawn together, thinking. “If I had a small resource. . . . Wait, can you explain again?” My translator repeats the question, adding examples, “If you had a small resource, what would you do with it? Buy something, build something,

some type of project?” She sits for a moment, then asks “Just a small resource? I would plant corn, rice, beans, yucca,” (QG17, V3).

“What would the resource be for? Seeds? Renting land? Hired help? Pesticides?”

The idea of the future as a destination, usually a better situation, is not a common concept in Ngöbe society. What a person is going to plant this year, or whether they have to weed the fields this week, are common discussion points, but not hypothetical situations. What they would do if they had the resources, or to make things better, often proved a difficult question for those who had not had extensive travel or contact with outside organizations or schools. Some said cultivating more, usually listing the most important staple crops that they would plant, others said improving housing, and still others would build a small business.

Three men in Hato Horcon dreamed of bringing in tourists, including one who had not lived in the community for over ten years. Another is working to get official organic certification, because then his group might be able to access a bigger market. It is not just the dream, though, that sets them apart. Los Hermanos Guerreros had already held a meeting, with about thirty signees from different communities, requesting a grant to build the cabins and a water purifier for the facilities. They have become experts at planning and finding funding for group projects.

Reinforcing Gender

As we saw in Cerro Concha and Quebrada Guabo, the necessity for women to spend more time on the farm, on the one hand, and the distance or lack altogether of farmlands on the other hand, has brought more focus, more plants from the farm, and

more economic activities into the patio. Here in Hato Horcon, where the men tend to stay home to work the land and over 85 percent of the families have some access to farmland, this is not the case. The patio remains largely overlooked, by organizations and by families themselves. Only a small number of those who used organic compost or chemical fertilizer on their farms used these in their patio, and if so only on a few young and important plants like bananas. Terracing is not done at all, except in the steep model garden at the Hato Horcon Nutrehogar.²¹ Planting large sections in rows or any high-yielding garden plots is rare, and usually only seen in families where someone has migrated for many years to work in vegetable production. One person, an administrator at Nutrehogar, did use their technique of planting tomatoes in bags of compost, but with domestic animals and children reigning in the patio and the farm nearby it is sometimes easiest to leave herbaceous crops for the farm.²²

Men still manage some things in the patio, but the patio may be more firmly part of the female sphere in Hato Horcon than in Quebrada Guabo or Cerro Concha. Gender roles seem to conform more to what has been described as traditional patterns (Samaniego Peña 1997). My translator, who had accompanied me throughout the other two communities, leaned over one afternoon as we left a house. “You know, this is the first place we’ve been attended to by mostly men. In the other communities, they didn’t want to attend us, it was the women,” (Guía2, V2). I couldn’t help but wonder if, since men left to work at jobs or faraway fields in Cerro Concha and Quebrada Guabo, women there were more used to receiving strangers than in Hato Horcon. Women, the mother of

²¹ In fact, terracing in the home garden could be a safety hazard; one family in Cerro Concha moved their house because the children tripped going down the path.

²² The person who planted tomatoes, however, was not part of the fourteen households in the study.

my host family had explained to me, didn't used to talk to strangers or non-related grown men. "When I was twelve, my brothers were told to stop talking to me, stop playing with me. They were my best friends, I missed them, I cried and didn't understand, but that is how it was," (Mother of host family, QG, V1). When their husbands were not there or in the one house where she lived without a husband, women would accept talking to me, though the conversation was often slightly strained.

This gender bias is reflected in Hato Horcon's organizations, where men outnumber women as administrators in all but the women's organizations. Men fill 56 percent of the administrative roles surveyed, as compared to being 39 percent of participants overall, in Hato Horcon. By contrast, while I encountered one or two administrators that were men in Quebrada Guabo and Cerro Concha, the families surveyed had four and one women administrators, respectively, and no men at all (see Figure 4.10). In Quebrada Guabo and Cerro Concha, men made up only eighteen percent and nine percent of the participants, respectively. In fact, in Hato Horcon even the women's organization is tied to a men's organization. "We [Hermanos] are the men's organization for the family, and ASAEVI is for the women of the family. But we help each other out, of course, we're all family," (Hermanos Guerreros director, HH, V3)

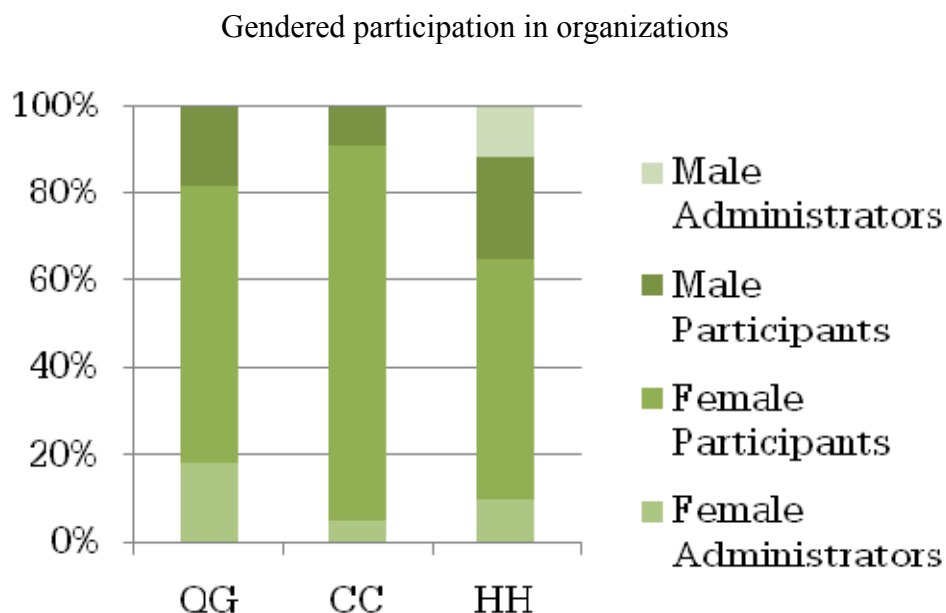


Figure 4.10 The three communities show differences in gendered participation and, more strikingly, control, within organizations. Cerro Concha has the lowest percentage of males involved in organizations, whereas Hato Horcon has the highest percentage of male participants and, strikingly, even though females still participate more in organizations more of the male participants are administrators in Hato Horcon than of the female participants.

Organizations have become, in some ways, an economic opportunity; if they request support as a group, they have found, they are more likely to receive it. Perhaps this is why they attract more men than in the other communities, perhaps it is because migrancy is lower, or perhaps it is a reflection of more traditional gender roles.

Exporting Values?

“Some of their varieties, of rice work,” an agricultural extension worker from IDIAP explained to me, “we tested them and they produced very well under the right conditions.” The organization investigates commercial and local crop varieties and works to better farm practices throughout the Comarca. “We are propagating those and spreading them amongst everyone. We also are trying to introduce nutritionally enhanced

maize, we go and do demonstrations in the communities, we feed some chickens normal corn and other this enhanced corn and the chickens get much fatter. If the farmers see change, if they see why it is better, then they switch, you can't just go tell them to change. And here we have higher producing bananas—”

“Local?”

“No, we haven't tried the local varieties. We already have these varieties that produce a lot,” (IDIAP agricultural extension worker, San Felix, V3 selection).

Most organizations include, among their priorities, changing not just practices but local values. IDIAP, to some extent, is working to spread a production and health-based valuation of plants. PAN-GTZ based its philosophy on “permanent dialogue with the Ngöbe men and women *with the aim of developing and promoting the conservation and management values* appropriate for the environmental resources,” (translation of the author, emphasis added) (Mono-administrativo, 1994). These goals do not always match up with local values, of course, which is part of why the organization is there.

For example, according to rural sociologist Patricia Howard, women often select plant varieties not just for production but also for taste, texture, and how they can be preserved, (2003). IDIAP, on the other hand, focuses on production. These distinctions in plant qualities, including plants adapted for different niches or different seasons, are maintained in the patio even as they disappear from the production-oriented farms. Whether the introduction of these new varieties merely provides more genetic material for farmers, or whether it actually devalues other varieties or different priorities such as taste or texture, remains to be seen.

Exporting values as a direct effect of organizations on families

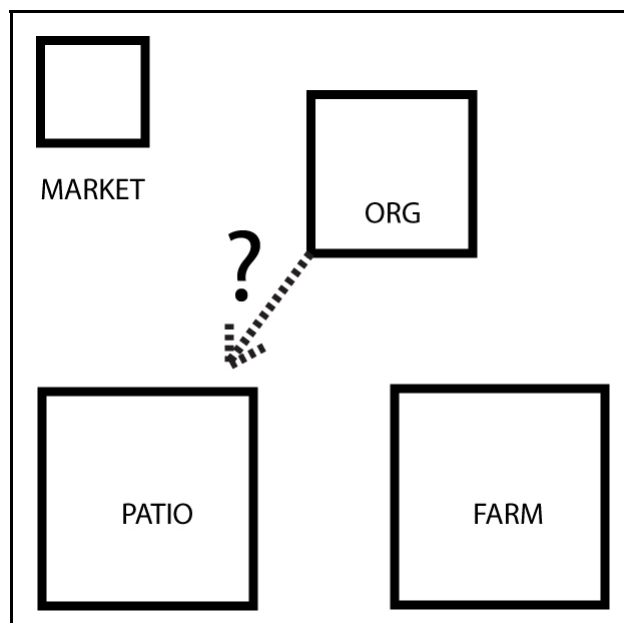


Figure 4.11 Can organizations impact the patio directly, though, by changing local values?

However, the impacts of the new plants provided by the Project just over a decade ago suggest that people will merely add these plants to their suite of varieties, especially preserving different types in the home gardens. As of now, even larger-scale distribution of external commercial seeds by programs like MIDA have merely added to the diversity of the home garden, not replaced it; local producers are often eager to try as many new plants as possible in small quantities in the experimental grounds of the home garden.

Walking through the botanical gardens of a sustainable agriculture university in Costa Rica with three women from ASMUNG, I smiled as they carefully collected seeds and seedling, wrapping them in cloth to take on the full-day's trip home. A month later when I returned to the house of my host family, the mother pointed out the seedlings. "I was so mad," she added, "when I came out one day and saw the chickens pecking at the

cinnamon. It came a long ways! But I think one of the seeds will make it. We'll see,”
(Mother of host family, QG, V1).

IDIAP recognizes that farmers ultimately have the choice of what plants to use and how to plant them, and works to show them where their values overlap. The way that an extension worker, or the organization as an entity, establishes its relationship with the community makes a huge difference in what sort of impact the organization can have.

Walking up to the plot of land that a community member donated for the year to Nutrehogar in Quebrada Guabo, the director explained to me, “We still have not planted. We finally got this land for a garden, but the *técnico* hasn't been here, he's been on vacation this month, and the seeds have to go in. I'm worried.”

“Don't you plant at home too, though? You know how, why do you have to wait?” I asked, surprised.

“We don't know how to do it his way, how far apart to put rows. He'll get mad if we don't do it right,” (Nutrehogar director, QG, V2 selection). A month passed. The seeds went unplanted.

A friend, exasperated by the situation, also commented, “Why can't they hire someone local? They could pay that person, he wouldn't be stretched out over such a large area. Your neighbor is a *técnico*, you know, and he still doesn't have a job. Why couldn't he do it?” (Guía2, V2). The *técnico* was equally frustrated when I spoke to him. “It's hard, they don't always listen to instructions, the people side is hard. We give them nutritive cookies, for the kids, one per day, and they give them a few, the parents might eat one, they don't last half the week,” (Nutrehogar regional técnico, V1).

Yet, in Cerro Concha and Quebrada Guabo, the técnico merely visits every once in a while; they keep the model garden in production on their own.

“We know agriculture here, the technician only comes by every few months to look, he leaves it up to us to teach and manage,” explained the director of Hato Horcon’s Nutrehogar (V3, personal communication). The extension agent for PNB there is also a farmer from a nearby community and when he meets with the producers it is as a meeting of peers discussing the best course of action. “I also have chilies in my farm, and I for my part will be under the Program, not the Company, next year, but whatever you choose you have to plan,” he started one discussion, and later shared, “I also noticed that I was losing weight between my house and selling them. It happened a few times. . . I even went to a neighbor’s, to make sure my scale wasn’t wrong. . . Either the company’s scale is off or I am losing weight in the walk, and I have a horse. For those of you who walk with the chilies on your back, it has to be even worse. . . We need to watch for this, we need to figure out what to do,” (PNB técnico, CI, V3).

More often than not, these mismatches in values or understanding do not result in community value changes so much as a failure of the organization to create change (see Figures 4.12).

If an organization is merely a service provider, it does not change the effective access to markets and farms and can be treated in the model almost as if there were no organization. In the areas where extension agents do not have a constant presence, I found none of the Nutrehogar techniques, such as terraces, making compost, or planting in bags, in gardens, and only a handful of the varieties from the gardens such as chayote

Change-making versus service-providing organization

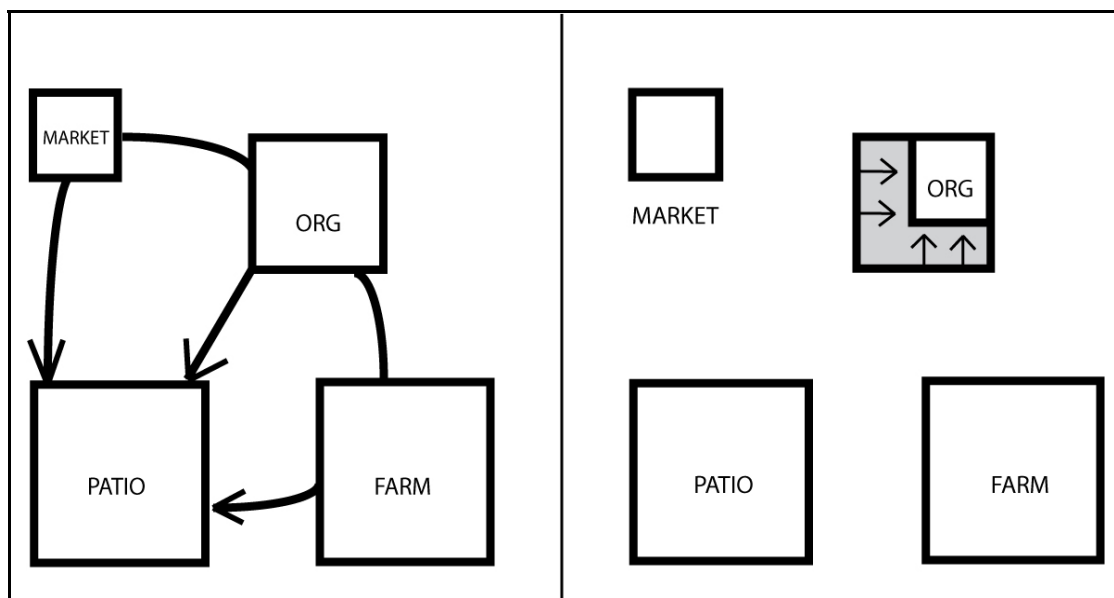


Figure 4.12 If an organization changes local values, changes effective access to farmland, or changes effective access to the market, that organization has altered the community context and can be considered a change-maker. However, if none of these changes occur, then the organization is a service-provider, not a change maker, and can effectively be ignored as an impact on home gardens.

or commercial tomatoes. One woman who worked in the model garden in Cerro Concha added, “These aren’t the same tomatoes as over there, they are tomatoes *criollos* [local breed]. They can survive anything. They barely need water, they don’t need fertilizer, they can produce lots of small tomatoes without anything,” (CC9, V1). When I asked someone who had worked in the model garden of [Nutre] in Cerro Concha why she didn’t have those plants in her garden, she shrugged. “Cucumbers, they don’t produce seeds to replant.”

The Flip Side of a History of Organization: inequality and politics

What does the presence of organizations mean, though, to those who are not part of these organizations? There are certainly some side benefits that work for the whole

community. For example, lectures from IDIAP on soils and plant propagation, from PNB on a variety of topics including commercialization, and from MIDA on agriculture arrive in the area and have open attendance. “IDIAP has a meeting room right here, they come sometimes and give lectures. I go or my wife goes always,” one resident explained, adding, “They’re useful,” (HH12, V3). Infrastructure created for projects, such as extensive tubing systems for water or better roads, could ostensibly help but in these communities projects are not normally designed with this in mind. Resources brought into the community by groups can increase the number of people that come through the community, and thus the cash inflow, or can increase the general amount of food available in the community so that families that have to buy food can buy more variety and healthier foods, and for slightly cheaper than outside prices. Organization within the community can also create a more powerful political voice, allowing them the chance to improve infrastructure such as schools or bridges. Perhaps the influx of new people, projects, and techniques can create new ideas for change and opportunity amongst everyone, even those who are not directly involved.

Still, “politics,” or who has the most power, inevitably leads to unequal distribution of benefits. In the first place, funds don’t go always where they are most needed.

“Three people drowned in that river last year. It’s not safe for all of the families that have to cross, or when the men come back, drunk. . . We made a committee eight years ago, people from both sides signed, we petitioned the government. We had all of the money except a few hundred, and it was shelved. I don’t know where all of that money went. They never built the bridge. But my son, he was in Quebrada Guabo last

summer, there was a government bridge built there. He was visiting, he didn't know it was there, it's not in the main area. Someone showed the bridge to him, and he laughed, it was this big bridge over a stream. And they can't build us one here," (Hermanos director, HH, V3, personal communication).

Other times, people don't hear about a program or the rules are not clearly explained, and those who can hide what they have may be able to receive support when others cannot. "Sometimes, you know, you can't put down the whole truth because they won't help you. You put what they want," explained one woman, discussing with me why others had gotten SENAPAN's *bono* when her daughter had not (Mother of host family, V3).

Organizations are aware that the way they enter a community, and who they invite to participate, impacts the effectiveness of the program; a high ranking director in the Ministry of Agriculture, for example, asked if I could look at whether working with individuals, families, family organizations, or local organizations was most effective for different types of projects (MIDA director, San Felix, V3). However, the impact on a program's effectiveness is due to who has access to the program and who gets "left to the side" or left out.

"We never heard about the meetings, we never heard about the project, we were passed over," one family explained (HH12, V2). When an organization comes in to work with already established community organizations, it supports the organization and existing local leadership. Also, because those groups are already organized and working, the program can have great success within that group. On the other hand, working solely with preexisting groups also reinforces existing inequalities. Especially in Ngöbe

communities, which are still partly kin-based, involvement in organizations tend to follow family relations, which means that they also break apart over family feuds.

“They split because the president, their uncle, wanted their land. They created their own organization,” a resident explained to me quietly. Such fights put people who are not part of the feud in a difficult place. “I don’t want to pick sides, so I’m not part of either, I do things with both. I am going to wait, to see who is the next president of the group, to see if they will be better to align myself with,” an independent organic farmer explained (Nutrehogar administrator, HH, V3).

For family-based organizations, cohesiveness and a pre-existing social norm of working to better the entire family can create rapid success, but grants of money and materials can seem like donations to just one family. “ASAEVI began with women from the whole community, but there were differences, there was the split, and everyone left, it stayed just the women from that one family,” my translator explained after an intense discussion with an ex-member (HH0, V3).

Suspicious and rumors spread as traditional checks and balances on wealth disparities within the community disappear and certain families seem to pull ahead. “Are you working with Los Hermanos? No? Oh, good. I heard that they received a grant for a project for the whole community, but we never saw it here, they kept it up there,” (HH12, V3).

On the other hand, when an organization comes in and is opened to participation by all interested individuals, it avoids supporting existing community splits and inequalities but also loses the social tendency to work hardest for one’s own extended family. In Hato Horcon, the Nutrehogar is a loose network, with one local and elected

person in charge and all interested members showing up to help run the sub-center and to benefit from the services provided, but it does not create widespread leadership or organizing ability, and the community hasn't been able to win resources or support for any projects to help them. To overcome this, the charisma of the leader makes a big difference. In Quebrada Guabo, for example, when the often absentee organization employee in charge of running all of the Nutrehogar centers in the area switched, many women stopped coming to the center and the local director stepped down in protest. The old director explained, "When [the new woman] came, I left. She didn't listen to us, she just came and told us what to do," (QG9, V1). In fact, as we saw above, this struggle between the locally chosen leadership and nationally chosen leadership erupted into serious problems, with fights over control of various funds and who had the right to dictate their use and the management of the center (Nutrehogar director, QG, V2).

The Outside Organization Director

Great change has happened here since I first started working in the area. You can see it everywhere. The roads, even just the state of the roads, makes central cities like Chamí and Soloy accessible. There are schools. There are coffee producers that work together and sell their products nationally. We have programs. We have a Comarca.

Still, there is so much to do, it's exhausting sometimes. There is so much work, and it always ends up being more complicated. We went to distribute chicks to a few towns, and by the time everyone had waited in line, gotten their chicks, and walked or rode to their homes, over half of the chicks had gotten sick from the heat. Many ended up dying. Or the seeds we use, we knew we shouldn't be distributing tomatoes at the beginning of the rainy season, but we were delayed. All of our seeds have to be quality certified, and there are no quality certifiers in the area, so by the time the seeds arrive from the warehouse it is late. If we let them sit around, they are damaged. If we distribute them, people can choose to plant them or save them for the rainy season—they run the same risk of damaging the seeds that we do, but we don't make the choice for them.

I think changing the way people plant just takes a while. You have to show them, and with a large-scale, gradual technique, that is hard to do. Some things just don't interest people. You live with people for long enough, and you begin to value what they value. I've seen enough ecological latrines built to become convinced that it would be better to spend that money building numerous normal latrines. Yes, the ecological ones don't smell if you use them right, they're better for disease prevention, but people don't use them. Only the Peace Corps workers use them correctly. Is it worth it, then?

Conclusions: Towards a Dynamic Model

A community's location is an unchanging fact. The local climate, incline, and soils are also relatively stable, although human management of an ecosystem can impact microclimates, erosion, and the organic matter in the soil. However, social networks, economic forces, and culture, which can all be changed drastically by the construction of roads, alter the “effective place,” or how location and ecology limit or support different activities in the home garden. These complicated interactions do not, however, force any specific action by families. Instead, they create the context within which families make the decision of what their best options are.

Context of individual decisions

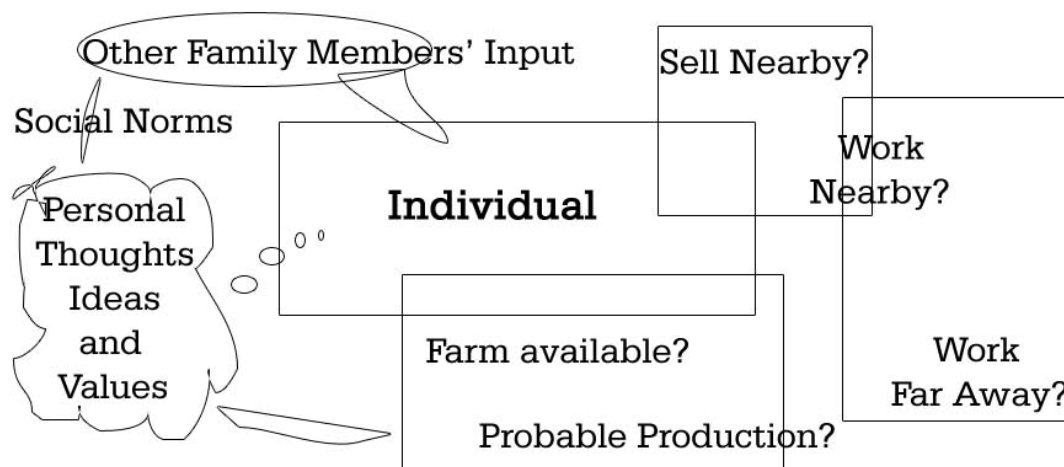


Figure 5.1 Individuals and families make choices that affect their patio based on the external context, including ecology of the area, culture, and access to food and cash production.

For example, within the three communities there were three families that had no land outside of their patio and no regular work that still did not choose to migrate, and

there were two families with a two hectare intensive organic farm, institutional support, and some additional cash from produce sales that chose to migrate with their entire families, leaving their houses boarded up for a few months and their farms without daily care. It is this diversity of individual choice that could explain, in large part, the wide ranges of diversity found in home gardens in the area.

By painting even a rough picture of how these dynamic interactions create the structure of limits and opportunities within each community, though, we can begin to predict the effects that different types of changes or interventions might have on a community level.

Creating the Effective Space of Communities

It is important to understand *how* communities come to be the way that they are. As we saw in Parts II and III, there are specific influences that alter the effective access to farmland, to the market, and to organizations. Before moving to a more generalized understanding of these changes, we revisit the transition between physical and effective access in *each* of the three communities.

The Effective Space of Cerro Concha

In Cerro Concha, farms are close to the patio but effective farm access is medium due to low production (caused by pests, disease, and land overuse) which makes more farmland necessary to sustain the family. At the same time, the market is relatively distant, requiring residents to travel an hour by foot for even limited access. With sales requiring much effort for little gain and farming increasingly unproductive, residents

have a double need for money: to pay for food and to pay for cash expenses, such as school, tools, and occasional medical care. In this situation, migration is a more attractive option, and the community tends to have higher migration and for longer periods of time ranging anywhere from three months through six or nine months. Seven men in five of the families have even migrated permanently but still visit for vacations or send food and cash.

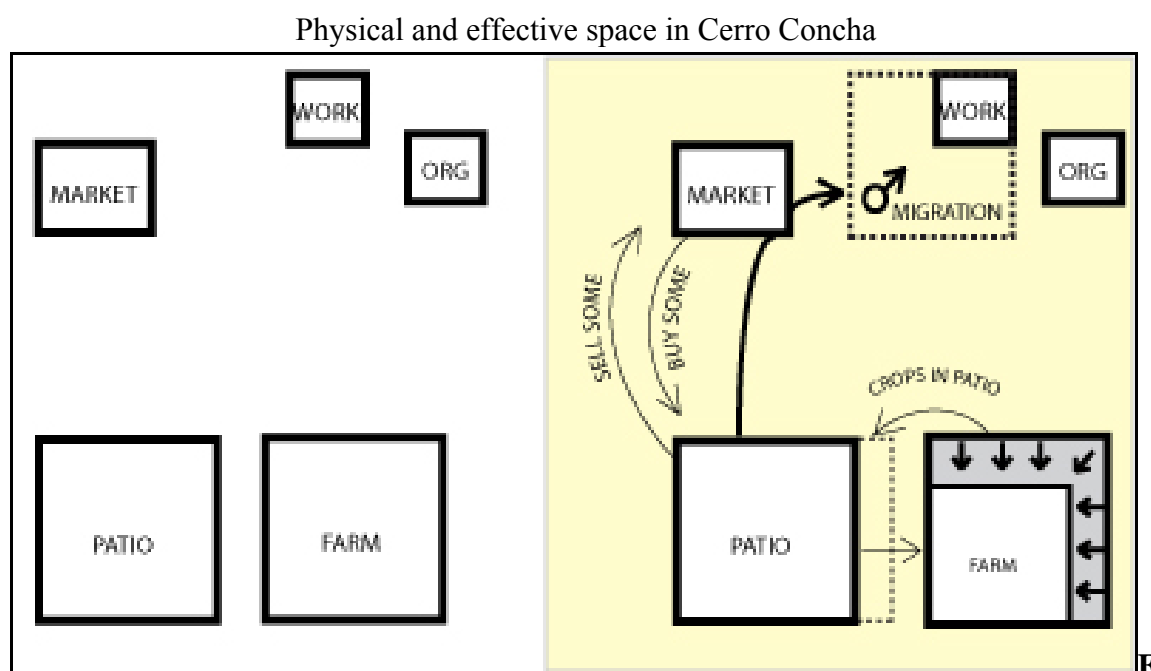


Figure 5.2 In Cerro Concha, where families have access to farmland nearby but are at some distance from market centers, employment areas, and organizations, low production on farms makes migration one of the better options to make ends meet.

High levels of migrancy compound the difficulty of effective cultivation, leaving fewer people to take care of the farm and stretching women's time even further between patio, children, household maintenance, and the farm. Depending whether the women choose to focus more on farming or the patio, this may increase or decrease patio diversity or overall production, but as a whole agricultural system production likely drops. Women, in charge of supporting the household and carrying out all daily business,

are both accustomed to dealing with strangers and to carrying out projects, and probably a good place to start with any programs, but limits on their ability to do heavy labor such as chopping down trees and a lot of machete work, as well as limits on their time, need to be taken into account with programs.

The Effective Space in Quebrada Guabo

In Quebrada Guabo, access to markets and the farm are switched. As people move in to form the community and be closer to schools, some lose access to farmland completely and most are left with their farm over an hour away by foot. This would tend to encourage planting more farm crops in the patio, but limited space and, most strikingly, domestic animals make cultivating these plants challenging and, often, a failure. In fact, the average number of domestic animals per household is lower than in Cerro Concha or Hato Horcon, but with so many patios so close together the density is much higher.

On the other hand, the market is much closer, with goods and buyers passing through the town on a daily basis. This tends to reduce migration, since there are other ways of earning supplementary cash, but since food costs are higher some form of work is still necessary. Proximity to the market, however, also puts residents closer to steady jobs, especially jobs for those with a higher level of education and jobs from which people can return home on a nightly or weekly basis.

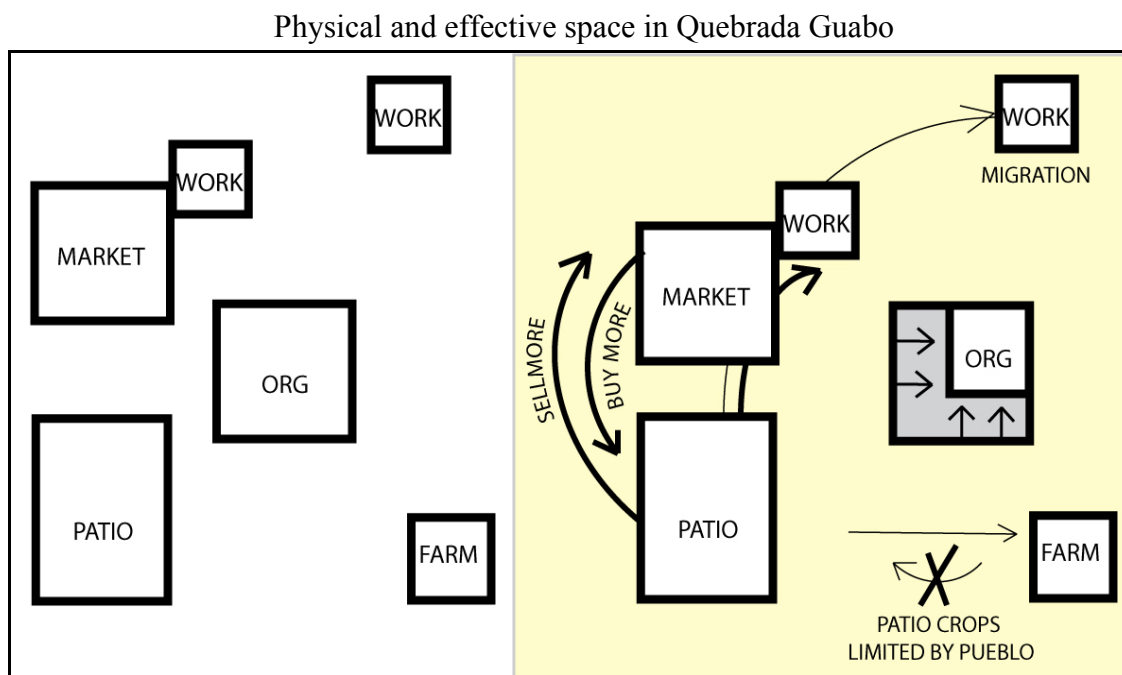


Figure 5.3 In Quebrada Guabo, since families have good access to the national market and work relatively close by but are limited in their ability to produce food, they depend more heavily on purchasing products and also on local participation in the market and employment to make ends meet. Organizations here, while numerous, have not had a significant impact on how families make a living.

So while farm production and compensation in the patio are both limited, there are numerous other ways of making money. Of course, given low production levels, these don't usually include selling produce. Nevertheless, small economic ventures are particularly popular and face fewer challenges because products can be sold to salaried passers-by and outside needs for a project, such as electricity, a refrigerator, mesh, cement blocks, or formulated feed, are accessible. Anything that can be developed in the patio, by men or women, and especially something that is not endangered by the domestic animals and that can be used, at least in part, to provide supplementary cash, should be adoptable by families. What is needed, however, aside from help with materials and startup costs, is a better understanding of long term planning, accounting, and how to maintain these projects.

The Effective Space of Hato Horcon

While organizations have some presence in Cerro Concha and a stronger presence in Quebrada Guabo, it is in Hato Horcon that they have managed to change the context of the patio. Hato Horcon is similar to Cerro Concha in both its actual distance from the national market, about an hour walking to the nearest road and town, with only one paid kindergarten teacher's position in Hato Horcon itself. Moreover, it is similar to Cerro Concha in access to farms, with most farms very near to the household and, despite some aggregation of households around the school, much higher levels of land ownership than in either Cerro Concha or Quebrada Guabo. However, because the long term presence and input of resources by agricultural organizations has kept farms productive, effective farm access here is high and most (almost 63 percent) of the families produce the majority of their food, especially those 64 percent of households with someone belonging to an agricultural organization²³. Here, least of all, is there any need to plant farm crops in the patio, and small gardens of beans, or especially corn or yucca, were seen only in more land-strapped or women-headed households.

Moreover, the presence of these organizations has shortened the effective distance to markets, bringing resources into the community as well as teaching and encouraging marketing of products both locally and nationally. Here, people may still have to travel to the market, but more often resources and buyers come to them, in search of the products they offer or of an organized and successful group to work with. With this development, in which families can provide their own food and sell extra produce for supplementary cash, migration is rendered less necessary and even detrimental to farm production. When

²³ "Belonging" to an organization, here, includes those who belonged previously but are no longer members

people from a family do decide to migrate, it is overwhelmingly for three months or less, usually during the least busy part of the agricultural season.

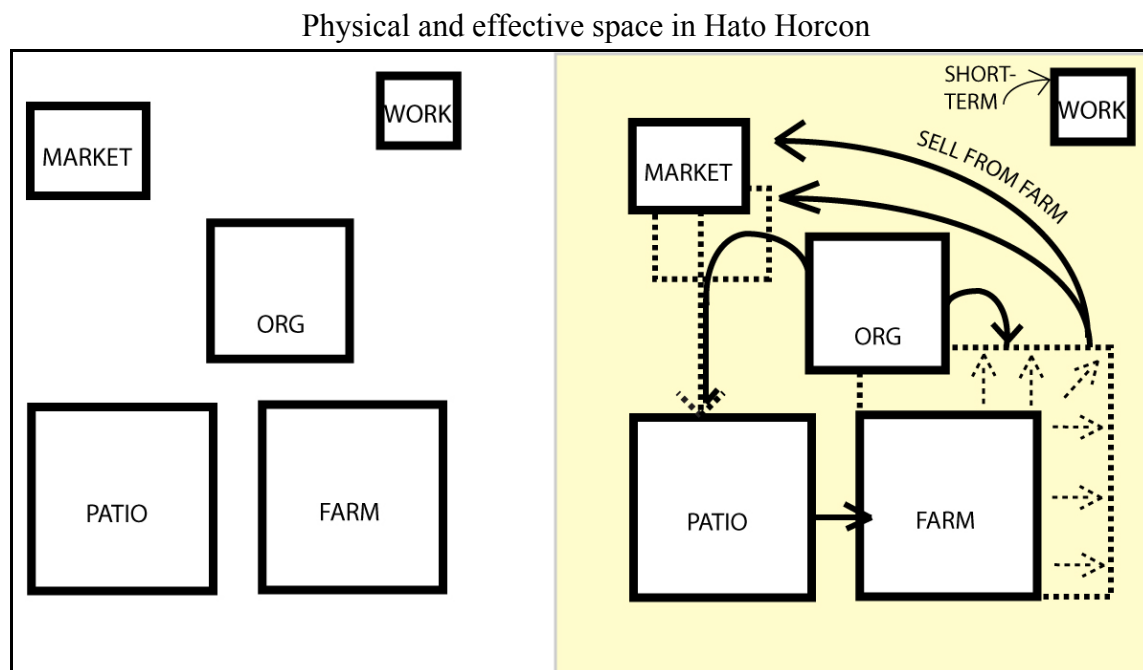


Figure 5.4 In Hato Horcon, where families have access to nearby farmland but are distant from the market, the work of organizations in the area has helped families to produce more food, as well as to market their products directly, putting the focus of most families' livelihood on their farms.

This means that labor in the area is readily available, but also that men retain more power and more of the public voice, for example holding 56 percent of the administration positions while only constituting 39 percent of the participants, or being the main person to attend visitors. Men's focus also remains on the farm, while women, often without much notice, manage the patio. Perhaps this, or the influx of new plant species from the agricultural programs, accounts for the higher overall levels of patio diversity. However, the men are focused on and more inclined to pursue projects on their farms.

Recipe for Change: Influencing effective access

These cases illustrate what creates change in the community context. If organizations are not considered, road construction is the primary way that effective access to markets in the area has been changed. Meanwhile, increased population density, either by population growth or by grouping around schools, is the primary way that effective access to farmland has changed. However, we saw, organizations can also impact effective access to food production and cash production. The presence of change-making organizations, however, can also have a strong influence on these two levels of access.

Impacts: Migration, Labor, Gender, and Internal Markets

The reason that access to markets, farms, and organizations have such a strong influence on the family's options and the home garden, though, are due in large part to a second set of tightly linked factors. These secondary factors related to access to farmland and access to the market are some of the most ignored, and important, limitations on what families can do in their farms and home gardens. Migration, which changes in prevalence and duration depending on the balance of a family's access to food production and cash production, for example, impacts both household labor and gender roles. Labor and gender roles determine what can be done in home gardens and who is doing it, and as such are essential to understanding the decisions made and techniques used in home gardens.

All too often, though, programs do not take these into account, implicitly assuming that every household has members around to take care of heavy work like

digging rows in the hard patio or building structures, or that women have extra time to be constantly tending and watering plants in their sphere, the patio. Even the characteristics that individuals use to determine whether a plant is valuable vary by gender. For projects designed to be carried out in the patio, high migrancy or a shortage of labor means that men are not around and neighbors usually have to be paid in some way for heavy labor such as chopping down, digging, and building things in the patio. Differences in gender roles between communities can impact garden diversity and characteristics, as well as household priorities. Gender roles could also have implications for who organizations can work with in each community. If organizations provide the resources for a project, these differences are important to take into account, and further research into the impact of community context on labor and gender roles is essential.

Towards Implementation

However, while a model creating the effective spaces within which families make decisions about their home gardens is important, it is most useful if it can tell organizations what to accommodate when designing programs. Figures 5.2, 5.3, and 5.4 showed how changes in access to farmland or food production, to the national market or cash production, and to change-making organizations can lead to changes in effective space. Based on this effective space, then, these three communities can be classified as three distinct “types” of community (see Figure 5.5). Within each community type, there are different opportunities and different limitations that impact what families can do and want to do in their patios (see Figure 5.6).

Community classification by effective access

Community	Effective Access to Farm	Effective Access to Market	Effective Access to Organizations	Community Type
Quebrada Guabo	Low	High	Medium	“Hub”
Cerro Concha	Medium	Low	Low	“Distant”
Hato Horcon	High	Medium	High	“Distant with Organizations”

Figure 5.5 The human context of that impacts home gardens in each community can be designated based on the living strategies available within the community, using the community’s effective access to the farm, the market, and organizations.

Characteristics of different community “types”

“Hub”	“Distant”	“Distant with Org”
Can access outside supplies	Can cultivate patio and farmland	Can cultivate patio and farmland
Can sell to passers-by		Can sell extra produce
High cash needs	Cash needs depend on production	Low cash needs
Focus on patio by both genders		
Patio is often only productive area	Low cash available for inputs	Farm is main productive area
Crops in patio have to be protected	Low available labor, mostly women	Less focus on patio, mostly women

 Opportunities

 Neutral considerations

 Limits

Figure 5.6 The opportunities, characteristics, and limits on home gardens that vary depending on human, not ecological, characteristics of the community depend on community type. Here these opportunities, characteristics, and limits are listed for community types “Hub,” “Distant,” and “Distant with Organizations.”

However, organizations need accurate and simple ways to assess their impact. In order for organizations, which are often low on human resources, to adapt their programs

to the the social, cultural, and economic situation—the effective access—of a community, they need to be able to assess effective access as quickly as they assess the climate, soil type, and grade of steepness. For the purposes of such an assessment, there are two types of data: easy to get information, such as distance from the community to roads, and harder-to-get but more descriptive information such as total area of land holdings of each family. Figure 5.7 presents some examples of these factors that can be used in combination to determine effective access.

Useful factors to classify communities by effective access

Effective Access to Farm	Effective Access to Market	Effective Access to Organizations
Travel time to farm parcels	Distance to local Roads*	Number of Participants*
Ownership of Land (outside patio)	Distance to Inter-American Hwy*	Number of Local Administrators
Population Density*	Most food bought or produced?	Percent of Adults that Participate*
Total Size of Land Holdings◇	Number of Salaried Workers	Inputs Provided by Organizations*
Yearly Farm/Household Production◇	For How Long do Workers Leave?	Years of Organizational Presence*
	Local Sales of Indicator Products*	Number of Local Organizations*

* Information that can be collected relatively easily on a community-wide scale, often without having to visit

◇ Information that would require substantial time to collect because it is not locally measured

Figure 5.7 Useful factors identified by this study that can be used in combination to determine effective access of a community to farms, markets, and organizations, specifying data that are particularly easy to obtain and data that, while very descriptive, are more difficult to obtain.

Some of these indicators can be relatively easily obtained for each community, sometimes without even visiting, such as distance to local roads and the Inter-American Highway, and others with an easy survey of local stores on approximate amounts of indicator goods sold that month or of organizations on their role, history, and participation logs. Others can be answered relatively easily by families, such as the travel

time to farm parcels or whether they own land outside of the patio, whether they buy or produce most of their food, and how many people in the family worked last year and how long workers were gone.

However, some numbers which would be particularly salient, such as total size of land holdings, farm or household production, or how much families spend regularly, is harder to assess quickly. For example, most land holdings are not measured and only a small part of overall household and farm production is actually counted by residents. These types of measurements would require walking to all of the farms to measure or, for production or spending, having families keep logs. As such they are probably too taxing to include in any sort of rapid assessment tool. Even with three opportunities, over the course of a year, I was not able to confidently obtain this information for even half of the houses.

The challenge, then, in creating a Rapid Assessment Tool for organizations is to find a balance of data that is as descriptive as possible while being relatively easy to obtain. An example of how such a tool would work follows. Even using just a few factors, we can begin to distinguish community type.

Figure 5.8 shows the standardized canonical discriminant factors for two functions used in a discriminant analysis. This particular analysis examined whether the household information above could be used in classifying the community that a household belonged to. To do that, coefficients are created for each factor to spatially separate the households by community. The larger the coefficient, whether positive or negative, the more important it was in the function. Functions 1 and 2 are not so important in their order, but each explains a certain amount of the variance in the data.

Example indicator factors used to group households by community

Standardized Canonical Discriminant Function Coefficients

Factors, by household	Function	
	1	2
Individuals in each household involved in an organization	.731	-.239
Presence of farm crops (rice, beans, yucca) in the patio	-.173	.367
Presence of tubers (yucca, ñame, ñampi) in the patio	.147	.217
Family produces most or buys most of their food?	.644	.546
Sum of distances to all farm parcels (in minutes travelling)	.335	.259
Percent of Males over 14 years that are contributing workers	-.137	.782

Figure 5.8 Standardized canonical discriminant function coefficients for a discriminant analysis designed to determine community type based on household data. In this example, the number of people in each household involved in an organization, whether the family is a net producer or net purchaser of food, and the percent of adult males in each household that work were most important in separating out communities, followed by the presence or absence of farm crops in the patio and the total distance in travel time to all farm parcels.

For this test, Function 1 determined 58.2 percent of the data variation, while Function 2 determined 41.8 percent, meaning that both functions were almost equally important in classifying households.

Based on the results of this analysis, the number of individuals involved in an organization and whether the family buys or produced most of their food proved most important in Function 1, followed by distance to farm parcels. In Function 2, the most important factors were the percent of the adult males in the household that worked for a salary, followed by (again) whether the family produces or buys the majority of their food, and finally, the presence of farm crops such as rice, beans, and yucca in the patio.

Example separation of households by community

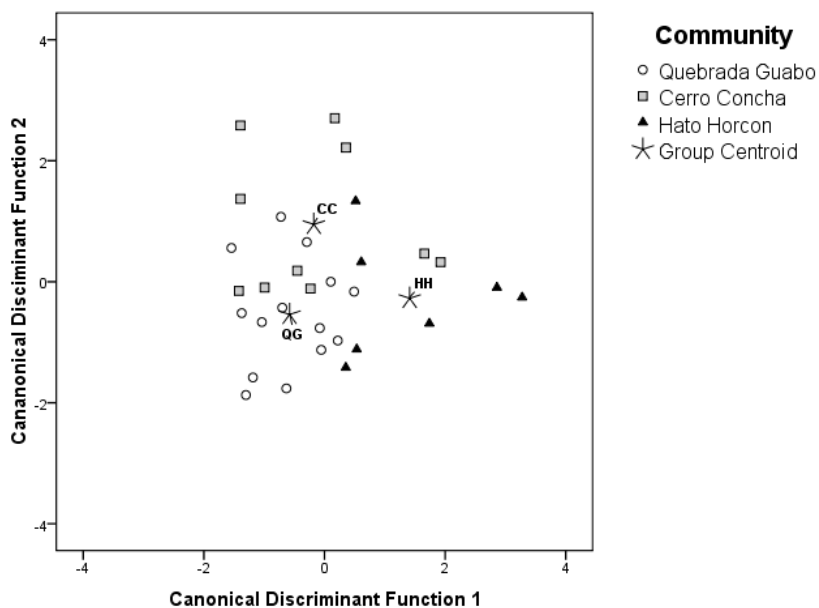


Figure 5.9 Example plot based on discriminant analysis functions 1 and 2 above, showing separation of households into their respective communities, with more similarity between Cerro Concha and Hato Horcon, as seen by higher misclassification along the border.

Figure 5.9 shows how households are separated into community groups by this analysis. While the factors do not separate the communities perfectly, this is to be expected, since each community has such individual variation and they are all in a similar region. The two categories in which households were most often misclassified, however, was between Cerro Concha and Hato Horcon, which also makes sense given that both are have similar physical levels of access and that mainly the presence of organizations, in which not everyone participates, differentiates Hato Horcon from Cerro Concha in this model.

Based on this, a closer analysis of which combination of easy-to-obtain factors most accurately predict the community context would prove particularly helpful, including more detailed investigation of changes in division of labor and gender roles.

The sets of indicators for organizations, while easy to obtain, discriminate least between organizations that will merely provide services and ones that will spark change. On paper, it can be hard to distinguish between a local organization that is only an organization in name, and one that is truly working and serving the area. Research on better indicators to distinguish between change-maker versus service-provider organization would be particularly useful. Research in a slightly larger number of communities, including at least two in each access category, would allow for a larger sample and more rigorous testing of these factors outside of the three exploratory communities. Most importantly, though, further research linking these contexts with specific impacts on nutrition, conservation of natural resources, and equality within the community and the household, is necessary to plan programs accordingly.

The Place of the Patio

The patio is one of the most central, and overlooked, parts of Ngöbe culture and agriculture. Not meant to require huge inputs of labor and time, the patio can be easy to discount as a place of low productivity. As an agroforestry system, though, full of mostly perennials, it is designed to channel what nature already does toward human needs. It requires constant, low grade management: the occasional clearing, constant harvest of a few products each day, and a constant presence and watchful eye.

Traditionally in Ngöbe communities and with organizations the farm is the focus, the big producer, and the part of the household that requires the most visible work and the most inputs. In fact, Nutrehogar is the only organization in the area specifically working on patio cultivation, and they have faced particular challenges in working with these

highly cultural spaces. Families are more willing to put physical labor and monetary inputs into a farm, and while the patio is a place for biodiversity conservation and experimentation, people are more willing to bring something that was successful in the patio to the farm than to bring new techniques from the farm to the patio. As an outdoor living room, in addition to its other purposes, the patio faces aesthetic and practical limits such as domestic animals and children that are not a concern on the farm. Still, the patio, more than any other space, adapts to a wide variety of family situations.

The creation of a rapid assessment tool, for daily use, coupled with continued in depth research with communities can help programs adapt to the reality of communities, better using their own resources and better serving the communities into which they have been welcomed. This region will not stop changing anytime soon, and as families continue to grow and children and young adults obtain higher education in ever-increasing numbers, new factors are bound to appear, and programs will have to continue adapting. The future of thousands of years of local heritage in biodiversity and culture, as well as the continued viability of the landscape and health and wellbeing of the people who live within it is being negotiated, in a small way, by each individual and family on a daily basis as they navigate these changes, work, learn, cook, gift, and keep planting.

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Interviews and Personal Communication

To protect privacy of individuals, interviews are cited in the text using a three-part code:

For example (CC16, CC, V2) or (MIDES administrator, SF, V3)

The first part of the code refers to the entity: either a household identification number or the general role of the person. The second part consists of a two letter code referring to the community in which the interview occurred: QG for Quebrada Guabo, CC for Cerro Concha, HH for Hato Horcon, SF for San Felix, and CI for Cerro Iglesias. The final part of the code refers to the date range of the interview, with V1 occurring during November and December of 2007, V2 in June and July of 2008, and V3 in December of 2008 and January of 2009.

V1 Interviews, November 19 – December 3, 2007

Organizations

School director. Interview by author. Hand written. Quebrada Guabo, Panama,

21 November 2007.

Nutrehogar regional técnico. Interview by author. Tape recording. Quebrada Guabo,

Panama, 3 December 2007.

ASMUNG administrators. Group interview with author. Hand written. Quebrada Guabo,

Panama, 3 December 2007.

Household interviews and tours of home garden included in this study

(Persons listed here were main respondents. Other household members were usually present as well.)

QG1, female head of household and sister. Household interview with author. Hand written. Quebrada Guabo, Panama, 21 November 2007.

QG2, female head of household and son. Household interview with author. Hand written. 21 November 2007.

QG3, female head of household and son. Household interview with author. Hand written. Quebrada Guabo, Panama, 22 November 2007.

QG4, female head of household. Household interview with author. Hand written. Quebrada Guabo, Panama, 22 November 2007.

QG5, female head of household, Household interview with author. Hand written. Quebrada Guabo, Panama, 22 November 2007.

QG6, female head of household. Household interview with author. Hand written. Quebrada Guabo, Panama, 23 November 2007.

QG7, male and female heads of household. Household interview with author. Hand written. Quebrada Guabo, Panama, 23 November 2007.

QG8, female head of household. Household interview with author. Hand written. Quebrada Guabo, Panama, 24 November 2007.

QG9, female head of household. Household interview with author. Hand written. Quebrada Guabo, Panama, 24 November 2007.

QG10, female head of household and sister. Household interview with author. Hand written. Quebrada Guabo, Panama, 30 November 2007.

QG11, daughters of household head. Household interview. Hand written with author.

Quebrada Guabo, Panama, 1 December 2007.

QG12, male and female heads of household, Household interview with author. Hand

written. Quebrada Guabo, Panama, 1 December 2007.

QG13, female head of household. Household interview. Hand written with author.

Quebrada Guabo, Panama, 1 December 2007.

CC1, female head of household. Household interview. Hand written with author. Cerro

Concha, Panama, 25 November 2007.

CC2, male head of household. Household interview. Hand written with author. Cerro

Concha, Panama, 25 November 2007.

CC3, male head of household. Household interview. Hand written with author. Cerro

Concha, Panama, 25 November 2007.

CC4, oldest daughter of household head. Household interview with author. Hand

written. Cerro Concha, Panama, 25 November 2007.

CC5, female and male heads of household. Household interview with author. Hand

written. Cerro Concha, Panama, 26 and 29 November 2007.

CC6, women from the family. Household interview. Hand written with author. Cerro

Concha, Panama, 27 November 2007.

CC7, female head of household. Household interview. Hand written with author. Cerro

Concha, Panama, 27 November 2007.

CC8, female head of household. Household interview. Hand written with author. Cerro

Concha, Panama, 27 November 2007.

CC9, female head of household and daughters. Household interview with author. Hand

written. Cerro Concha, Panama, 27 November 2007.

CC10, female household head with garden tour by daughter and son-in-law who live nearby. Household interview with author. Hand written. Cerro Concha, Panama, 29 November 2007.

CC11, female head of household and daughters. Household interview with author. Hand written. Cerro Concha, Panama, 29 November 2007.

CC12, male and female heads of household . Household interview with author. Hand written. Cerro Concha, Panama, 2 December 2007.

CC13, female head of household. Household interview with author. Hand written. Cerro Concha, Panama, 2 December 2007.

Informal communication cited, reconstructed from daily and weekly notes.

Guía1, guide and translator. Personal communication with author. Author's notes.

Quebrada Guabo and Cerro Concha, Panama. 19 November through 3 December 2007.

Mother of host family QG. Personal communication with author. Author's notes.

Quebrada Guabo and Chamí, Panama. 19 November through 3 December 2007.

Mother of host family CC. Personal Communication with author. Author's notes. Cerro Concha and Quebrada Guabo, Panama. 19 November through 3 December 2007.

Father of host family CC. Personal Communication with author. Author's notes. Cerro Concha and Quebrada Guabo, Panama. 19 November through 3 December 2007.

V2 Interviews, June 17 – July 16, 2008*Organizations*

Nutrehogar QG director. Interview with author. Handwritten notes. Quebrada Guabo, Panama. 18 June 2008.

PNB director. Interview with author. Handwritten notes. San Felix, Panama, 23 June 2008.

Regional director of Nutrehogar and programming design director. Interview with author. Handwritten notes. Quebrada Guabo, Panama, 23 June 2008.

Agronomy teacher QG. Informal interview with author. Author's notes. Quebrada Guabo, Panama. 23 June and 4 July 2008.

Nutrehogar CC Director. Informal interview with author. Author's notes. Cerro Concha, Panama, 28 June 2008.

Kindergarten teacher CC. Interview with author. Handwritten notes. Cerro Concha, Panama. 29 June 2008.

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Regional director of MEDUCA. Interview with author. Handwritten notes. San Felix, Panama, 1 July 2008.

Nutrehogar HH Director. Interview with author. Handwritten notes. Hato Horcon, Panama. 10 July 2008.

Household interviews and tours of home garden included in this study

(Persons listed here were main respondents. Other household members were usually present as well.)

QG14, female head of household and son. Household interview with author. Hand written. Quebrada Guabo, Panama, 26 June 2008.

QG17, female head of household. Household interview with author. Hand written. Quebrada Guabo, Panama, 4 July 2008.

QG20, female head of household. Household interview with author. Hand written. Quebrada Guabo, Panama, 12 July 2008.

CC14, female head of household. Household interview with author. Hand written. Cerro Concha, Panama, 28 June 2008.

CC19, female head of household. Household interview with author. Hand written. Cerro Concha, Panama, 2 July 2008.

CC20, female head of household. Household interview with author. Hand written. Cerro Concha, Panama, 2 July 2008

HH1, male head of household. Household interview with author. Hand written. Hato Horcon, Panama, 7 July 2008.

HH2, daughter of household head. Household interview with author. Hand written. Hato Horcon, Panama, 7 July 2008.

HH3, male household head. Household interview with author. Hand written. Hato

Horcon, Panama, 8 July 2008.

HH4, male and female heads of household. Household interview with author. Hand written. Hato Horcon, Panama, 8 July 2008.

HH5, daughter of household head. Household interview with author. Hand written. Hato Horcon, Panama, 8 July 2008.

HH6, female head of household. Household interview with author. Hand written. Hato Horcon, Panama, 8 July 2008.

HH7, male head of household. Household interview with author. Hand written. Hato Horcon, Panama, 8 July 2008.

HH8, male head of household. Household interview with author. Hand written. Hato Horcon, Panama, 8 July 2008.

HH9, male head of household. Household interview with author. Hand written. Hato Horcon, Panama, 9 July 2008.

HH10, male head of household. Household interview with author. Hand written. Hato Horcon, Panama, 9 July 2008.

HH11, female head of household. Household interview with author. Hand written. Hato Horcon, Panama, 9 July 2008.

HH12, male head of household. Household interview with author. Hand written. Hato Horcon, Panama, 9 July 2008.

HH13, male head of household. Household interview with author. Hand written. Hato Horcon, Panama, 9 July 2008.

HH14, male head of household. Household interview with author. Hand written. Hato Horcon, Panama, 9 July 2008.

Informal communication cited, reconstructed from daily and weekly notes.

Guía2, guide and translator. Personal communication with author. Author's notes.

Various parts, Western Panama, 17 June through 13 July 2008.

Mother of host family QG. Personal communication with author. Author's notes.

Various parts, Western Panama, 17 June through 13 July 2008.

Sister of host family QG. Personal communication with author. Author's notes. Quebrada

Guabo, Panama. 17 June 2008.

Mother of host family CC. Personal Communication with author. Author's notes. Cerro

Concha and Quebrada Guabo, Panama, 17 June through 13 July 2008.

Father of host family CC. Personal Communication with author. Author's notes. Cerro

Concha and Quebrada Guabo, Panama, 17 June through 13 July 2008.

Nutrehogar QG director. Personal Communication with author. Author's notes. Quebrada

Guabo. Panama, 1 July 2008.

V3 Interviews, December – January , 2008

Organizations

IDIAP agricultural extension worker. Interview with author. Author's notes. San Felix,

Panama, 19 December 2008.

MIDA director. Meeting with author. Handwritten notes. San Felix, Panama, 20

December 2008.

Nutrehogar HH administrator. Interview with author. Handwritten notes. Hato Horcon,

Panama, 27 December 2008.

ASAEVI administrator. Interview with author. Handwritten notes. Hato Horcon, Panama,
30 December 2008.

PNB técnico. Producer meeting attended by author. Author's notes. Cerro Iglesias,
Panama, 30 December 2008.

Kiosko owner. Interview with author. Author's notes. Cerro Iglesias, Panama, 30
December 2008.

Household surveys

(Persons listed here were main respondents. Other household members were usually present as well.)

QG1, female head of household and brother. Survey with author. Handwritten notes.
Quebrada Guabo, Panama. December 2008.

QG2, son, female head of household. Survey with author. Handwritten notes. Quebrada
Guabo, Panama. December 2008.

QG3, female head of household, son, son. Survey with author. Handwritten notes.
Quebrada Guabo, Panama. December 2008.

QG4, female head of household, son. Survey with author. Handwritten notes. Quebrada
Guabo, Panama. December 2008.

QG6, female head of household and mother. Survey with author. Handwritten notes.
Quebrada Guabo, Panama. December 2008.

QG7, male head of household. Survey with author. Handwritten notes. Quebrada Guabo,
Panama. December 2008.

QG8, male and female head of household. Survey with author. Handwritten notes.

Quebrada Guabo, Panama. January 2008.

QG9, female head of household. Survey with author. Handwritten notes. Quebrada

Guabo, Panama. January 2008.

QG11, daughter, daughter, female head of household. Survey with author. Handwritten

notes. Quebrada Guabo, Panama. January 2008.

QG12, male and female head of household. Survey with author. Handwritten notes.

Quebrada Guabo, Panama. January 2008.

QG13, female head of household. Survey with author. Handwritten notes. Quebrada

Guabo, Panama. January 2008.

QG14, female head of household, son, son. Survey with author. Handwritten notes.

Quebrada Guabo, Panama. January 2008.

QG17, female head of household. Survey with author. Handwritten notes. Quebrada

Guabo, Panama. January 2008.

QG20, female head of household. Survey with author. Handwritten notes. Quebrada

Guabo, Panama. January 2008.

CC1, female head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama. December 2008.

CC2, male head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama. December 2008.

CC3, female head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama. December 2008.

CC4, female head of household and mother. Survey with author. Handwritten notes.

Cerro Concha, Panama. December 2008.

CC5, female and male head of household. Survey with author. Handwritten notes. Cerro

Concha, Panama. December 2008.

CC6, female head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama. December 2008.

CC8, female head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama. December 2008.

CC9, female head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama. December 2008.

CC12, male and female head of household, son. Survey with author. Handwritten notes.

Cerro Concha, Panama. December 2008.

CC14, female head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama. January 2008.

CC19, female head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama. January 2008.

CC20, male head of household. Survey with author. Handwritten notes. Cerro Concha,

Panama, January 2008.

HH1, male and female head of household. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

HH2, daughter of household head. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

HH4, male and female head of household, daughter, son-in-law. Survey with author.

Handwritten notes. Hato Horcon, Panama. December 2008.

HH6, daughter of household head. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

HH7, female head of household. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

HH8, male head of household. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

HH9, female head of household. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

HH11, male head of household. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

HH12, male head of household. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

HH13, male head of household. Survey with author. Handwritten notes. Hato

Horcon, Panama. December 2008.

Informal communication cited, reconstructed from daily and weekly notes.

Guía2, guide and translator. Personal communication with author. Author's notes.

Various parts, Western Panama, 17 December 2008 through 6 January 2009.

Mother of host family QG. Personal communication with author. Author's notes.

Various parts, Western Panama, 17 December 2008 through 6 January 2009.

Mother of host family CC. Personal Communication with author. Author's notes. Cerro

Concha, Panama, 17 December 2008 through 6 January 2009.

Father of host family CC. Personal Communication with author. Author's notes. Cerro Concha and Quebrada Guabo, Panama, 17 December 2008 through 6 January 2009.

Father of host family HH. Personal Communication with Author. Author's notes. Hato Horcon, Panama, 27 through 30 December 2008.

Hermanos Guerreros director. Personal communication with author. Author's notes. 27 December 2008.

Nutrehogar CC event. Event attended by author. Author's notes. Hato Horcon, Panama, 28 December 2008.

Nutrehogar HH director. Personal Communication with author. Author's notes. Hato Horcon, Panama, 27 and 29 December 2008.

Sister of HH12. Personal Communication with author. Author's notes. Hato Horcon, Panama, 27 December 2008.

Glossary of Spanish and Ngobere terms used

abono orgánico – organic fertilizer, either ashes, fruit peels, compost, or bokachi

abono químico – commercial chemical fertilizer

acueducto – disperse water system that collects water at the source and delivers it,

through a system of tubes, to the yards of families downhill.

aradores – literally “ploughers,” this word is used to refer to various plant pests, including

a type of mite, a type of worm, and a burrowing small mammal that eats roots.

balo – a type of deciduous tree which has particularly nitrogen-rich leaves. In Hato

Horcon these trees were brought by the Sustainable Agriculture Project and the

leaves are used as the organic matter base for bokachi.

bandeja – thirty eggs

BioMM – a mixture of beneficial soil bacteria used in organic agriculture to fight disease,

made with molasses, broken rice, and locally collected bacteria.

bodá – a short native palm cultivated in Ngöbe areas which produces slightly bitter,

upward-growing shoots off of the roots. These are eaten boiled or steamed.

bokachi – high nutrient, quick acting organic fertilizer prepared according to the recipe

and temperature-controlled process developed by Japanese Professor Teruo Higa.

In Hato Horcon, bokachi is made in fifteen days using balo leaves, rice husks,

chicken or cattle manure, ashes, molasses, and local soil.

bono – literally “bonus,” this refers to a government check issued by SENAPAN to older

women and women with elementary-school aged children every few months, for

varying amounts, to help pay for food. In some areas these checks can be used as

money, but in lower Nole Duima they can only be cashed in for certain goods at local kioskos that have been selected and approved by the Panamanian government.

brindi – a celebration which includes some sort of offering or gift-giving, often of food

bunito – a fifteen passenger van used as public transport on the more travelled roads.

Longer rides or worse roads generally are serviced by covered trucks.

cacao – Used to refer to the cacao tree, its fruit, or a traditional drink made from toasting the seeds, grinding them, and steeping them in water.

caoba – a timber tree, one of the species provided in large quantity by the Sustainable Agriculture Project to beneficiaries in Hato Horcon.

capacitacion – literally a “training,” this refers to hands-on or practical trainings in various skills or knowledge areas such as women’s rights, building a rice paddy, or basic accounting.

carrión – a waist-high grass which produces a useful and high-nitrogen fiber and has a strong root system, commonly planted along the edge of a terrace to hold the earth in place.

chicha – a common beverage made of fruit juice, water, and sugar.

chicha fuerte – a local alcoholic beverage made of fermented grains or tubers and sugar, often distributed to participants working on the farm during a junta.

chichema – a starchy traditional beverage made from maize, yucca, or pixbae and water.

chichica – a native heliconia which grows wild in the area and has tender, tasty stems.

chuso – a metal-tipped stick used in traditional agriculture to make holes for planting seed on the farm.

comida blanca – a meal which consists only of plain white rice or another starch, with no accompaniment for flavor, usually eaten when the family has nothing else to add.

consejo – a local council which handles small disputes and legal matters.

corregimiento – the smallest political division in Panama, usually including a few communities.

crema – oatmeal, cream of wheat, or cream of rice, commonly nutritionally enhanced and served mixed with powdered milk, especially for children.

criollo – similar to típica, an adjective used to describe anything considered the native or national versión, including Panamanian orange tree varieties, certain local sauces for foods, or local chicken breeds.

cuadro – literally “square,” used to refer to a plot of land such as a house lot.

culantro – in the same family as cilantro, this species of coriander is native to Mexico, Central, and South America. It has wide, round, saw-toothed leaves which are said to resemble cilantro in flavor and smell.

Dialect – Perhaps left over from a Spanish misnomer, many Ngöbe refer to Ngobere as “el Dialecto” or “the Dialect.”

dueño – the head or boss, specifically of a household or of the family’s collective land holdings, and the person with the most power in collective decisions.

gatos del monte – in this area, small mammal that occasionally hunts and eats residents’ chickens. This name can refer to gray foxes, jaguarondis, or other small wild felines depending on the region, and I was unable to verify the identity of this animal by sight.

guandú – Leguminous bushes which grow about human height and produce pods of small

green pigeon peas, which can be eaten fresh or dried.

hojaldres – typical Panamanian breakfast accompaniment outside of the Comarca Ngöbe-

Buglé, hojaldres are fried flat pieces of dough resembling elephant ears.

junta – a gathering of extended family and friends to help with a physically intensive task

such as harvesting rice, chopping down a large section of swidden, or building a

structure. The host family provides food and chicha fuerte for the guests for their

work, and is expected to return the favor if guests ever throw a junta.

kiosko – a small local store, usually family owned and operated, which consists of a

small room for goods and a window at which customers order.

latino – the word that most Ngöbe use to refer to non-indigenous Panamanians and,

occasionally, similarly-complexioned foreigners.

limpio – clean or clear, used also to refer to a parcel or patio maintained with the weeds

and bushes cropped short.

maizena – toasted, ground corn brewed and consumed like coffee.

manoteada – literally “handful,” used to measure rice harvest, it refer to the amount of

rice stalks that can be held in one hand.

marañon curazao – a column-like tree with dense foliage that creates complete shade

below, often seen in the patio with a bench, table, hammock, or other resting place

set up beneath.

membrillo – a long-leaved, shade-creating tree that produces round green fruits that are

orange and chambered inside and, when cooked, have a taste reminiscent of sweet

potatoes.

nagua – what is now considered traditional dress for Ngöbe women and worn on a daily

basis by women and girls alike, the *nagua* is a loose-fitting dress decorated along the collar, sleeves, and in a circle halfway down the thighs with triangular patterns of differently colored cloth.

otoe – a species of tuber which is shade tolerant and has heart-shaped leaves. Larger varieties are popular for soup. Sometimes referred to as New World Taro.

paila – large metal cooking pot placed on top of the fire, for making large amounts of food.

papo – a type of hibiscus with particularly splendid flowers, which grows easily from branch cuttings and is commonly used in the Ngöbe versión of a hedge.

patio – the area around the house, kept short-cropped and planted with fruit trees and spices, sometimes blending into patches of perennial timber and fruit, which is highly adaptable and the closest correlate to the home garden.

peones – someone, usually a member of the extended family, hired for a few days to complete hard labor such as farm work or building a house.

pixbae – a domesticated palm which produces starchy, nutritious fruits twice a year and which can be chopped down for heart-of-palm. Popular throughout Latin America, each region has a slightly different spelling and pronunciation, but two of the more common names are *peyibaye* and *peach palm*.

pollo de granja (*de engorde*, *ponedores*) – commercial breeds of chicken, including fryers (*de engorde*) and layers (*ponedores*). They produce quickly and in quantity—fryers are ready to eat twice as fast as local breeds and layers produce two to three times as many eggs—but need to be protected from rain and given formulated feed.

pollo de patio – local breeds of chicken, they are generally hearty, tough, slow-growing, and are raised on leftover food from meals and whatever they can scavenge in the garden.

pueblo – a small town or community.

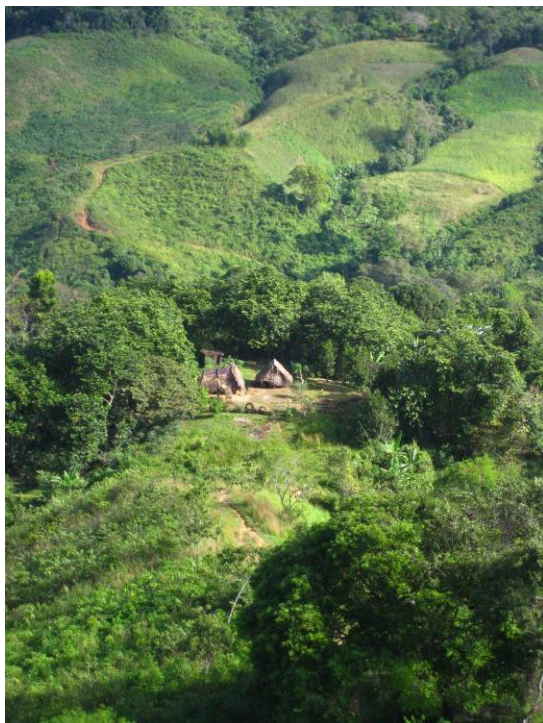
quintal – unit of measurement: fifty pounds.

tina/tanque – here, a square-edged, somewhat shallow pond dug as a rice paddy or to hold fish and snails.

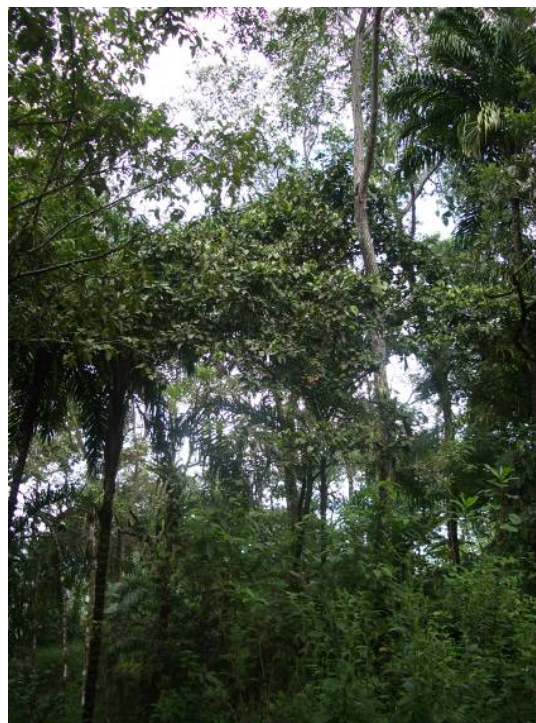
técnico – here, the title of a person who has finished high school with a focus in agronomy.

zorra – opossum, a small mammal with sharp teeth that enjoys chicken.

Appendix A.1: Visual Tour of Home Gardens



Horizontal Stratification



Vertical Stratification



Permanent crops: healer's house



Banana microzone



Limpio (clear) patio



Patio as a living room: table and hammock



Farm to patio:

yucca plot



Guandú plot

Appendix A.2: Visual Tour of Model Gardens



Primary school model garden and pig sty, Quebrada Guabo



Kindergarten classroom and chicken coop, Cerro Concha



Nutrehogar model garden, Cerro Concha



Tomatoes in bags, Nutrehogar, Hato Horcon



Bokachi, Hato Horcon



Rice Paddies,



Asoc. Hermanos, Hato Horcon

Fish and Snail Pond



Terraced Farm, Asoc. Mixta, Hato Horcon



Distribution of School Garden kits, MIDA

Appendix B: Semi-Structured Interview Questions and Survey

Semi-Structured Household Interviews:

(in this technique, each question below is a starting point, and was often followed by prompts, examples, related questions, and discussions. These were complimented by discussions while touring the home garden)

1. ¿Qué tiene Usted sembrado en el patio? ¿En la finca?
2. ¿Quién trabaja en el patio? ¿Qué hay que hacer?
3. ¿Qué proporciona el patio?
3. ¿Vende algo del patio? ¿De la finca?
4. ¿Qué tiene que comprar?
5. ¿Hay plantas medicinales sembrado en el patio?
6. ¿Vivía aquí como niño/a? ¿Cómo era por acá? ¿Qué estaba aquí en el patio?
7. ¿Usted trabaja o ha trabajado con algún organización?

HID# _____, GPS# _____, Fecha _____, Hora _____

Persona entrevistada _____

Dueño/Dueña de la casa _____

Introducción: _____

Contenido del sitio y de la finca

Vamos a hacer eso en una manera diferente para que yo entienda mejor y, también, para disfrutarlos mejor. Vamos a poner personas, plantas, y animales en un mapa, pero primero tenemos que hacer el mapa.

1. Por favor Ud. dibuje un mapa de su sitio, y si hay parcelas y finca, esas también.

2. De dónde viene su agua? ¿Tubería, quebrada, pozo? (dibujar)

Tengo conmigo algunas tarjetas con dibujos.

3. Cuáles de estos Ud. tiene sembrado en:

[Arroz1, Maiz2, Yuca3, FrijolesPalo4, FrijolesBejuco5, Guineo6, Ñame7, Nampi8, Otoe9, Pixbae 10, Aji 11]
este sitio: _____ la finca? (otra?)

4. Cuáles de estos Ud. tiene sembrado en:

[Frutales12, Maderables13, PalmasParaConstrucción14, Leña15, Pollo16, Pato17, Puerco18, Caballo19, Ganado20, Rastrojo21, Café 22, Cacao 23]
este sitio: _____ la finca? (otra?)

5. ¿Si Ud. tiene algo sembrado en la finca, todavía va a sembrarlo en su sitio? ¿Por qué/Por qué no?

6. ¿Vendió algún producto del sitio esta semana? ¿Este mes? Sí/No ¿Dónde? _____ ¿Quién llevó el producto al mercado? _____

7. ¿Vendió algún producto de la finca esta semana? ¿Mes? Sí/No ¿Dónde? _____ ¿Quién llevó el producto al mercado? _____

Historia del sitio (usar el mapa como referencia)

8. ¿Cuántos años tiene Ud. en este sitio? _____
Antes de llegar, ¿qué estuvo aquí?

Finca Rastrojo Monte Sitio de padres Otra _____

Cuántas hectáreas tiene su sitio? _____

9. Cuántas hectáreas tiene su finca? _____

su finca propia alquilada prestada no tiene parcelas

Si alquila o presta, de quién?

padres de dueño/a hermano/a de dueño/a vecino

otra _____

10. ¿Qué sembró primero al cambiar el lugar de su casa?

La familia

11. *Ahora vamos a identificar a las personas que viven aquí, con una corta descripción de su edad, trabajo, y eso.*

ID Nombre Edad Relación a dueño/a trabajo, tiempo, lugar, \$?

Organizaciones

13. Quién ha participado en organizaciones? (*escribir con nombres*)

1Ulrikron, 2Moctezuma, 3Padres Familiares, 4ASMUNG,

5ASAEVI, 6Nutrehogar, 7PNB, 8PAN-GTZ, 9MIDES

10MIDA, 11SENAPAN, 12 Proyecto, 13MIXTA,

14Guerretros

Trabajo de la familia

14. ¿Este año que hicieron en la finca? ¿Quién participó?

¿Quién se encargó?

Otra:

Participa:

Encargado:

Tumbar monte:

E:

Quemar:

E:

Sembrar:

E:

Limpiar:

E:

Cosechar:

E:

Dar comida a los animales:

E:

12. ¿Hay algunos miembros de la familia que están trabajando por afuera ahora?

Nombre Edad Relación a dueño/a trabajo, tiempo, lugar, \$?

15. En este año qué hizo en el sitio? ¿Quién participó?
Quién se encargó?

Otra: Part:

Enc:

Limpiar

E:

Queimar

E:

Sembrar

E:

Echar agua

E:

Echar abono

E:

Cosechar cosas

E:

Cocinar

E:

Dar alimentación a los animales

E:

Cuida animales enfermos

E:

16. Tumbaron árboles? S / N

De Sitio Finca Otro _____

Participaron:

¿Para qué? Vender Construir Leña Otra _____

17. ¿Cómo se hace diferente el manejo de la finca cuando personas de la familia salen por afuera para ganar su salario?

Precios de Comida

18. ¿Qué tiene que hacer la familia para comer bien con estos precios de comida tan altos?

¿Siembra más ciertas comidas? ¿Vende más? ¿Compra comida diferente?

19. Va a comprar arroz para la Navidad este año?

S/N/Tiene su propio

¿Cuánto cuesta ahora? _____ Navidad pasada? _____

Cuántas libras de arroz come la familia por semana? _____

20. Va a comprar guineo para la Navidad este año?

S/N/Tiene su propio

¿Cuánto cuesta ahora? _____ Navidad pasada? _____

21. Va a comprar otes, ñame, ñampí para la Navidad este año?

S/N/Tiene su propio

¿Cuánto cuesta ahora? _____ Navidad pasada? _____

Prioridades

22. ¿Qué necesitan hacer Uds. para mejorar la vida de la familia?

23. ¿Si tuviera un pequeño recurso para hacer una cosa, ¿qué haría con eso?

Y el manejo del sitio, ¿cómo difiere?

Appendix C: Identified Species List by Overall Frequency

Spanish Name	Scientific Name	Ngobere Name	uso	hábito	QG	CC	HH	TOTAL
Mango	Mangifera indica L (agric ngobe)	Mango (sippel)	Fruta	Leñosa perenne	10	11	12	33
Guineo	Musa sapientum L: M paradisiaca L (agric ngobe) Musa sp. (p 56 percep		Fruta, Musa spp	Herbaceous	10	11	11	32
Aguacate	Persea americana Mill (agric Ngob)	Duga (me, sipper)	Fruta	Leñosa perenne	10	10	11	31
Limón	Citrus aurantiifolia (Christm.) Swingle (agric ngob)	Limo (sippel=	Fruta	Leñosa perenne	10	9	10	29
Membrillo	Gustavia superba (H.B.K.) Berg. (agric ngob)	Tubä (me y sippel)	Fruta	Leñosa perenne	9	8	11	28
Naranja	Citrus sinensis (L.) Osbeck. (agric ngob)	Naran (me y sippel)	Fruta	Leñosa perenne	3	12	13	28
Pixbae (Peyibaye)	Bactris gasipaes (p56 percep)	Deba (me y sippel)	Alimento	Palma perenne	9	10	9	28
Cacao	Theobroma cacao L. (agric ngob)	Ká (sippel, me)	Fruta	Leñosa perenne	8	11	8	27
Otoe	Xanthosoma sagittifolium (L.)		Alimento	Herbaceous	5	9	11	25

	Schott (agric ngobe)									
Calabazo	<i>Crescentia cujete</i> (agric ngob)	Ciö (sippel)	Multi, Útiles	Leñosa perenne	8	8	8	24		
Ají	<i>Capsicum frutescens</i> L (agric ngob)		Alimento	Leñosa perenne	9	6	8	23		
Macano	<i>Diphyssa robinoides</i> Benth. (agric ngob)	Maganá (sippel)	Madera/Construcción	Leñosa perenne	4	7	12	23		
Café	<i>Coffea arabica</i> L.: C <i>liberica</i> Bull. (agric ngobe)	Cabe (me, sipper)	Fruta	Leñosa perenne	7	6	9	22		
Laurel	<i>Cordia alliodora</i> (Ruiz & Pav.) Cham.	Rö grie p102	Madera/Construcción	Leñosa perenne	7	7	7	21		
Nance	<i>Byrsonima</i> <i>crassifolia</i> (L.) H.B.K.	Miga (p108)	Fruta	Leñosa perenne	4	9	8	21		
Pipa/Palma de coco	<i>Cocos nucifera</i> L. (agric ngob)	Cogo (sippel)	Alimento	Palma perenne	10	6	4	20		
frijol de palo/guandú	<i>Cajanus cajan</i> L. (agric ngob)		Alimento	Leñosa perenne	11	7	1	19		
Ñampí			Alimento	Herbaceous	6	7	6	19		
Piña			Fruta	Herbaceous	6	4	8	18		
Ñame	<i>Dioscorea alata</i> L. (agric ngobe)		Alimento	Herbaceous	4	6	7	17		
Hoja Bijau	(a few varieties)	Bijau (me)	Multi, Útiles	Herbaceous	6	3	7	16		
Palma corozo	<i>Corozo oleifera</i> p50 percep	Crozo gro (sippel)	Madera/Construcción	Palma perenne	4	8	4	16		
Cedro	Sippel 3 types:		Madera/Construcción	Leñosa perenne	2	8	5	15		

	(cebola) cedrela spp. (espino) bombacopsis quinatum, (macho) guarea grandiflora												
Gusanillo				Multi, para pescar	Leñosa perenne	3	9	3	15				
Plátano				Fruta, Musa Spp	Herbaceous	6	5	4	15				
Caña de azucar	Saccharum officinarum L. (agric ngob)			Alimento	Herbaceous	2	5	7	14				
guaba cimarron				Multi, Fruta para aves	Leñosa perenne	8	4	2	14				
Guabo	inga spectabilis (Vahl.) Willd. (agric ngobe)			Fruta	Leñosa perenne	3	1	10	14				
Mamón	Melicocca bijuga L (agric ngob)		Mamon (sippel)	Fruta	Leñosa perenne	5	4	4	13				
Guarúmo	Cecropia peltata (sipper y sanjur 95)		Kura (sippel, me?)	Multi, hacer casa	Leñosa perenne	2	3	7	12				
Marañon	Anacardium occidentale (Sippel y Sanjur 95)		marallon (sippel)	Fruta	Leñosa perenne	5	4	3	12				
Pollo				Animal		5	4	3	12				
Yuca	Manihot esculenta Crantz (agric ngobe)			Alimento	Herbaceous	1	6	5	12				
Ñajú	Malachra spp. (agric ngobe)			Alimento	Herbaceous	2	8	1	11				

Batata	Theobroma bicolor (sippel y Sanjur 95)	Odöba (sippel)	Fruta	Leñosa perenne	3	2	5	10
Jengibre	Zingiber officinale (ANAM plantas medicinales)		Medicinal	Herbaceous	1	1	7	9
Marañon curazao	Syzygium malaccense (Sippel y Sanjur 95)	Marañon (sippel)	Multi, shade	Leñosa perenne	1	2	6	9
Culantro	Eryngium foetidum (ANAM plantas medicinales)		Alimento	Herbaceous	3	4	1	8
Guanábana	Annona muricata L (agric ngob)	Soron (me, sippel)	Fruta	Leñosa perenne	3	3	2	8
Jobo or Siduela	Spondias mombin (sippel y sanjur 95), SIPHERÑ CIRUELA: Spondias purpurea	Jobo (sippel)	Madera/Construcción	Leñosa perenne	0	0	8	8
Palma bodá	Chamaedorea spp (Willd.) (agric ngob)		Alimento	Palma perenne	2	4	2	8
Papaya	Carica papaya L (agric ngob)		Fruta	Leñosa perenne	4	4	0	8
balso	Ochroma lagopus (p50 percep), Ochroma pyramidale (sippel y sanjur 95)	Crun (sippel)	Multi	Leñosa perenne	1	3	3	7
Palma real	Scheelea ostrata	Balan (sippel)	Madera/Construcción	Palma perenne	1	4	2	7

Guácimo	(Oerst.) Burret (agric ngob)		Madera/Construcción	Leñosa perenne	2	1	3	6
Marañón de pepita	(sipper 3 clases: guácimo Guazuma ulmifolia, Blanco Luehea speciosa, colorado Xilopia aromatica)				1	4	1	6
Tortugo			? Madera/Construcción	Leñosa perenne	1	5	0	6
Árbol de pan	Artocarpus altilis (Parkins.) Fosb (agric Ngobe)	Beré (me, sipper)	Fruta	Leñosa perenne	1	1	3	5
Chayote				Unk, Madera/Construcción	3	0	5	5
Guachapalí	Pithecolobium saman (jacq.) Benth.	Guachapalí p98	Madera/Construcción	Leñosa perenne	0	2	3	5
mani forestero			Multi, forage, no erosion	Herbaceous	0	0	5	5
Oreja Mula	Miconia argentea	Urono (me y sipper)	Madera/Construcción	Leñosa perenne	0	0	5	5
Palma jora (Chonta nombre común, segpun sipper)	Oenocarpus panamanus (agric ngob)	Jora	Madera/Construcción	Palma perenne	0	1	4	5
Palma Su(o?)canca			Madera/Construcción	Palma perenne	0	3	2	5

Puerco			Animal		2	3	0	5
Recao/hoja de ajo bejuco			Alimento		1	1	3	5
Roble	Tabebuia rosea (Bertol.) DC	Doglé, Digima p118 (doglé sippel)	Madera/Construcción		1	3	1	5
Rosa			Ornamental		3	0	2	5
Zapote	Licania platypus (Hemsl.) Fritsch (agric ngob)	Zabo (sippel)	Fruit		2	2	1	5
Café de tierra alta/de altura					0	0	4	4
Cocla			Multi, cerca o no sirve		4	0	0	4
Coquillo	Jatropha curcas (agric ngob)	coquillo (sippel)	Multi, Medicina, postes		0	1	3	4
habichuela	Vigna sesquipedalis L (agric ngobe)		Alimento		2	2	0	4
Mamón chino			Fruta		0	1	3	4
Palma vino (palma pacora del sippel?)	?Acrocomia panamensis	Vino gro (sippel)	Madera/Construcción		0	4	0	4
Palo frío	Flacourtia sp.	Jola p114	Madera/Construcción		1	3	0	4
Pasmo	(hierba de pasmo de paridaÑ Siparuna sp., ANAM plantas medicinales)		Medicina		0	1	3	4
Sigua	Persea veraguesensis (sippel y sanjur 95)	Mirä (sippel)	Madera/Construcción		2	0	2	4
Uyama	cucurbita maxima		Alimento		0	2	2	4

(Zapallo)	Duch (agric Ngobe)												
Balo	Gliricidia sepium (sipper y sanjur 95)	Balo (sipper)		Multi, Abono		Leñosa perenne	0	0	3			3	3
Cabullo				Multi (artesanía)		Herbaceous	0	0	3			3	3
Caña cimarron				Medicina		Herbaceous	2	0	1			3	3
Escoba				Multi, Útiles		Leñosa perenne	2	1	0			3	3
Frijol bejuco	Vigna sinensis L (agric ngobe)			Alimento		Herbaceous	1	0	2			3	3
Jagua	Genipa americana L. (agricngob)	Crema (sippel)		? Check			2	1	0			3	3
Jiraca (varias clases)				Alimento		Herbaceous	1	2	0			3	3
Limón agrío							1	2	0			3	3
Maia				Madera/Construcción		Leñosa perenne	0	0	3			3	3
Mamey	Calocarpum mammosum Pierre (agric ngob)			?			0	3	0			3	3
mozote				Medicinal			1	0	2			3	3
Ñajú otro							0	3	0			3	3
Paja de limón				Alimento		Herbaceous	1	1	1			3	3
palma jacenca (penca)				palma jacenca (penca)		Palma perenne	0	1	2			3	3
papaya silvestre				Multi, leña		Leñosa perenne	1	0	2			3	3
Toreta	Fruta	Tugla (sippel)				Leñosa perenne	1	0	2			3	3
Toronja	Citrus paradisi (sippel y sanjur 95)	toronja (sippel)		Fruta		Leñosa perenne	1	0	2			3	3
"palma para casa"				Unk, Fruta/Chicha		Palma perenne	2	0	0			2	2

Achiote	Bixa orellana (Sipper y Sanjur 95)	Kuro (sippel)	Alimento	Leñosa perenne	2	0	0	2
cacao del monte	Theobroma purpureum (sipper y sanjur 95)	?mura gúo			2	0	0	2
Calabazo de la orilla del mar			Calabazo de la orilla del mar	Leñosa perenne	0	0	2	2
Caoba	Swietenia macrophylla (sippel y sanjur 95)	Cullara (sippel)	Madera/Construcción	Leñosa perenne	0	0	2	2
Cedro amargo	Cedrela odorata L.	Ruga p86	Madera/Construcción	Leñosa perenne	1	1	0	2
Cereza			Fruta	Leñosa perenne	1	1	0	2
Corotú	Enterolobium cyclocarpum (Jacq.) griseb.	Krudu p94	? Madera?	Leñosa perenne	0	2	0	2
Espavé	Anacardium excelsum (Bert. Et Balb.) Skeels	Tobon p96	Madera/Construcción	Leñosa perenne	1	1	0	2
guabo rabomono	Inga oerstediana (sippel y sanjur 95)	Bü (sippel)	Fruta	Leñosa perenne	2	0	0	2
mandarina					1	1	0	2
Noni			Fruta	Leñosa perenne	1	0	1	2
otoe cimarron					1	0	1	2
Palo sangrillo	Croton panamensis (sippel y sanjur 95) Crotom sp. P50percep	Jön (sippel)	?		0	2	0	2
Pita (check-is this pixbae sin espina)	Pita (check-is this cabullo?)		Pita (check-is this cabullo?)	Herbaceous	1	0	1	2
					0	0	2	2

Teca	Tectona grandis (agric ngobe)	Teca (sippel)	Madera/Construcción	Leñosa perenne	0	2	0	2
Tomate criollo	Lycopersicon esculenta Crantz (agric ngobe)		Alimento	Herbaceous	0	1	1	2
Tula	es calabazo?		Multi, Útiles	Leñosa perenne	1	1	0	2
Albahaca	Ocimum basilicum (ANAM plantas medicinales)		Alimento	Herbaceous	1	0	0	1
Almendro			Fruta	Leñosa perenne	1	0	0	1
Barrigón	Pseudobombax septenatum (sipper y sanjur 95)	Dobrá (sipper, me?)	No sirve	Leñosa perenne	1	0	0	1
bejuco de estrella	Aristolochia chapmaniana (ANAM plantas medicinales)		Ornamental, Medicinal	Herbaceous	0	0	1	1
Caimito			Madera/Construcción	Leñosa perenne	0	0	1	1
Caña india			Multi, Cerca	Herbaceous	0	0	1	1
canela			Alimento	Leñosa perenne	1	0	0	1
Cedrón	Simaba cedron (ANAM planta medicinal)		Madera/Construcción	Leñosa perenne	0	0	1	1
Chichica			Alimento	Herbaceous	0	1	0	1
citronele			Alimento	Herbaceous	0	0	1	1
colpachi	(Budowski: copalchi, sipper: corpachí -- Croton schiedanus)		Medicinal	Leñosa perenne	0	0	1	1
Guayabao	Psidium guajava (sipper y sanjur 95)	Nguima (sippel)	Fruta	Leñosa perenne	0	0	1	1
Hierba		migio	Unk		0	1	0	1

Maíz	Zea mays L (agric ngobe)		Alimento	Herbaceous	0	1	0	1
maravilla			Unk		0	0	1	1
Matapalo (strangler)			No sirve		0	1	0	1
ñame cimarron			no sirve	Herbaceous	0	0	1	1
naranja agrio					0	0	1	1
Oregano			Alimento	Herbaceous	1	0	0	1
paderame			Multi, alimento	Leñosa perenne	0	0	1	1
Paja valeriana	Stachytarpheta sp (ANAM plantas medicinales)		Medicinal	Herbaceous	0	0	1	1
palma playera			Madera/Construcción	Palma perenne	0	0	1	1
palo Cuajá	Vitex sp.	Dobo grie (sippel)	Madera/Construcción	Leñosa perenne	0	0	1	1
Palo noguatda (sippel calls Palo panti)		Noguatda (me, spelling from Sippel)			1	0	0	1
palo ratón	Platypodium elegans	Tugüe (sippel)	Multi or Madera?		0	0	1	1
Pato			Animal		0	0	1	1
Piña cimarron	Ananas comosus (l.) Merrill. (agric ngo)		?		1	0	0	1
pino	Pinus caribaea Mor. Var. hondurensis	pino (sippel)	Madera/Construcción	Leñosa perenne	0	1	0	1
poma rosa			Multi, fruta, leña	Leñosa perenne	0	0	1	1
salvilla (?) o salbia?			Unk, Medicinal		1	0	0	1

Uña de gato			Medicina	Herbaceous	1	0	0	1
zapato			Unk, Medicinal		1	0	0	1
Arroz	Oryza sativa L (agric ngob)		Alimento	Anual Herbaceous	0	0	0	0
menta			Alimento	Herbaceous	0	0	0	0
Oreja			Alimento	Fungi	0	0	0	0

*Scientific names and some Ngobere names based on common names, descriptions, and pictures in Agricultura Ngöbe by Krebs and on identifications by Sippel and Sanjur, with some final identifications based on a list of medicinal plants by ANAM and with help from an extensión worker at IDIAP. I have left these notes in the appendix. All ornamentals, which are easily identified visually but for which I could not find scientific names, have been left out, as have all species that I was unable to verify the common name and plant appearance for.