

Schooling the Forest: Land, Legacy, and Environmental Epistemological Practice in the Upper
Napó

By

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To Jamie and Georgiabelle, or Georgiabelle and Jamie. If only I could decide which order.

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Chapter 1: Practice-in-Place

Understandings and Forest Resurgence

This dissertation deals with the complex and evolving interaction between thought, practice, and the local environment in a remote but rapidly changing part of the Ecuadorian Amazon. It is a place, above all, where people are rapidly and eagerly taking advantage of opportunities they perceive to boost their integration into the State and, increasingly, global-scale economy. Even though very little will be said over the next eight chapters about trees or forests in their more canonically-quantified manifestations – tree cover and land conversion, deforestation, levels of biodiversity – I contend that the findings contained here directly implicate the future of the Ecuadorian rain forest. Rather than engaging trees and animals *per se*, it seeks rather to elucidate changing human *perceptions* of the local biosphere, and in particular to track the development of “the forest” as an *a priori* perceptual construct. Such perceptions, I contend, come about from a complex interaction between a changing forest knowledge base, changes in inferential reasoning about forest knowledge, the aspirational meanings motivating reasoning, and changes to forest practice. These changes are discursively and experientially patterned across the generations of residents currently living in the community in which I conducted field work. I make this attempt in order to help shift discussion of tropical land use toward a focus on what I see as the crux of the human-nature relationship, that is, the manner in which human understandings of natural environments end up affecting those environments in concrete, historically-constrained ways. As such, my method is historical, context-driven, and ethnographic, but also cognitive. I seek to understand the ways in which historical contingency

is brought to bear on natural spaces through the lens of their effects on local understandings. The project is thus about trees and forests in the sense that trees and forests are freighted with the baggage of evolving patterns of human reasoning within a particular historical context.

The project seeks to feed into an emerging discussion at the borderland between ecology and the social sciences that views the human-forest relationship as complexly-causal, situated, and contextual. While “culture” has long been invoked at the nexus of the human-environment relationship, especially for small-scale groups in the Amazon Basin (Hames and Vickers 1983; Posey and Balée 1989), my belief is that understanding the intersection of local “cultural” formations with “global” ideals for environmental use sets very real stakes for the future of natural spaces as sites of ongoing negotiation and engagement (Tsing 2005). There is an emerging literature into which I might inject my methodological sensibilities, one that sees the global scaling of the human-nature relationship as decidedly *not* fated uni-directionally toward inevitable tropical forest destruction at the hands of road-builders and colonists. The scholar spearheading this push is Susanna Hecht, who has defined what she calls the “new rurality” (2010) for inhabited tropical landscapes like the Amazon Basin. The concept of the “new rurality” is meant to distinguish the complexity of the globally-scaled human-nature relationship from one which sees human beings as deployed *onto* nature to one which appreciates human integration *into* the rural landscape as multifaceted, as a function of globalized economic demand and State-level political exigencies. Denizens of the “new rurality,” rather than conceived as exploiting rural landscapes in an inexorably degradational manner, organize their territories in order to “capture environmental services in complex portfolios” (Hecht 2010:165).

Such a conceptualization is meant as a corrective for earlier models of forest regeneration through a “forest transition” model, which is based on extrapolations of historical evolutions in

land use patterns undergone in places like the United States and Europe (Mather 1992; Mather and Needle 1998; Walker 1993). This “forest transition” hypothesis states that early, rapid, pioneer deforestation gives way to forest regrowth in marginal and de-populated areas under conditions of industrializing economic development, growth of the service sector, technological innovation for increasing agricultural mechanization and intensification, and a consequent trend toward population urbanization. The teleological effects of this hypothesis, however, seem not to be inevitable in all places. Many of these studies show that under the conditions deemed to be optimal for the “forest transition” model to play out, the rate of environmental degradation does not in fact decline (García-Barrios, et al. 2009; Izquierdo, et al. 2008; Schelhas and Sánchez-Azofeifa 2006), or is not correlated directly with population density (Hecht and Saatchi 2007; Sloan 2007).

Further, the “forest transition” model does not seem to characterize ongoing processes of forest management and resurgence in the tropical global south, including Latin America (Hecht 2014). This is because the recent pattern of modernization in Latin America differs markedly from the Euro-American model of development since the 19th century, in that such modernization has occurred extremely rapidly and has responded to exogenous rather than endogenous dynamics (Hecht 2014:102). In addition, rural areas of Latin America continue to have high population densities, and are already extensively “globalized” in terms of commodity/finance flows and labor (Hecht 2014:102). Thus, Hecht argues, we should begin to think about such areas not as sites where increasing human population density leads inevitably to the loss of both forest and biodiversity, but rather sites that can be appreciated for their existence as “hybrid” human-nature landscapes, or, more broadly, as “socio-natures.” Such places may even support forest regrowth and increased biodiversity (Perfecto and Vandermeer 2010). Put in

this light, there is a strong theoretical utility for understanding the preservation of tropical places such as the Amazon not in terms of a “land sparing” model focused on “fortress conservation,” but rather promoting a living, productive “agroecological matrix” (Perfecto and Vandermeer 2010).

Rudel and colleagues (Rudel, et al. 2002) have provided evidence for the southern Ecuadorian Amazon showing that factors related to ethnicity and regional history are importantly related to the process of forest transition. This group studied a region considered to be an “old colonization zone,” which had been heavily populated with colonist smallholders beginning in the 1960s. Both these smallholders as well as existing populations of indigenous Shuar rapidly deforested large tracts of primary forest during this period. However, using satellite-derived land cover data and household-level surveys, they found a divergent pattern of land use change in the region from the period of 1987 to 1997 for the colonist versus the Shuar communities. Where the colonist community conformed, in broad strokes, to a “hollow frontier” model in which cash-cropping gave way to clearance for increased pastureland, the Shuar community showed a net increase in secondary forest as pastureland was converted to shifting agriculture. Further, while the colonist community cohered to a model of forest “transition” in which the likelihood of forest regrowth increased with increasing distance from a road and on marginal lands, the opposite pattern was shown for the Shuar community: forest regrowth was even more likely near a road than farther away. Rudel and colleagues conclude that this model of indigenous forest regrowth challenges notions of forest transition that see land abandonment and urbanization as its prerequisites. Instead, cultural preferences for shifting agriculture over cattle ranching drove the unexpected patterns of forest regrowth.

Rudel and colleagues' paper gestures at the conclusion that for the Ecuadorian Amazon, a common political-ecological context is not sufficient to account for changes in land use patterns. Rather, ethnicity and attendant understandings of the forest may be another crucial factor in such evolutions. In this project I attempt to take direct account of changes in such understanding in relation to the local forest for a small community of indigenous smallholders. In terms of its political-ecological history, the field site chosen for this study reflects the complex contingencies gestured at above in the notion of Latin America's "new rurality" in many broad-stroke ways: material modernization such as land privatization, roads, and ecotourism have arrived at lightning speed in the past two generations, it currently has globally-scaled pretensions to the market for both cash-cropped agricultural commodities and tourist dollars, and it has experienced a rapid uptick since the 1960s in terms of population density, both through endogenous growth and external waves of colonization. In response, land use has also evolved drastically since the site's founding in the 1960s. As I will show over the course of the project, land use patterns in the community have followed along closely with intergenerational evolutions in local aspirations for particular kinds of market integration. A central paradox here is that the manner in which such aspirations toward increasing market integration have evolved since the community's founding in the 1960s is roughly in line with Hecht's (2014) notion of complexly-situated forest *resurgence*. This resurgence is not in concert with the "forest transition model," but rather due directly to ongoing changes in both local practice vis-à-vis the forest and at the human-forest-perception interface: to put it bluntly, as people aspire to the market they evolve away from their forest, first in terms of practice and then in terms of their knowledge base, inferential reasoning, and, ultimately, their valuations of the forest. This has nothing to do with population density, urbanization, or agricultural intensification; it has to do rather with local people making

individual decisions based on how they think about their own place in the local environment and their family's future there.

In this sense, then, I also mean to take the study of such understandings beyond the level of homogenous, ethnicity-based “understandings” of the local environment. I do not have a notion that indigenous communities have intrinsic recourse to “sustainable” ecological practices, and neither do I have a notion that local people are blindly reacting whole-heartedly and without question to the vicissitudes of the shifting state-level economy. Rather, looked at from the ground level, the story in the community at issue in this project is much more complex than that. Residents have surely responded, over the four generations of landholders in the community since its founding, to the structural and political-economic realities that have presented themselves to each generation. However, I contend that these political-ecological responses have precipitated much more basic, patterned shifts in *understanding* the local forest that have fed recursively back into these responses as the next generation came of age. I track one such shift currently ongoing in the community: a decreasing knowledge base regarding the local forest on the part of young people, coupled with the rise in particular forms of “environmentalist” thinking. These shifts in understanding, however, function alongside the more thoroughly exploitative cash-cropping imperatives with which their forbears arrived. Both of these frames for understanding appropriate forest use interact in subtle and complex ways with indigenous and explicitly “traditional” modes of knowing and being. Further, I assume that the evolutions in knowing, understanding, and behaving in relation to the forest are only the most recent in an endless, historically-constrained game of local sense-making and aspiration. My claim here is that understanding the dynamics of this iterative, intergenerational “game,” that of the ground-level consequences of globally-scaled discourses onto places like the Amazon Basin, will allow

researchers to resist attempts to fit them into neat models of forest “transition” based on teleological assumptions of a global social evolution toward urbanization and agricultural intensification.

Structure/Knowledge/Practice/Inference/Valuation: Cultural Change through the Lens of “Epistemological Practice”

In order to get to forests and their fates, I have contended that we must begin with people and their thoughts. So, just how is it that people come to think in similar ways about aspects of their lived worlds? In some ways framing the basic anthropological question this way inverts the classical assumptions about the nature of “culture,” which has focused historically on sharedness and coherence across individuals as its hallmarks. In a recent review of various theoretical and methodological approaches to the study of culture, Atran and colleagues define an “intuitive” definition of “culture” as: “the shared knowledge, values, beliefs, and practices among a group of people living in geographical proximity who share a history, a language, and cultural identification” (2005:745). The emphasis on homogeneity within the culture concept has led to a lengthy debate over the usefulness of the term (Brumann 1999, for example, notes the tendency of the term “culture” to morph from its nominal form to its adjectival form “cultural” as a reflection of this unease across the discipline). However, while this unease reflects an appreciation that internal *variability* is also an important aspect of any group we might want to constitute as a “culture,” Atran and colleagues make the claim that the way out of this conundrum is not to do away with the culture concept altogether, but rather to embrace variability as the very object of study. Here they make a case for what they call a “cultural epidemiological” approach to culture. This approach treats culture as “mental representations (and attendant behaviors) that are reliably but diversely distributed across individuals in a

population (the population itself being circumscribed by the intersection of these various distributions)” (750). In this way, the approach attempts to treat whatever one might call “cultural” as *emergent patterns* within a given population (see Chapter 8 for more of a discussion of “emergence” in social settings and its usefulness to an epidemiological approach to culture).

This project makes a case study of a small, almost entirely indigenous Kichwa community located on the Napo River in the Ecuadorian Amazon, which I will call Sacha Loma, and attempts to apply to the data with the same “cultural epidemiological” sensibility outlined above. A focus on emergent patterns of understandings and behavior opens up the study of culture to empirical possibility, in that it makes the relative degree of agreement and disagreement related to various domains of knowledge, distributed across the individuals in a population, its object of study. As such, the cultural epidemiological approach is ideal for the study of cultural change (Ross, et al. 2012; see Chapters 2 and 3 for more of a discussion). Ethnographically, however, the cultural epidemiological shifts that I seek to measure in this project are intimately related to structural changes to Sacha Loma since its founding in the 1960s (see Chapter 4). Because these structural shifts are recent and have affected most significantly the local learning environment for young people, I am interested in elucidating changing modes of habitual thought and action on an intergenerational scale. The goal of the project is therefore to pinpoint key aspects of how changes within the community have affected the manner in which young people become expert about their local biotic environment, in order to gain insight into the mechanics of cultural change. Learning, however, should be thought of here in the largest, most contextual sense possible. While the introduction of formal schooling plays a central role in ongoing change in the community, the structural fact of schooling plays a secondary role to the fact that participation in the school routine has produced a revolution in the way young people

are “apprenticed” into a local “community of practice” (e.g., Lave and Wenger 1991; reviewed in Chapter 3). Fundamental to the changing community of practice is a shift in young people’s aspirations for success within the cash economy; these aspirational shifts imply knowledge of, and behavior in, the local forest in fundamentally new kinds of ways (see Chapters 4 and 6).

The study attempts to answer one particular question in relation to the much larger project of accounting for cultural change, namely: Do knowledge of, and motivated reasoning about the local forest show systematically different intergenerational patterns that are reflected in, and structured by, new learning environments? The cultural epidemiological sensibility on which it is based implores us to conceive culture as not an all-or-nothing proposition, as if there were a “correct” cultural response to every query, or that knowledge and behavior should be largely homogenous. Rather, in this conception that which is “cultural” is inherently always under constructive negotiation, is chronically unstable, and evolving. Disagreement, therefore, and the systematicity of disagreement with prevailing understanding, is also key to the construction of culture, and to cultural change. Methodologically, both participant-observation and formal distributional methods should be thought of as equally informative delineating constellations of local understandings and practice and their ongoing change.

This approach has a theoretical foundation in the work of Sperber (1996), who posits a relationship between individual cognition and social forms that is mediated by what he calls “representations.” Such “representations” include what we might consider to be canonically “cultural” tokens (rituals, texts, pictures, discourse, etc.), as well as what we might consider to be canonically “psychological” things (thoughts and ideas). Such representations are either “public” (out in the world) or “internal” (in the social actor’s head), but are deeply interwoven and mutually constraining. These representations propagate among networks of social actors

through the various media available to them. There are two implications stemming from this scheme. First, certain “representations” should be more “catching” than others, and therefore propagate and become internalized more easily. While this should account for commonalities in cultural beliefs and attitudes between members of a community of practice, the maintenance or change of cultural ideas, and their propagation, should be a critical empirical endeavor for anthropology as a discipline. Second, an anthropology that cannot adequately evaluate internal “representations” (that is, culturally-informed constellations of psychological tokens) is incomplete (for a similar take on the relationship of knowledge to culture, see Boster 1991). However, what Sperber does not do is to integrate his vision into a holistic notion of cultural change (that is, how representations come to be shared, or not), or to specify methodologically how one might accomplish the empirical measurement of a distribution of such representations. This dissertation represents an attempt to integrate the holistic bent of anthropology through participant observation with the distributional psychological techniques employed in the cognitive sciences (as reviewed in Chapter 3). In this work methods like cultural consensus modeling have been used productively to assess patterns of agreement and disagreement in domains such as folk biology. I see both ethnographic and formal distributional methods as equally critical to research questions of processural cultural change.

There have been calls from those propounding the “cultural epidemiological” approach to culture that more traditionally “anthropological” features which constrain and enable particular cultural forms are also important, above-and-beyond its squarely cognitive bent. For example, Atran and colleagues (2005) make the observation that “the various distributions of ideas across populations may also be determined to a significant extent by the history of economic, political, and military relations between and within groups” (751). Ross (2004), coming from a similar

point of view, claims that the “mental processes that are (or can be) subject to social transmission” which constitute “culture,” are also “in constant relation with the (social, historical, and natural) environment” (61). For all of these calls, however, research in the “cultural epidemiological” mode has sometimes fallen short of this methodological ideal (see Chapter 2 for more of a critique here). I attempt to take these shortcomings seriously in the current project, which is why I attempt to put ethnographic methods on equal footing in my analyses. I also attempt to use formal methods normally used to look at empirical distributions of knowledge in a more fluid manner, using patterns of knowledge, inference, and causal reasoning to gesture at distributions of value and motivation within the population.

From a holistic standpoint, perhaps my sensibility in this project is closest to Ortner’s (2006) conceptualization of the balance between structure and agency outlined in her notion of “serious games.” Players of such “games” are simply agents within any historically-contingent context; they are striving members of their context, neither fully beholden to contingent, cultural strictures nor fully free of them. Such a view takes important account of both the importance of “social facts,” and the nature of individual motivations and goals. Such motivations, in Ortner’s parlance, might be called “projects.” In this study, I refer to these as “aspirations,” in order to highlight the nascent quality of the striving within the State-level economy for Sacha Loma residents. Though residents have been mediating their relationship to the State and global economy for generations, it is the quality and scale of their striving which is nascent, in terms of entrepreneurialism and mobility (see Chapter 4).

Methodologically, however, I break what might be called the “projects” of “serious games” down into five components to which I have methodological access. I do this specifically because I am interested in these “projects” from an empirical and especially *distributional*

standpoint, and so need to delineate the methodological grounds on which they might be elicited. These components of within-group distributions should not be thought of as discreet, however, but rather seamlessly intertwined and mutually constitutive. The first of these aspects is structural context. I want to be very clear that while much of the project focuses on cognitive distributions of knowledge and understanding, all thinking and doing takes place within a context that both constrains and enables local social actors in specific ways. The study of these sorts of factors is foundational to anthropology in a Marxian frame. These are physical and social structural realities that people live habitually: the constraints of the physical environment, the strictures of local transportation, how space and time are measured, the ideological and physical sway of local governmental and non-governmental institutions, the market conditions for cash crops, and the like. These sorts of factors have direct impact on how the world is thought about and acted upon in patterned ways. Though they may be “structuring” in the Bourdieuan sense, however, these factors should be thought of as related only complexly to behavior. The relative degree of agreement or disagreement with the prevailing cultural strictures should still be thought of as an empirical question.

While these factors are commonly thought of as the prime movers of cultural structuration in a power-centered approach to anthropology, I take such top-down structural formations as simply one of several factors in the holistic study of culture change, that is, necessary but not sufficient to explain such change. Rather, the study of culture change is best effected a local level, with the understanding that hegemonic factors help to build local patterns of knowledge, practice, and frameworks of valuation. In this way the dissertation is meant to complement the very real insights gained in the last few decades in power-centric approaches to the environment in anthropology (e.g., Dove and Carpenter 2008) and political ecology

(Greenberg and Park 1994; Paulson and Gezon 2005), which tend to focus causal explanation of cultural and environmental change in Marxian materialist terms. This dissertation takes structural change and its effects on community practice as its starting point, and then asks whether there are patterned changes in reasoning about the forest as well, which might in turn be linked to the construction and maintenance of new forms of practice, knowledge, and valuation.

However, practice theorists long ago made the point that there is a recursive structuring relationship between factors related to hegemony and their formation and maintenance through practice (Bourdieu 1977; Giddens 1984; Ortner 1984). My goal in this project is to show that while examining habitual “practice” as a structuring element in the maintenance of cultural form is productive, this approach also neglects the possibility that knowledge, and reasoning about knowledge, plays a role in the construction and maintenance of cultural forms. Vike (2011) has made a similar assertion regarding the study of power through a cognitive lens, focusing on the link between knowledge and action. Building on Strauss and Quinn’s seminal (1997) book, which asserted that conscious knowledge plays a much bigger role in the construction of culture than is allowed for in the dominant hegemony-or-practice focused paradigms de rigueur in the social sciences, Vike asserts that the study of patterned forms of knowledge may in fact be the very best way to study power. To do so he claims that hegemony is not efficacious by the route most often assumed by social theorists, that is, that hegemonic ideas are “internalized” in a way to which local actors have very little conscious access (see Bourdieu’s (1977) notion of “*habitus*”). Instead, Vike asserts that the real force of hegemony is rooted in the structural effects it has in “defining the limits of what is pragmatically possible” (2011:377). This conceptualization is concrete and visible: I take Vike to mean that hegemony is in the open, in the things that literally constrain the universe of thought and practice. We thus have no need for

recourse to a shadowy notion of false-consciousness, because hegemony is literally instantiated on the landscape (in buildings, roads, measured plots of farmland, etc.), and in loci of discourse (state agencies, advertisements, schools, and the like). This therefore highlights the role of people's conscious knowledge, and its underlying structural supports, in the construction and evolution of particular cultural forms. These, in turn, are seated in the minds of local actors. Rather than ignoring the effects of power, cognitive anthropology has the specific capacity to elucidate just how power works on behavior, through the mediating interface of knowledge and reasoning about knowledge. Hegemony, then, rather than being appealed to as an "explanatory default" (376), should be treated as "a purely descriptive device, simply a way of labeling a certain pattern" (390). In its place, Vike agrees with Kronenfeld (2009) that the real locus of interest is in the content, and flexibility, of knowledge-based cultural models for action. This conception provides for a much more robust and fruitful examination of the effects and effectiveness of power formations.

The given constraints of a structural context are the physical and ideational basis on which local social actors learn, act, and reason: within this context a group of people hash out their understandings of the world. This act of "hashing out" through individual practice and social interaction, which results in a more or less patterned set of understandings about the world, I take to be the essence of the construction of culture. The four remaining aspects I mean to examine, then, imply a constant tacking back and forth between both the individual and the group, and also between the internal and the external, that is, between the individual mind and that which is publicly enacted through behavior and discourse (c.f. Sperber 1985). These are: 1. individually-held knowledge, 2. habitual practice, 3. inference, and 4. valuation. While structural context is best approached from a historical and ethnographic perspective, these factors

can be approached from the perspective of both ethnographic participant observation and from the standpoint of formal distributional techniques. However, as will be clear in the analyses, I do not take these as *a priori* constructs but rather make inferences to patterned thought from their empirical distribution in the community. Thus when I talk about “inference” or “valuation” I am not referring to necessarily conscious discursive constructs (like the *se’pi’cho* system of “prohibitions” practiced by the Cofán, as outlined in Cepek (2011), and reviewed in Chapter 3). Rather they are systematic manners of understanding that are distributionally emergent in the community.

Individually-held knowledge and habitual practice I hold to be intimately and foundationally related: what do people know, and what do they do based on that knowledge? How do knowledge and practice structure the nature of what is think-able and do-able? In this dissertation knowledge is treated at times as “propositional” in nature, that is, as “facts” about stuff in the world known by individuals. However, treating knowledge as “disembodied” for methodological purposes (to examine knowledge distributionally across individuals) is fundamentally different than treating the formation of knowledge as purely “mental” in the context of its production. On the contrary, practice itself has been shown to be foundationally related to knowing, and “knowing” should be treated as a relational process rather than as the teleological acquisition of disembodied facts. This has been conclusively established in anthropology. Ingold (2000c), for example, has pointed out repeatedly that the form an object takes in the hands of a practitioner is related as much to the physical process of making as it is to a priori knowledge of how one makes something. Ingold refers to this process as the acquisition of “skill.” Other scholars, for example Keller and Keller (1993; 1996), make a similar point but leave more of a causal space for goal-oriented mental models in the planning and making of

objects. Scholars like these have recognized that both the creation of what is commonly termed “knowledge,” and the deployment of such knowledge, involves concrete, relational interface with the world. In short, knowledge is embodied processually.

However, I should also explain, given the methodological predispositions of researchers interested with environmental questions, what I do and do not mean by “practice.” What I have in mind is *not* the sort of quantifiable land use proxies that have been favored by geographers in Eastern Ecuador (Barbieri, et al. 2005; Bilsborrow, et al. 2004; Gray and Richard E. Bilsborrow 2008; Lu 2007; Lu, et al. 2010; Marquette 1998; Murphy 2001; Pichon 1996; Pichon 1997). In these studies quantifiable variables like land clearance rates have been related to catch-all demographic variables like “ethnicity.” A similar method has been used in some of the formal studies of cross cultural folk biology that served as the impetus for this project (Atran, et al. 2002; Atran, et al. 1999). While I do not discount this sort of data as powerful in terms of understanding large-scale trends in land use patterns, in this project I am more interested in ethnographically-derived intergenerational differences in habitual practice, and the valuations of habitual practice that individuals hold, as they are currently evolving in the community. I call some of these patterns “formal” in the sense that I have survey data that speak to individual knowledge of forest plants and plant-based skills, from which I derive patterns of common practice across community members. I see “practice” as richly related to valuations of and knowledge about the forest, rather than as an independent variable to be correlated with environmental “use.” What people do, have done, are used to doing, and think they *should* be doing in relation to the forest is implicated in a processual account of change as much as any quantified metric of soil fertility or tree cover on individuals’ farms. “Practice,” therefore, is one

of the main points of confluence with the formal survey data, and is conceived as both cause and outcome of knowledge.

That knowledge and practice are reciprocally and constructively related implies that their relationship is also generative. For my purposes, I will refer to the generative aspects of knowledge and practice as “inference.” In defining the relationship thusly it implies that individual formations of knowledge-practice serve as premises, and that these premises serve as a base on which people reason about the world. Thus knowledge and practice should be conceived here as constraining, in the sense that they set the boundaries for what is thinkable and doable: based on these constraints people make generalizations about how things work in the world. An instance of this in the literature is Kempton’s (1987) study of behavior patterns in home thermostat use based on the mental model of central home heater function held by residents of American households. Kempton found that thermostat use was related to a folk model of how a central heater system works, which included hybridized elements of both a technical “engineering” model and a comfort-based “physiological” one. While Kempton did not examine distributions of propositional knowledge *per se*, the study makes the point that what a person knows about intricate, internally interrelated systems is intimately related to how one reasons about it, and what one does in relation to it.

Finally, I would distinguish a notion of “inference” from a related, higher order construct – “valuation” – that I also see as operational in the genesis of cultural change. The reciprocal connection between knowledge and practice might be considered the “what” of culture, that is, the basis on which people reason and act. In turn, inference might be considered the “how” of culture, or the generalized technical “way” in which a domain is thought about, or conceived as operating. Finally, valuation might be considered the “should” of culture, that is, it is motivated

or goal-oriented reasoning about the cultural domain. Broadly conceived as large-scale motivations for personal achievement, valuation might be called “aspiration.” Patterns of motivation are key to processes of cultural change, I contend, because without it differences in knowledge, practice, or inference might result in distinction without difference: if people do not wish for different sorts of outcomes in their lives or the lives of others in their community of practice there is little point in observing the distinction in the first place. That differences in reasoning and motivation are key to intercultural distinctions have been hinted at in recent studies that have explored the notion of “epistemological frameworks” (Medin, et al. 2007; Medin, et al. 2006a; Medin, et al. 2006b; Ross, et al. 2007), which are reviewed in Chapter 3. The basic finding is that differences in motivated reasoning in domains such as folk biology lead to intercultural stereotyping, even by social actors with similar knowledge bases and habits of practice.

In using terms such as “valuation,” “motivation,” and “aspiration” I am aware of the criticism that such terms might be construed as pre-loaded with associations of personal achievement usually linked to Western, capitalist understandings of economic gain. However, I intend these terms to be understood here in the broadest possible manner, that is, not solely in terms of “gain” but rather in terms of generalized desire for future outcome. Whether community members are appropriating notions, and acting in accordance with notions of capitalistic gain is a tangential empirical question which will be taken up in Chapter 4 of the dissertation. Kichwa people in the Napo region certainly understand and actively deploy notions of individual ownership and personal achievement in their daily lives. The degree to which these understandings influence the local relationship to the forest is a critical question to the dissertation.

As I claimed above, I see the five components in the formation and maintenance of culture – structural context, knowledge, practice, inference, and valuation – as reciprocally implied and mutually-constitutive. The term I use for the mutually-constitutive tensions between these components in the formation and change of local culture is “epistemological practice,” that is, the structuring give-and-take between knowing, thinking, and doing in the face of structural constraint. Further, this implies that culture change should be studied from the theoretical standpoint of distributed understandings, and methodologically from a combined ethnographic and cognitive psychological point of view. I see the study of epistemological practice as an inherently interdisciplinary endeavor, for which neither participant observation nor formal cognitive elicitation is sufficient. Rather, they must be brought into productive conversation, with the goal of elucidating processes related to cultural change.

I realize that by delineating “components” in the construction of culture that I am open to the charge of reductivism, in that it may be construed that I am saying that the interaction of these parts is the “way” in which culture comes to be. I am not making this claim. Rather what I claim is that using methods that speak to distributions of cultural ideas gives the researcher insight into making etic reconstructions that speak particularly to knowledge, practice, inference, and valuation. “Reconstructing” aspects of culture from the ground up in this manner in turn gives insight into processes that reflect change. Further, what is known about the local forest and how these coalesce into ideas about “how” the forest works and what “should” be done with it are not necessarily conscious constructs. Rather than simply asking local people for conscious, ideological opinions on these subjects, I use a method that infers these empirically from distributional patterns of responses, and then places these patterns into conversation with ethnographic observation, which includes both conscious responses to ideological questions and

everyday “sense making” discourse by local people. This method is meant to function synergistically in order to arrive at holistic account of local change at multiple conceptual levels.

The contention that the components outlined above might productively be approached from the standpoint of their mutual constitution also stems from my resistance to arguments that attempt to position one of these (structural context, practice, or mental models, for example) as the prime mover and shaper of cultural forms. In the rest of the dissertation I take an approach that gradually builds toward what I hope to be a holistic portrait of intergenerational change in forest-related reasoning for Sacha Loma residents. In the rest of this chapter I present a contextualizing view of Sacha Loma that paints a portrait of daily life and habitual practice in the community vis-à-vis the forest. In Chapter 2, I focus that portrait on a series of individual Sacha Lomans in order to gesture at the complex mediation of modernity, tradition, and aspiration ongoing for residents there. In Chapter 3, I provide a more lengthy review of the relevant literature from the “cultural epidemiology” school, as well as the role of formal schooling in the formation of an indigenous citizenry and research on nature knowledge in relationship to such schooling. Chapter 4 takes a historical and ethnographic look at the Upper Napo River region and at Sacha Loma in particular, and makes the case that the recent history of Sacha Loma has reoriented habitual forest-related practice, and understandings of the local forest, profoundly. Chapter 5 examines changes to knowledge and practice in the community from a formal and distributional point of view. Chapter 6 picks up where Chapter 4 leaves off, and examines the discursive correlates of changes to forest-related knowledge and practice. Finally, Chapter 7 formally and distributionally analyzes intergenerational changes to forest-related inference and valuation.

Sacha Loma and its Region

As with much ethnography, the study you are to read was born out of what seemed, at first blush, to be paradox. The process of doing field work and of writing this dissertation, moreover, became less a task of resolving that paradox for myself by finding a neat solution than it was a process of coming to grips with its basic veracity. When I first traveled to the community of Sacha Loma in 2008, it was in the context of tourism: my now-wife had spent a year in the community before we had even met, teaching English to students in a boarding school just downriver. This school was run by an American-founded non-governmental organization (NGO) that had established itself in the community over a decade earlier and had spent that time building up infrastructure in basic education, medicine, and ecotourism. We stayed in the eco-lodge for a few weeks that first summer, venturing into the community but mostly trying to convince the lodge guides to take us on hikes.

This was also my first time in the Amazon rain forest, and though I had done ethnographic and cognitive field work as a graduate student in Mexico, growing up as I had in the US in the 1980s and 1990s I was mired in romantic notions of the Amazon as a vast, untouched forest, populated with scattered groups of indigenous people living more or less symbiotically with their land. The Amazon forest was supposed to be supremely fragile but impossibly diverse. It was supposed to be balanced on a knife's edge in terms of how it would respond to "encroachment" from people and their cattle, houses, roads, and machines (cf. Slater 2002 for a critique of master narratives related to "The Amazon"). The reading I had done on the region's cultures, moreover, seemed to treat the people I would encounter there as swidden cultivators of manioc and plantain, as followers of powerful *ayawaska*-ingesting shamans who could call their protector spirit *supai* and sometimes send sickness to rival families. They were

forest experts who would know the plants to use to heal and soothe and purge themselves of sickness. The story of the Amazon, in all, was supposed to be simple: it was a case in which the maw of global capitalism was systematically grinding up and razing untouched biotic and cultural capital, eating it from the inside out, cynically reducing the “whole” to its constituent parts so it could justify commodifying and then selling a priceless, fragile system for pennies on the dollar. It was a story of reducing the highest density of species-per-hectare on the planet to rows of oil palm and pastureland for cattle.

When I first encountered Sacha Loma, it seemed I had found an instantiation of exactly the image I had in my head, an island of indigenous communalism resistant to surging outside encroachment. To get to the community required the sort of machinations and lack of surety Americans tend only to read about in books. It felt as if I were going as far as I could in the region away from its creeping urbanization. Sacha Loma is located on the banks of the Napo River, almost exactly halfway between the two regional urban centers of Tena, upriver, and Coca, downriver. Having flown into Quito, we reached Sacha Loma by taking a bus out of the mountains heading east, winding six hours downward to Tena, which is located in the last of the Andean foothills where tropical cultigens can begin to be seen peeking out from people’s back yards and fields (see Figures 1 & 2). This road from Quito to Tena had only been fully paved since 2006. From Tena it was another bus, crossing the beginnings of the Napo River at the town of Puerto Napo, and then running along its south bank for another hour until the pavement ran out, through indigenous communities flanked by dense rain forest behind the fields and periodic clusters of clapboard houses carved out beside the road. At a fork an hour from Puerto Napo was the last paved turnoff, meandering off to the left, back across the Napo and toward the town of Misahuallí, a place known for its pack of feral monkeys and its large annual *carnaval*

celebration each February, the last town on this part of the river with any claim to being a tourist attraction. We, however, continued straight ahead, another two hours on an unpaved, barely two lane dirt track lined with thick, overhanging forest, kicking up clouds of dust, getting hotter all the way along. This road ended in a dead end at the colonist outpost of Colonia Los Rios, known to everyone in the region as “La Comuna.” This was the end of the road. To get to Sacha Loma from here, I quickly learned, one has to beg, cajole, or contract a passing canoe for another thirty minute motor trip downstream. Depending on the time of year, the height of the river, and the weather this can be a quick sunny jaunt, an arduous process of avoiding sandy shoals and poling oneself along with long, hard stalks of bamboo-like *pindo*, or a soaking-wet huddle together through torrential storms, watching cloud-to-cloud lightning illuminate the milky river and the crowns of huge *ceibo* trees on each bank. The terrain is still hilly here, making this the swiftest part of the eastbound journey of the Amazon tributaries; certainly different from the image one has downriver of the huge, laconic wall of water moving slowly toward the Atlantic. Here there is a propulsiveness to the water. On a clear day the snow-capped peak of the volcano Sumaco can be seen to the northwest, standing out against the purple sunset.

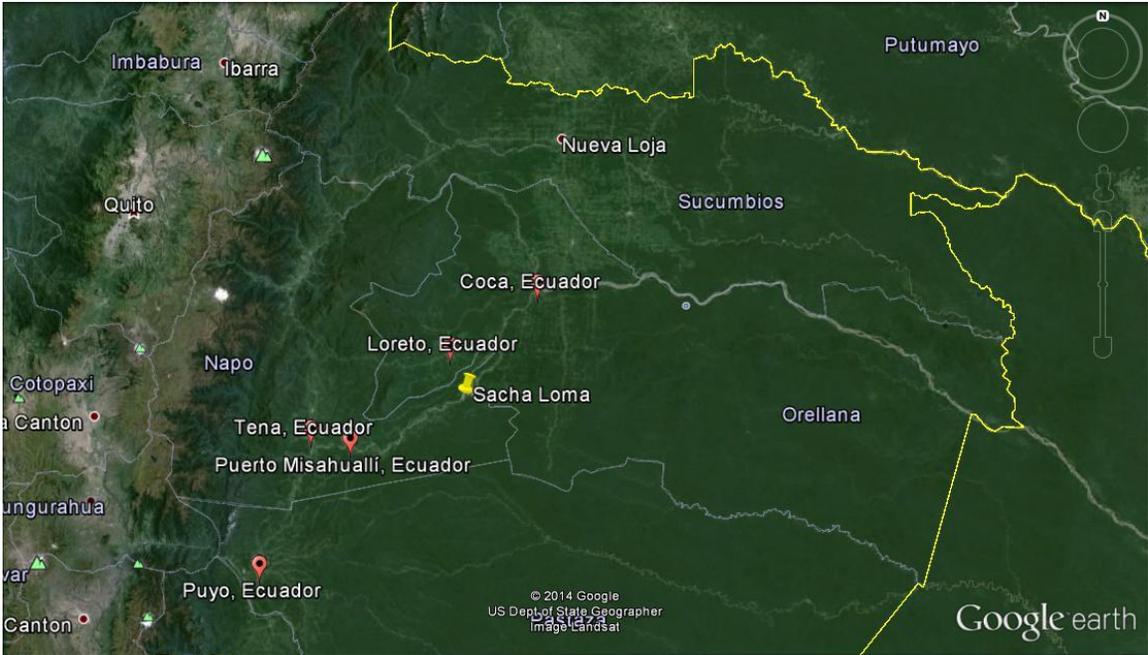


Figure 1: Eastern Ecuador Cities



Figure 2: Getting to Sacha Loma

Motoring downriver, the banks of the Napo are lined on both sides with a mixture of forest, swidden fields, farmhouses, and the occasional community cluster of homes. At the time, however, to my untrained eye all of this looked like forest. It was only over the course of months, and repeated visits, that I learned just how “managed” all of this forest by the riverbanks was. I learned to make out the slender shapes of banana and plantain palms, growing up either alone or in dense stands. Or the finger-like leaves of manioc plants, the sprawling stands of sugarcane, the lonely balsa wood trees left standing when the field was cleared so that they could later be cut and sold. There are dirt paths down to the river everywhere. The river is still a main regional highway here as it’s been for centuries, and though a road now runs along the north bank of the Napo a little further inland, everything on the south bank still happens with reference to the river. People casually refer to regional space in terms of it: one is either going away from the river, *adentro* (“inside”), or toward the river, *afuera* (“outside”); upriver, *por arriba* (“upward”), or downriver, *por abajo* (“downward”). As we will see later, I’ll argue that the “inside/outside” distinction has taken on quite important valences for people with reference to their identities and their aspirations. In this sense, living *afuera* is literally to live in a manner that is rendered visible to the world, where one has access to the river highway and, now, to roads, buses, cars, and thus national-scale mobility. It is to live as part of the global imaginary.

That is the part I didn’t yet know, however. Pulling up to the community port that first day, what I saw was a cluster of clapboard houses nestled into a bend on the south bank of the Upper Napo River, at the base of a steep hill rising up and away from the riverbank. The community seems perched there, clinging to a steep slope behind a shroud of trees. Behind the cluster of houses the community is literally overhung by a steep wall of dense forest rising up several hundred meters. To get anywhere one is constantly negotiating these hills. Thus the first

part of the paradox was just how “remote” this place seemed to be, almost *intentionally* remote, as if the people living here were seeking to escape something. As we’ll see, however, I think it was just the opposite: the Kichwa families that founded Sacha Loma were not really “escaping” anything at all, even if they were, in a literal sense, moving away from the places they were born, and away from colonists, urbanization, and mechanization. Rather, they were, and continue to be, self-consciously moving toward something: toward a constantly-evolving, messy notion of “betterment,” heard in one of the most oft-repeated refrains in the community, that one does whatever one does in order to *seguir adelante*, to “move forward” oneself and one’s family. This has always been, in the history of the community, a fundamentally capitalist notion, but one also linked to firmly-held ideas of cultural exceptionalism.

This seeming remoteness quickly broke down for me, though. The community, as currently construed, consists of a cluster of houses sandwiched between an extensive public school complex to the downriver side, and the land owned and maintained by the eco-lodge, to the upriver side. Further downriver, there is another small cluster of houses that considers itself to be simultaneously part of, and apart from, Sacha Loma. The leader of the family grouping that makes up the downriver portion of the community, a man in his mid-fifties named Medicio, calls this downriver “neighborhood” *Nuevo Renacer* (“new rebirth”), to distinguish it from the rest of Sacha Loma. The *Nuevo Renacer* portion of town pre-dates the coming of the public school and the NGO in terms of its physical placement; the land this extended family occupies was pioneered, and then given as an inheritance to Medicio by his father, Alanzo, who still lives on a small farm across the river on the north bank, in a place considered part of the community of Agua Santa, the next community downriver from Sacha Loma. This part of the community is not completely separate, however. Medicio and his older children are intimately involved in

community politics, and Medicio himself served as community president during the main portion of my field work, making him a central character in the study. Downriver from *Nuevo Renacer* live a few colonist families who consider themselves part of Sacha Loma but were rarely seen in town, except occasionally at the community clinic. Downriver from these families lies the border of Sacha Loma with the next community, Agua Santa. However, as should become clear later, the borders of both “community” and even “household” in the region are far from clear. For example, one of the families I will profile in Chapter 2, while technically living in Agua Santa, is intimately connected to Sacha Loma: both of the oldest sons in the family attended the boarding school started by the NGO, and both have worked in various capacities for the eco-lodge. The mother, Rosa Maria, works full time in the state run *fodi* (kindergarten) in Sacha Loma, and the youngest daughter in the family, Guliana, attends the public school there. The family is also related, by marriage, to the family living in the *Nuevo Renacer* section of town, as was made painfully clear when Rosa Maria’s brother, a man in his mid-30s who was also married to and had children with Medicio’s daughter, died of a mysterious, undiagnosed sickness, throwing both families into disarray (see Chapter 2).

The group of houses sandwiched between the eco lodge on one side and the public school on the other, however, came about *after* the establishment of the NGO. This was one of the big early revelations I had about the community, and was a structural evolution that played a fundamental role in reshaping how families relate to one-another, to the forest, and to their own futures, as will be explored in detail in the dissertation. For now, the important point I want to drive home is that what looked, at first, like a long-standing, stable, indigenous community on the banks of the Napo was in reality anything but, and fundamentally-reorienting decisions had been made for decades before I got there about where people should live and how that implied a

relationship both to the forest and the Ecuadorian state. Upriver from the eco-lodge is the border of Sacha Loma with the community of Guacamayos, which, similarly to Agua Santa, has marriage ties to Sacha Loma. For example, a middle brother of one of the founding families in Sacha Loma, a man named Bartolo who also was a founding employee at the eco lodge and works as a cook there, married a woman from Guacamayos named Piedra. Their three oldest boys, Jerardo, Hernan, and Javier, all spend significant time there with their grandparents. By the end of my field work Jerardo was engaged to, and about to have a baby with, a young woman from Guacamayos. Hernan had dropped out of the public school in Sacha Loma in a flap over bad grades and excessive drinking; his father sent him to work on his grandparents' farm, which included raising pineapples for commercial sale.

Sacha Loma also extends to the north side of the Napo, where a few families related to those on the south side have their farms. However, while there is road access to this portion of the community via a connector that runs into the Coca-Tena road, there is no town center there, so "Sacha Loma proper" is the cluster of families located on the south side. This one-lane dirt road connecting the north bank of the Napo in Sacha Loma to the Coca-Tena road was only punched through in 2011. Many communities in this part of the Napo region straddle both sides of the river; this is also true of Agua Santa, located just downriver about five minutes by canoe, though contrary to Sacha Loma the "town center" is located on the north bank, contiguous with the road. Agua Santa town center, which has bus access along the Tena-Coca road, is also the site of one of two nearby weekly markets. The town center there consists of several small cement buildings which, though closed six days a week, open early on Saturday morning to reveal a few stores where one can buy bulk dry goods, groceries like vegetables, fruit, and milk, hardware and cleaning items, refrigerated items like fresh beef, chicken, and yogurt, as well as

beer, liquor, and cigarettes. Several vendors also show up weekly to set up stalls and sell clothing, toiletries, ice cream, and fruit and vegetables imported from other parts of Ecuador and the rest of South America. Middlemen show up in trucks to buy farmers' produce, like grapefruit, pineapple, and plantain, the major cash crops coffee and cacao, and even the occasional cow or hardwood tree. Mothers line up at canoes that arrive each market day manned by government representatives of social benefit programs, who make direct deliveries of free food to poor families. A few of the other cement structures open as open-air restaurants, serving chicken soup and grilled chicken. Some of the others open as bars, where people, mostly men, play pool and drink the ubiquitous Ecuadorian lager beer, Pilsener.

Upriver, La Comuna similarly transforms itself into a market town on Thursday mornings. Though it is a significantly larger market than that in Agua Santa, it is also farther away and harder to reach by canoe, so while La Comuna is utilized as the main conduit for travel to the Sierra (because it has direct buses several times a day to Tena, and from there to Quito), Agua Santa is the main weekly meeting place for Sacha Loma and the surrounding communities. However, La Comuna is a destination for some residents on Thursdays. It is also the site for larger shipments of goods into the region; for example the food deliveries to the eco-lodge are contracted through La Comuna. Because there is a permanent store/bar with a restaurant across the street and regular bus service, it is also the site of larger regional meetings, such as those conducted by Petroamazonas, the subsidiary of the state-run oil company that was planning to conduct seismic oil exploration in Sacha Loma and surrounding communities during my field work. La Comuna, however, is a colonist outpost and does not have marriage ties to Sacha Loma as far as I know (though there are examples of Sacha Loma residents in marriages with colonists; see Chapter 4). Incidentally, this state of affairs with the markets has evolved along

with the changing structural realities in the region. Up until the mid-2000s the catchment area for the Agua Santa market was much larger than it is now; with travel still difficult and slow in the region, people aggregated to form one larger market there. However, with increased road construction and paving, the markets have become smaller and more diffuse. A third market, in the larger town of Cruzchikta, located about thirty minutes downriver from Sacha Loma by canoe, has become the center of gravity for the communities downriver from Sacha Loma. Though people do travel to Cruzchikta sometimes, either for the market or to visit family (at least two families in Sacha Loma have marriage ties to Cruzchikta), this evolution in mobility has effectively split the region up into smaller aggregating parts.

Tena, to the west and upriver in Napo Province, and Coca, to the East and downriver in Orellana Province are by far the largest cities in the region, as well as those most frequented by residents of Sacha Loma. Tena, along with its companion town just to the north, Archidona, is an old city whose colonial and indigenous past reach back to the 16th century (Muratorio 1991). Coca sprang up from a small jungle outpost only since the 1960s, in the wake of the region's first oil boom, and has expanded at a breakneck pace since then (Cabodevilla 2007[1996]). It now contains the largest airport in the region, with several domestic commercial flights each day. Tena also has a new airport, built in 2011, but has much less frequent flights. Normally, tourists to the region either fly to Coca and from there disperse to the many jungle lodges in the region, or downriver to Yasuní national park. Foreign visitors to Tena tend to be more young, backpacker types, and opt for the regular bus service from Quito, which is readily accessible.

The histories of the two major regional towns are reflected in the makeup of the communities. Sacha Loma was first founded in the 1960s (see Chapter 4), and two of the three founding families came from upriver in the Tena region. All of the people currently residing in

Sacha Loma from the Coca area, however, are students in the NGO-run boarding school, and are thus young and not originally from Sacha Loma. The rapid expansion of Coca in the wake of the mid-20th century oil boom has upended the older pattern of families expanding into the (largely uninhabited, at least by white landowners) forest from upriver. Today, however, both Tena and Coca are easily accessible by bus or motorized canoe from just about anywhere on the river.

Further to the south, in Pastaza Province, the urban center of Puyo is also important to the community. The third founding family in Sacha Loma comes from just over the border of Pastaza Province, a community called Arajuno (see Chapters 2 and 4). This family is thus still oriented towards the southwest as their “homeland.” For example, the oldest grandson, Edgardo, of this founder, Alanzo, married a woman from Pastaza Province, and dreams of someday living in or near Puyo. The closest town to Sacha Loma one might consider “urban” is Loreto, located on the north side of the Napo, to the northwest of Sacha Loma along the Coca-Tena road. This is a small town but does have permanent stores, paved roads, and a bus station. One young woman in town, Paloma, is from Loreto, and is married to Felipe, the oldest grandson of another of the founding families. Paloma is also related to the *Nuevo Renacer* group originally from Arajuno, headed by Medicio. Further upriver is the town of Misahuallí, which as mentioned above is a regional magnet for domestic tourism. It’s a small place, but has a beach and a pleasant port, along with several open-air cafes and restaurants that cater to non-locals. One young woman from Sacha Loma, Maria, is married to a man and lives with his family outside of Misahuallí. She came to visit her family only a few times during the main portion of my field work, once when she was ill and again after she gave birth. She is a granddaughter of the third founding family of Sacha Loma.

As is evident from the brief above discussion of regional geography and residence patterns, one might correctly say that talking about who is “from” Sacha Loma, and who “lives in” Sacha Loma is a bit of a slippery subject. Indeed, I could go systematically through each of the community residents and tell an equally complicated story about their provenance. I realized soon after beginning my field work that the “community” of Sacha Loma was anything but stable, to the point that Sacha Loma could be considered as much a “node” in a regional network of family and geographical interrelationships as it could be an autonomous “community,” as such (Reeve 2013). It is a place that is far from static, but rather ebbs and flows in terms of who is living there, who is physically there in any given moment, and who considers themselves to be “from” there. To use a nautical metaphor, the place is as much a waypoint as it is a destination. This reality is fundamental to the community makeup. Further, versions of this ebbing and flowing have always been the case, and Sacha Loma, while always considering itself to have an existence as a community, is also very much fluid in terms of this self-definition. Essentially, membership is a matter of intense and ongoing negotiation, and different people associate themselves with the community to different degrees, depending on the context. What I want to explore in this dissertation, then, is not the *fact* of this fluidity (because aspects of this fluidity are closely associated with historical modes of Kichwa being), but rather its *quality*: what “constitutes” Sacha Loma has been an ongoing negotiation with changing structural conditions. These evolving conditions have not so much *enabled* the fluidity in self-definition, which has long been central to Kichwa sociality and relationship to the forest, as well as to majority culture Ecuador. Instead, it has increased both its scale and its manifest destiny; it has changed the kinds of people young people strive to be, and the mobility they have to explore these new options.

Sacha Loma Itself: Place, Family, and Relationships

Just as Sacha Loma can simultaneously be construed as an autonomous community and also part of a massively overlapping regional network of places and relationships, internally the community is just as complex. There are three major family lines in Sacha Loma, corresponding to the three men who first claimed land there in the early 1960s, before the land reform laws really began to affect the region. One of these men, Alanzo, is still alive, and as mentioned above now lives on the north side of the Napo with his wife. He is also a *curandero* (plant healer); in the region this also includes performing non-plant-based “cleaning” sessions, during which songs are sung and sickness is drawn out of the body. As will be explored in Chapter 2, however, however, there is an important emic conceptual distinction in Sacha Loma between *curanderismo* and *shamanismo* (shamanism), which by definition requires the ingestion of the hallucinogen *ayawaska*. Alanzo is used often by the eco-lodge guides as part of their tours to perform examples of these ritual “cleanings” for tourist groups. Two of his sons have households in the community: one is the patriarch of the *Nuevo Renacer* barrio in the downriver section of the community, Medicio, which contains several households inhabited Medicio’s grown sons and daughters. The other son, Nemar, lives by the public school in the upriver section of the community.

The second family line traces its original founder through the maternal line: it was the father of the oldest current female resident, Valerie, who claimed the land by the river. In the early 1970s, Patricio, Valerie’s husband, came to join his father-in-law there. Patricio now spends the vast majority of his time on his farm *adentro*, though he is frail and almost completely deaf, and must be cared for by Valerie. This couple has five living sons; three of them have established households in the community, a fourth is in his early 20s and had gone to Manta, on

the pacific coast, to work in an eco-lodge there. He caused an uproar in the community late in my field work when he brought a non-indigenous girl from the coast back with him to meet his parents (see Chapter 4 for more on the fraught nature of ethnic mediation in Sacha Loma). A fifth son is just 18, has not graduated high school, and still lives with his parents. The couple also had several daughters who are now deceased; two young children by one of these recently deceased daughters spent significant time living in the community during my field work. This couple's oldest son, Anselmo, has one daughter, Nicola, old enough to have set up a household in the community. She is married to a mestizo man who is the eco lodge site manager, and they recently built a house next door to Nicola's parents' house.

The third community patriarch is deceased, but previously owned the land on the south bank of the Napo that was originally sold to the American-led NGO in 1992, and put in motion the chain of events that led to the creation of the current incarnation of Sacha Loma (see Chapter 4). This man's son, Pepe, is currently the oldest member of that family to have a household in the community; he and his wife Micaela have six children living in the community, ranging in age from their mid-30s to under 10 years old. Three of these children have set up households in the community. In all, there are, give or take, about 18 indigenous households in Sacha Loma which can reasonably be considered to be "from" the community. This includes three households that were built fairly recently, but against the wishes of some members of the founding families. All three of these households, however, are related by blood or marriage to Valerie's family. Two of these were built by Kichwa families where one member of the couple was an employee of the eco-lodge and previously lived on the north side of the river, but decided to build houses on the south side to have easy access to their work and to the public school for their children. One of these was a canoe driver for the eco lodge, named Ramon. The second was a woman,

Nomani, who worked as a gardener and hotel maid. A third was built for a widow who was also Ramon's mother. The reason for the contention over their building houses there was that they already had land on the north side of the river, so to ask permission to build on the south side was considered something of a "land grab."

However, this number does not include a few colonist families who also consider themselves part of Sacha Loma. As mentioned above, most of these families live downriver from *Nuevo Renacer* and have little to do with the community on a daily basis (though one woman living in this part of town had a chicken coop and sold chickens to the community which were much prized and commanded a high price. These were known as *pollo criollo* (local chicken, e.g., as opposed to imported, industrial chicken), and would fetch upwards of US\$10 for a single bird. People in Sacha Loma considered these healthful, and good to eat when sick. People sometimes sent younger children downriver to purchase them.). One mestizo colonist family, however, was intimately involved with the community. This was the household of Manny, who worked as the canoe driver for the public school, and Flor, who worked as a gardener and hotel maid for the eco lodge. The land they lived on had originally belonged to Flor's mother, but had been sold to the NGO in preparation for the construction of the eco lodge. Manny and Flor have five children, three of whom live in the community. Of the two who do not, one daughter, Yoana, who is about 20, has been in an out of school and retail work in the cities of Riobamba and Quito. The youngest son, Saloman, about 15, attends a soccer academy boarding school in Tena. Of the three who do live in the community, all currently live at home with their parents. The oldest daughter, Libertad, about 23, works as a secretary in the NGO boarding school. Her younger brother Raul is one of the three main eco lodge guides. Another son, Calvino, was finishing his last year of high school in the NGO-run boarding school. During

the year, both Raul and Calvino brought their pregnant partners to live in the community with their parents, and both babies were born within a month of each other.

As mentioned, the founding Kichwa families in Sacha Loma felt that the three additional houses had been built in violation of any “right” to the land, even though they were built by Kichwa families with strong family claim to the community. This resistance extended to Raul and his partner Feliz, who sought during my field work to build a house in the community after his daughter was born. As will be explained in Chapter 4, the NGO, after purchasing the original farms for the construction of the public school and then the eco lodge, later allotted small house plots adjacent to the school to members of the founding families. Several of these plots had yet to be built on, but still existed on paper. However, the community would not give clearance to Raul to build his house there, because even though he was born in the community, he was not ethnically Kichwa. On the other hand his young partner, while Kichwa, was not from the community. Thus, even though the NGO technically owned the land, both Raul and Mr. E, the NGO founder, decided not to push the issue. Raul and Feliz later decided to build their house further into the forest and further away from the community proper, on NGO-owned land that had not been allotted previously for housing as per the community-NGO agreement.

The School, the Clinic, and the Lodge: Mediating Space, Place, and Time

The main center of gravity in the community, however, was not the two clusters of households, but rather the public school complex, which dominated the community geography. The school infrastructure was located adjacent to the upriver cluster of community families on its downriver side. Two long, one-story concrete buildings up on top of the hill, split up sequentially into individual rooms, constituted the main block of school classrooms. A third concrete building adjacent to the classrooms served as a computer lab, filled with about fifteen

desktop computers. Mostly these were used at night by children who played the computer games that had come pre-installed on them when they were donated. There was no internet access at all in the community proper until well into 2012, when workers arrived to install a huge wireless antenna next to the computer lab. Even at the end of my field work, however, they were still having internet access problems. Wi-Fi internet access was available at the eco lodge, though only a few laptop computers existed in town. The lodge did maintain a small computer lab with three computers located next to its open-air reception desk for tourists to check their email and such. However, often the teachers in the public school would assign homework to the community students that explicitly involved internet searches. The lodge thus allowed groups of students to come upriver and use their computers. However, computer literacy in the community was not very high; there were several times during the year where I had to help students with tasks as simple as opening an internet browser.

Down the hill from the classroom complex were more long, one-story concrete buildings which served as both the school administration offices and housing for both teachers and the several boarding students who spent the weekdays living in Sacha Loma, bunking together in a single room. These students came from houses located in communities too far *adentro* for them realistically to make the trip back and forth to school each day. None of the teachers at the school was, save two of them, a member of the community. One exception was Yolanda, an 18 year-old who had graduated the previous year from the Sacha Loma public school and was offered the job as English teacher. The other was Segundo, a Kichwa man from the Tena region who came to Sacha Loma to teach, first technical education, and then, when the tech-ed program was axed, in the elementary school. He ended up marrying one of Medicio's daughters, and lived in school housing with her and their two young sons while he taught and she, though well

into her 20s, attended 11th grade. All of the other teachers were from elsewhere in Ecuador, and several were from the Sierra. Teachers worked on one-year, renewable contracts with the Ministry of Education. The principal and vice-principal were ethnically Kichwa but came from Tena. To a person, all of these people arrived in the community on Monday morning and left on Friday afternoon, traveling back to Tena and from there to wherever they lived. The teachers were thus seen very distinctly as “foreign” to the community, a fact which created quite an ambivalent relationship on the part of community parents toward their teachers. On the one hand they were absolutely wanted in the community because they represented a conduit to a type of knowledge that every person in town was convinced was important. On the other hand, the teachers were constantly, justly or not, being accused of a string of antisocial behaviors, mostly excessive public drinking, chronic lateness to class or simply not showing up at the appointed day and time, and even philandering with students. As I will discuss in Chapter 2, the over-consumption of alcohol was a constant tension in the community, and Sacha Loma took steps to curtail drinking by first prohibiting, and then setting a one-liter-of-beer a day limit on purchases from the three small stores in the community. Thus they (mostly, according to community members) de facto solved this problem. Lateness and absenteeism on the part of teachers was a continual problem, however. Teachers would routinely not show up en masse and blame poor transportation in the region, even though they were supposed to have a dedicated early morning bus from Tena every Monday. They would also leave early on Fridays, and cancel class at the slightest provocation.

Perhaps the problem that concerned community parents the most was the possibility that a teacher would couple with a student. Though at the beginning of the school year parents were vociferously outspoken about what a terrible thing this was (it had happened the previous year,

they claimed), this ended up happening again and became quite a saga over the period of my field work. One of Paloma's younger sisters, Sarafina was living with Paloma and Felipe and attending the public school. Early in the year it got around that she and a teacher had been surreptitiously getting together. Instead of commanding that the relationship end, however, the community had the teacher fired and insisted that Sarafina marry the young man. The man's career as an educator was ruined. We later heard that he had become a candidate for the police academy in the large port city of Guayaquil, on the Pacific, and that Sarafina had gone to live with relatives elsewhere during this time.

An average weekday in Sacha Loma revolves around the school and its schedule. As will be explored in Chapter 4, families in town have engineered their lives around sending their children to school, which is a revolutionary shift in practice for a community that until the mid-1990s focused intensely on cash cropping as its main conduit to material advancement. The public school in Sacha Loma serves as the educational center for several surrounding communities both up and downriver. There are a total of about 80 students who attend the school, from kindergarten to 12th grade. Approximately 20 of these students come from Sacha Loma itself. The other 60 are ferried to the school each weekday morning in a large metal canoe run by Manny, who is married to Flor, the only multi-generation mestizo family in the upriver section of the community. Manny makes both an upriver and a downriver trip each morning and afternoon, first to pick up and then drop off students all along the adjacent section of the river. Students wear a uniform that includes a white polo shirt, dark blue dress pants, and black dress shoes. Girls wear a blue skirt in place of the pants. There is a manifest value placed on neatness in one's appearance for school. Students come to school meticulously clean, and young people go to great lengths to avoid getting even the soles of their shoes muddy, a difficult task in a rain

forest as they tiptoe around the community and down to the port. Students stand out starkly in the community, where the normal uniform is shorts and a t-shirt. People going to the farm, on the other hand, are readily apparent from their knee-high rubber boots and the machete they carry in their hand. The crisp, clean uniforms students wear are a self-conscious indexical departure from an existence focused on the forest, and are associated with non-manual, “urban” work. This fact was brought home to us once when we were catching a canoe upriver to make a connection to the bus to Tena. All of a sudden as we were pulling out of the port Edgardo, Medicio’s oldest son, appeared out of the trees and waved the canoe down. We pulled back into port, and saw that he was barefoot but carrying a pair of clean canvas shoes. He got in the canoe, washed off his muddy feet, and put on the clean shoes. When he saw our inquiring faces he explained that anyone showing up in the city either in rubber boots or in muddy shoes was obviously from the *monte* (basically a “hillbilly”), and that his family members and friends in Tena always made fun of people like that. To perform “clean,” for both Edgardo and the Sacha Loma students, is to perform “cosmopolitan.”

Of course, this is not to say that the community itself is not “clean,” rather simply that it is located in a rain forest and thus must be constantly maintained for a semblance of order to reign. The space the community occupies is cleaned and groomed regularly, and people are forever sweeping out their homes and performing maintenance on them. While the forest paths behind the community that people take to reach their farms are thick with mud and overhung with vegetation, the community, though perched on a hill, is open, with large flat spaces and tightly grouped buildings. There are three full-time school custodians. Two of these are men in their twenties, Paco and Martin, and they do the heavy lifting and landscaping, ranging from weed-whacking the school grounds to building maintenance. They are sons of two of the

founding Sacha Loma families, and are married to two sisters, Sirena and Maximiliana, who come from the third founding family. The third school custodian is Sirena and Maximiliana's mother, Micaela. These practices of landscaping serve, along with the daily school routine, to set up a stark contrast between "community space" and "forest space." In the community, one has freedom of movement, more or less, without having to put up with moving through a heavily forested area. There is thus another very literal distinction between "inside" and "outside" the forest: to be "in" the forest is literally to be engulfed by it. To be "outside" the forest is to be in the community, in an open social space, kept neat and clean and grassy. Because this is a rain forest keeping a social space in this condition is a call of constant communal work and upkeep: community members routinely formed *minkas* (communal work parties) on weekends to chop down the patches of vegetation in communal spaces next to the school grounds that would spring up quickly after rains. There were also *minkas* commonly put together to repaint communal buildings and to construct new homes and common buildings. Children were often given the task of *macheteando* (cutting with a machete) around the house to keep it groomed. The owner of the largest store in town would routinely drain the *ecuavoley* (a kind of volleyball played all over Ecuador for money) court in front of his store, the main after-work hangout in town, with a long plastic hose after rainstorms. The ideal "yard" was one that was so well groomed that it contained no vegetation at all, simply compacted, bare ground.

A second major institution in the community was the clinic, which was built, funded, and staffed by the community NGO for several years before it was taken over by the Ecuadorian government. The clinic was located just upriver from the school and main cluster of houses. Doctors that staffed the clinic worked there on five-week rotations. One young doctor, just out of medical school in Quito, came through a program in which the government funded his

medical education in exchange for a few years of his service in medically underserved areas of the country. Joining him were two nurses, as well as a dentist. Anselmo, one of the main community leaders and the oldest son of Valerie and Patricio, studied nursing in Tena and came back to the community to take the job of clinic intake nurse. Besides treating acute injuries and sicknesses, the clinic was also a major regional site for state-run social health initiatives, such as vaccination campaigns. The clinic staff was thus routinely called away to far-flung communities to vaccinate children against various diseases. They also had a prolonged campaign to vaccinate dogs in the region against rabies. The clinic was only provisioned in a rudimentary way, with basic painkillers like ibuprofen, antibiotics, topical steroids, and anti-fungals. For any laboratory testing they had to send samples out to the parochial seat upriver to Chonta Punta, where there was a larger clinic. There was also no medical imaging equipment there. The only in-patient care at the clinic was for childbirth; two babies were born there to women from the community during my field work. The final major preventative measure doled out by the clinic was birth control. All women were aware that birth control was available at the clinic, and the most frequently used measure was a 3-month birth control shot. Birth control was almost never used for the purposes of young people delaying the birth of their first child, but by women in established couples who wanted to space out their family's pregnancies (for more on delaying childbirth in Sacha Loma and its justification, cf. Shenton n.d.).

The third major institution in the community was the eco-lodge, located upriver from the clinic, and the sustainability-focused boarding school they ran, located downriver from *Nuevo Renacer*. The lodge almost constantly had large groups of tourists in residence for short three- to five-day tours, and was even the site of an international United Nations-sponsored conference during my field work. However, while the occupations of many adult residents in Sacha Loma

involved the lodge, they had very little direct contact with the tourist groups. This direct interface was left to the students of the boarding school, who rotated into maintenance and hospitality positions at the lodge. Tourist groups were assigned to a guide, who became their main contact during their stay. The lodge guides would sometimes bring tourist groups for a walk through the community, but there was very rarely any interaction between the tourists and the residents. Less often some of the younger, more intrepid tourists would wander into town from the lodge and buy a beer or a cigarette from Pepe's store. Most of these tourists spoke very little Spanish. Most of the reactions residents had to tourists took the form of feeling "ogled," and a sense that the "gringos" brought all kinds of fancy clothing and electronic machinery with them. There was a certain uniform, it seemed, to especially the middle aged American and European tourists: this was synthetic fiber camping clothes, button-down synthetic fishing shirts (the "PFG" brand seemed especially popular), a wide-brimmed synthetic hat, hiking boots (or lodge-provided rubber boots), and a digital camera. This kind of outfitting clashed strikingly with what residents generally wore: cotton pants or shorts, t-shirts, and either bare feet or canvas shoes. These differences were salient to residents, and the expensive-seeming items the tourists brought through town were both objects of desire for local residents, and an index of inequality (see Valdivia 2009 for more on the indexical quality of clothing, and in particular shoes, in terms of "whiteness" and upward mobility for Kichwa groups).

The downriver boarding school also seemed to have a minimal impact on residents. During my main year of field work the school was undergoing a restructuring, and the students were doing what the NGO termed a "gap year," during which small groups were rotated through the school, then the lodge, and then to other hospitality-industry centers all over Ecuador. Thus only about 15-20 students were around the community at any given time. Those in the lodge

sometimes came to Pepe's store or up to the *cancha cubierta* in the afternoons to hang out or play sports. Only two students from the community were currently enrolled in the boarding school, one Kichwa and one mestizo. The only people currently living in the community full time who graduated from the boarding school were Raul and Feliz, who lived with Raul's mestizo family just upriver from the main community, and Eduardo and Jerardo. Two other graduates were not currently living in the community. Several other people in their twenties had either spent some of their high school career there but had left for various reasons. The most common reason given to me for why they left was that they "did not like the environment" of living in single-sex dorms. Low grades and excessive drinking, however, were other precipitating factors.

From Monday to Friday Sacha Loma was thus marked by the school routine, where a flood of young, neat and clean kids flooded into the community. Each early morning there was a formation of all the students, after which they would disperse to their individual classrooms. For the lower grades there was only one teacher for each grade. For the high school classes teachers would rotate between each grade's classroom. Late in the morning there would be a school recess, and students would flood the small clapboard store run by Pepe's family, located right by the riverbanks and next to the school. Most often purchased here were cookies, candy, and soda. Apart from school lesson time in classrooms, another major structuring factor in school was physical education. Several times each week each grade would be brought up to the *cancha cubierta* (covered court), the cement combination *ecuavoley*, *indor*, and basketball court covered with a metal roof, and located at the very top of the hill, above the school buildings and close to the overhanging forest. Here students would play various structured games and sports, or run and do calisthenics. There were signs posted all over the school declaring things like "a healthy

body is part of a healthy mind.” This always struck me as a particularly structuring aspect of schooling, since the school routine was physically removing young people from the forest where they would have been doing hard, manual labor from an early age. Part of the implicit discourse of doing school was the corollary idea that by spending time in the classroom children were being physically “lazy,” and therefore they needed to chide students for their lack of activity, and then add it back into their schedules in a particularly contrived manner (see Chapter 3 for more on the construction of state citizenship in indigenous classrooms). Classes would continue until the early afternoon, when the students from surrounding communities would be ferried home by canoe.

Even for adults, an average day did not include travel to the forest. Most adults had occupations that kept them within the sphere of the community. There were only three households in the section of the community next to the school where at least one of the parental adults did not have some job in the community or something other than forest work as their main occupation. These occupations included school janitor (three people), clinic intake nurse (one person), canoe driver (four people), schoolteacher (two people), store owner (three people), and eco-lodge cook (two people). In addition, most adult women in the community were charged with taking care of young children and performing housework. Though every family had farmland and both subsistence and cash crops, only one couple made farm work a daily, full time occupation, leaving much of the child care and housework to their two teenage daughters, both of whom also attended the community school. On a normal day, then, with the students gone by mid-afternoon, the adult workday would continue until about five, when people would begin to congregate in one of two places in the community for relaxation. One meeting spot was Pepe’s family store by the school, where games of *ecuavoley* would inevitably spring up. The other spot

was the *cancha cubierta*, where people would get games of *indor* going. Such sports were a vital part of everyone's day in the community, and even those who did not play would congregate as spectators. Normally women did not play, though *ecuavoley* was considered the specific domain of men to a larger extent than *indor*. *Ecuavoley*, first, was played for much higher stakes, sometimes with a buy-in of over US\$20 per player, a huge sum given the wages in the community. Thus to play *ecuavoley* was to index not just ability in the game but also the financial means to do so; I do not think it was happenstance that those who were most fond of playing *ecuavoley* were also those men with the highest prestige wage-earning jobs in the community: canoe driver, school teacher, eco lodge cook, and eco lodge tourist guide. Given these stakes, I don't believe I ever saw a woman even keep score. Women, for their part, would sit around and occasionally comment on the prowess, or lack thereof, of the players, especially if a husband was involved. *Indor* was also played for money, but normally for only a few dollars, at most, or perhaps for post-game beverages. *Indor* was also a much more inclusive endeavor, and young people and older men would often play together. Often, however, the younger, more athletic young men would play amongst themselves. During the year there were also several *indor* and full-scale soccer tournaments (conducted on a much larger field cleared downriver by Medicio's *Nuevo Renacer* compound); these tournaments almost always included female divisions, where teams of women would play each other. Women were also routinely asked to keep score and time during matches. The *cancha cubierta* was equipped with halogen lamps run by a generator owned by the school, and often games of *indor* continued until well after dark, sometimes until eight or nine o'clock.

During the afternoons children to about the age of three were carried by their mothers or older sisters in slings, or, once they could walk, followed behind their mothers or other relatives

closely. Children from about the age of three all the way to high school age were essentially free to roam the community in the afternoons. Often children would play in the river; there was a heavily-forested island that had formed in front of the community, meaning that directly in front of the south bank of the community there was a stretch of about twenty yards where the water was relatively calm. Children would often go down in groups and play for hours, essentially unattended. Children would also play their own semi-organized versions of *ecuavoley* and *indor*. For several months in 2011-2012 the fad of playing *boliches* (marbles) swept over the community, and though this started with a group of preteens it quickly grew to include both men and women in their twenties. The game was played up on the cement slab of the *cancha cubierta*, involved four players, and the winner's prize was the loser's marbles.

Beyond this, people were more often than not in their homes. Kids most often did their homework after dark; all of the community homes had at least one artificial light in the house, which was run by one of several gas-powered generators. Several households had televisions and these were often going after dark. Only one household, that of Rico and Nicola, had satellite television, but they had built the television into the wall of their porch facing outward, and this became a communal space where kids watched cartoons in the afternoons, and women watched telenovelas in the evening. Later in the year, Rico, a mestizo and lodge manager, decided that he was tired of being the community theater and enclosed his porch with wooden planks and screening. Beyond that, most people also had DVD players and would watch recorded movies and, especially, music videos by the likes of Bayron Caicedo, a pop star from the Ecuadorian Amazon.

Language and Identity

The lingua franca in Sacha Loma was Spanish, which everyone spoke in public in the community, and at school. Kichwa was only heard publicly in very formal contexts like presentations during school assemblies, where the bulk of speeches were made in Spanish, and then a person was “invited” to say a few words in Kichwa. During informal public events like community parties, where one of several young men in the community with a karaoke machine and a large set of speakers would always DJ, all of the public speech was in Spanish. Every person in the community, including the oldest, understood Spanish. However, there seemed to be an almost perfectly linear intergenerational devolution in the ability to understand, and especially to speak Kichwa among community residents. The oldest people in the community, the very few in their 60s, spoke Spanish clumsily, as an obvious second language. The next-younger generation, in their 40s and 50s, spoke both languages equally well. The children of these people, in their 20s and 30s, to a person claimed to “understand” Kichwa but not to be able to speak it well. Several people in this age group revealed this to me almost with shame, and a few even told me they were actively “practicing” speaking Kichwa with their contemporaries to “save” it in the community. People younger than this neither spoke nor understood Kichwa, and were the explicit subjects of the dismissive ire of their grandparents on this count; I heard many times the assertion that children “do not care” about learning Kichwa, or that they “refuse to learn” it. The pattern I observed on this account is similar to that currently seen all across the Americas in terms of indigenous language loss in the face of encroaching dominant, global languages (cf. McCarty, et al. 2006).

Interestingly and perhaps tellingly, however, while older people in the community would certainly publicly lament the loss of spoken Kichwa around the community, there was very little

in the way of action taken on behalf of revitalizing it. Indeed, speaking Spanish was seen as a gift that could be given for children to “move forward” in life, and beyond expressing confusion that children were not interested in speaking Kichwa, this fact did not seem to be at the forefront of parents’ and grandparents’ minds; indeed the promise of education was held in much higher esteem than the preservation of a language identity. A factor here was that older people, while stridently opposed to non-Kichwa families building houses in the community (as discussed above in the case of Raul and Feliz), tended to see Sacha Loma as fundamentally “mixed,” because it was the location of a school with a regional draw. Pepe, for example, explicitly told me that it was “impossible” to have a bilingual school in Sacha Loma (which is permitted under federal rules) because there were colonist families that attended the school in addition to Kichwa families. This was one reflection, I believe, of both the realization that the colonists had finally and literally caught up” with Sacha Lomans, but also simultaneously the desire to reap the benefits of the development that came on the coattails of this development (see Chapters 2, 4, and 6).

The most clear-eyed assessment of the state of language loss in the community, and its causes, came to me from Segundo, an ethnically Kichwa schoolteacher not originally from the community but married to a daughter from the *Nuevo Renacer* clan, who had two small sons. My sense is that he had a clear-eyed view because of both his level of education and the fact that, coming from the community of Talag, to the west of Tena, he was in a good position to understand the regional dynamics of language. Segundo clearly saw the use of Kichwa regionally as community-specific, and a function of both the ethnic makeup of the particular community and the structural conditions therein. Beyond these factors, he also saw parental will

as key to children using Kichwa in everyday contexts. Personally, Segundo says, though he speaks Kichwa fluently he only speaks it occasionally with his children:

Here [e.g., in Sacha Loma], we have enculturated more in Spanish, and we have lost that practice, to speak [Kichwa] with the children. ... We've lost the bond that we had, that everyone should speak in Kichwa; here in [Sacha Loma] we've been enculturating much more in Spanish than in Kichwa. ... Here there's no one who will encourage the [Kichwa] language. Here we're only a few families. From there are also the children and grandchildren, and on and on, but these grandchildren don't have the same values that the grandparents have, and their own parents. The children at 8 or 11 years old, you ask them a question in Kichwa, and they don't understand. Those at 14, 15 years old, they will respond to you, but it's not totally in Kichwa, but mixed up with Spanish.

He went on to explain:

The biggest influence here is tourism. There's also no other way out, because here we're mixed with mestizo, colonist people. That's where it comes from, because parents here don't instill Kichwa values. That's where the break is, because here in [Sacha Loma] they don't speak [Kichwa] much. Here there are only three families that really speak Kichwa; the others only speak Spanish. Along the river it's only like that in certain places, it's like this in [Sacha Loma], but not in other places – there's more Kichwa spoken. In Guacamayos it's only Kichwa, in Agua Santa there's no Kichwa at all, it's only colonists. Cruzchikta is pure Kichwa – there you'll hear them speaking just Kichwa, to children, to adults; there's very little Spanish enculturation.

Interesting here is Segundo's assertion that outside influences – cultural “mixing” and “tourism” have had an effect on the will of parents to “enculture” children, and have caused a persistent devolution in language use. Critically, Segundo also mixes up ideas about language loss with larger themes of material and cultural modernization: with new ideas, he says, come new sorts of practices, which have new sorts of values attached to them. Basically, he is saying, the “education” everybody seems to want does not happen in a vacuum, but comes with consequences. He is upbeat, though, about the future. While he implies that local people see the choice as “one or the other” in terms of speaking, and even being, Kichwa versus being educated and having other priorities, he does not see it that way: “In my community [e.g., Talag] we only speak Kichwa – well, Kichwa and Spanish, really. And that's how it should be here: Kichwa and

Spanish, from young childhood right up until he or she goes to the university.” Clearly this is an educator who thinks local people can have everything they want.

The Farm and the Community: “*Adentro*” and “*Afuera*”

Chapter 4 will much more extensively analyze the relationship of the community to land use, as well as the forest and the community as distinct conceptual spaces for certain types of practice. Here I will simply introduce the distinction community members hold between the two spaces. The “ideal” image of a “hard working farmer” for members of Sacha Loma is a person who “gets up early” (before the sun comes up), who works all day until afternoon, who consumes *wayusa* (a stimulating tea) early in the morning, and then drinks only *chicha* (fermented manioc mash) while he or she works. This was the case for both men and women, and included both subsistence agriculture on the *chakra* (Kichwa: “garden”), paradigmatically female work (Irvine 1987; Irvine 1989; Swanson 2009), and also cash cropping work, which was paradigmatically male. However, on a day to day basis the ideal Kichwa farmworker trope was not played out. The contact people, and especially young people, had to the surrounding forest came mainly in the form of short trips to subsistence fields located near the community. Several families had small plots they either had inherited or had borrowed portions of larger farms from family members. They were located either across the river on the north side, or upriver or downriver on the shifting river islands that formed and reformed as a consequence of cyclical flooding. It was a daily event to see families, or even groups of children, paddle across the river on handmade dugout canoes and to return a while later with a tumpline basket full of sweet manioc or a *cabeza* (head) of plantains. Several women had also planted stands of manioc around the community. All of this sort of direct interface with the natural world, however, took

place in highly managed plots located near the community, and did not require one to enter the forest proper.

It is important to note that subsistence plots do not constitute a “farm” for Sacha Lomans. A “farm” (Spanish: *finca*) was properly a place where cash cropping (or, in the memories of local people, cattle farming) took place. There was thus a conceptual distinction between “gardening” on one’s *chakra*, and properly “farming.” This distinction also correlated with the distinction between being “in the forest” or not. This is because the *chakra* was part of the community-associated social space (that is “*afuera*,”) and the “farm” was located *adentro*, away from that community space. Going *adentro* had, for most people, more the feel of an “expedition”; one had to plan for it around one’s schedule in the community, and bring provisions for the journey. Though there were some older adults who went regularly or semi-regularly to their farms, it was not unusual to hear people plan their trips *adentro* several days, or even weeks, in advance. It was also not uncommon for more pressing business in the community to delay or cancel one’s trip *adentro*. In fact, one of the most surprising things to me was how difficult it was to find someone to take me *adentro*. And, when I did, it was hard not to think that they were doing me some sort of favor by doing so, that they actually only went because I wanted so badly to go. Residents routinely downplay their farms, in terms of the necessity of actually being present there: they say that you just need to go once in a while to clear the space of weeds around your coffee and cacao trees, that once everything is planted there is not that much to do. I even had people tell me that it was not important to take children to the farm because even though kids should be farmers, they could learn all they needed to know “in fifteen minutes.” Parents, of course, do obligate their kids, especially older ones, to go to the farm and work. However, these trips are always scheduled around the school calendar. During the school

year families will go on some weekends to the farm, and during the summer, especially July, right before school starts again, the community effectively empties out, and whole families go for an extended period to work together. The major exception to this pattern is the group of houses in *Nuevo Renacer*. Medicio, the patriarch there, was lucky enough to inherit a farm on the riverbanks from his father, and he and his family have planted several hectares of cacao right above their house sites, running up a steep hill from the river. This family thus has a much more fluid relationship to their farm, often going in the afternoons after school gets out, and otherwise in the morning. Non-school attending adults in that family group go to their fields almost every day, from morning to mid-afternoon, when it gets especially hot.

Sacha Loma and Forest Animals: Conservation, Destruction, and Ambivalent Attitudes

The final forest-related practice that should get mention is the local attitude toward forest animals and how this relates to the practice of hunting. My sense was that the distribution of conservationist versus utilitarian values of animal use was wide, and sometimes conflicted within the same person; this coheres with my analysis of environmentalism, forest-based aspirations, and the role of humans in nature that I analyze in Chapters 6 and 7. This meant that across the community, people seemed deeply ambivalent toward whether the value of forest animals lay in their being alive or dead. At the broadest level, people declared themselves to have a very utilitarian view of forest animals. For example, I systematically elicited the “usefulness” of forest animals from residents using a free listing task with nine community residents, ranging in age from 14 to 55 years old. In this task participants simply listed all the animals that came to mind, and they were recorded in the order they were reported. The task generated a total of 108 responses across the nine subjects of vertebrate animals native to the local forest. For 81% (87/108) of these responses the number one “use” of the animal was eating it. This task

generated 40 unique examples of vertebrate, non-domesticated animals named at least to the folk generic level (e.g., “monkey”), or to the species level (e.g., “wooly monkey”). 75% (30/40) of these animals were considered “edible” by participants. It might be objected that a free listing task is intentionally biased toward especially salient animals, and salient animals are those which are hunted. However, the animals listed as “edible” included all manner of forest animal, from several types of bird, to every kind of monkey listed, to several rodents and even lizards. In fact, several people stopped me, or simply laughed when I repeatedly asked about this use of each individual animal they had listed, because “we eat *all* the animals.” The only animals not systematically considered edible by those that listed them were vultures, parrots, hummingbirds, anteaters, sloths, rats, jaguars, ocelots, foxes, and snakes. In addition, there were really only two categories of “usefulness”: edibility, which comprised the vast majority of forest animals, and then the “hide,” which in this free listing task comprised only the felines (jaguar and ocelot) and the armadillo, which a few people mentioned could be turned into the body of a guitar. Beyond this, animals were considered to have “no use” other than “pet” for a few cases (pygmy marmosets and parrots, for example). Importantly, however, some people made it clear that their responses were only an idealized narrative how they conceptualized past practices of their forebears. The lack of equivocation about the utilitarian use of animals was coupled, for several people, with an overlaid narrative of “this is not the way it is anymore.” A few people explicitly said that while people “used to” eat these animals, now the only thing one does with them is “put them in the zoo.”

In addition to the ambivalent relationship to animals among community members, there is also quite a complicated local discourse regarding hunting. On the one hand, there is perceived to be (probably correctly) a link between clearing forest, shooting animals, and the

animals “going far away” from one’s land. Community members have also been told by both the NGO and government sources that hunting should be forbidden. However, at the same time *carne de monte* (“forest meat”) is seen explicitly as integral to Kichwaness, that is, of being “of” the forest. Again the clearest intimation of this came from Segundo, who sees culture loss, hunting, and food as intimately related:

Here [in Sacha Loma] we are losing, basically, the very cultural root of our ethnicity – we are losing it. And I would emphasize that what we’re leaving behind is our food, our drink, all of that we’re losing. In this way we’re becoming more Spanish. For example with *chicha* [mashed manioc brew] – lots of times there’s people who don’t have any in the house. And those foods that people had in the house in the old days, like a little bowl of hot peppers, which you’d put on a little piece of fish, or a piece of forest meat – you’d have an *uchu manka*, as they used to call that little bowl of peppers. And that’s how you’d eat every morning, every afternoon, and that’s how you’d feed yourself. But today you don’t see that anymore; mostly you just see food that comes from the city.

Obviously, Segundo’s assertions extend beyond the confines of animals and hunting. However, this quote illustrates the degree to which hunting is seen as integral to one’s identity as Kichwa, indexical as it is to a particular mode of practice and subsistence. It further illustrates the anxiety that people over the age of about 30 feel in reference to the loss of such practices. However, considering the fact that Segundo himself is an educator, and read through his quotes from above regarding language preservation, it illustrates the betwixt-and-between state in which residents in Sacha Loma find themselves in relation to education, advancement, and practices seen as “traditional” on the one hand, and the perception of those practices from the majority culture and international representatives – colonists and tourists – who constantly surround them.

Hunting, however, is still a fairly routine practice in the forest surrounding around the community, and when people go to their farms they routinely also bring a shotgun with them. On his farm, Pepe told me almost wistfully one day that when he had built his first house on his farm, herds of peccary would often come through and he would shoot several at a time to feed

the family. Since then, however, he has planted several hectares of cash crops, and for many years cleared forest and bought in cattle. Though he has long since given up cattle ranching as too risky and labor intensive and the pasture is now returning to forest, he says he has not seen a peccary on his land in years. However, the idea of exploiting animal resources in the forest is also bound up with ideas of material progress. For example, one of Dorotea's justifications for wanting a road cut from upriver in La Comuna to the community farms *adentro* (an important political push in the community which I will return to in Chapter 4), was that it would allow the easier harvest of forest animals for people in the community. So, the values of both exploiting and not exploiting animals are simultaneously seen as positive. In what I personally witnessed, hunting is now mostly confined to the *wanta* (paca) and the *watusa* (agouti), two jungle rodents that are both very common and perceived to be pests on subsistence plots, since people say they love to dig up and eat manioc tubers. However, in the same breath, people talk openly about how hunting used to be, in the past, much more integral to life in the forest than it is today. This is considered a conscious point of cultural change across generations, and it seemed to me that people clung to the idea of eating forest animals, and making products out of them, as an indexically Kichwa act. For example, a man who now works as a cook in the eco lodge, not originally from Sacha Loma but from the region further upriver, told me that in the "past," people needed only to buy four things they could not obtain in the forest: matches, salt, diesel, and soap. He said this, moreover, with specific reference to food, in the sense that "now," people need to rely on purchased food, such as rice or potatoes, for their subsistence.

However, even this nostalgia itself is complicated with ideas about "right conduct" in a rapidly modernizing context in which children are expected to go to school. Hunting, as is well documented in the ethnography of the Napo Kichwa, is linked in a fundamental way to the

traditional marriage process. Historically, forest meat and river fish were considered the only viable foods for a proper wedding, and the groom and his party were responsible for providing this feast to the numerous guests at the wedding. In order to do this the groom's family and close friends would hunt or otherwise procure such hunted, wild meat (cf. Uzendoski 2005b). This practice was also linked to the value attached to what was considered "hard work," and the relationship of that "hard work" to the valuation of the bride-to-be on the part of the groom and his family. As Uzendoski says, "in wedding preparations the groom is meant to suffer, especially during hunting and fishing trips" (Uzendoski 2005b:76). Anselmo, a 44 year-old father in the community, had a wedding like this. He specifically said, however, that he would not want this same ordeal for his children (none of whom has been married). This is because it is just too costly in terms of time, money, and effort. He himself had to take his male relatives deep into the forest and stay there for four days of hunting, bringing preserved food with them like smoked plantain and manioc. They hunted *chorongos* (woolly monkeys), and in order to keep the meat fresh he they had to smoke it right there, in the forest. The forest, he said with distaste, was filled with "ants, bees, insects – it was a total disaster!" Once, when they had shot at a troop of monkeys, one of them was hit and killed but got stuck up in the tree. The group made Anselmo climb up a thick vine and retrieve the monkey. He recounted this as if it were a crazy, rash act that he would not wish on anyone: "just one slip, and the groom is finished!" he said. "It was just *so* difficult. It was the most difficult thing I did in my entire life." He was also obligated to go fishing in the river, and to spend a lot of money on liquor for the wedding. Anselmo makes explicit the equation that local parents make between the forest, traditionalism, hard manual work, and lack of "progress" on the one hand, and the community, integration into majority culture values, intellectual work, and material and ideological "progress." For him, this

all comes together under the guise of hunting; as he said, “considering all of this [work], it’s just so expensive. Seeing it that way, I don’t want it for my children. Also, to *require* them to get married? No, I don’t think so. In the old days, they would oblige us to marry; instead of allowing us to study, they would just make us get married. *That* was the only thing that made [parents] proud.”

Animals that entered the community were, in general, treated like exotic novelties. This was surprising to me because it conveyed the sense that people really did not have that much experience with these animals. It was also my sense, however, that acting “callus” toward animals was a way of performing masculinity, and this was a portal to performing “traditional Kichwaness” for local boys and men. Once, walking in the forest with 20 year-old Maximiliana, she told me a story about walking in that same spot with her husband, Martin, when they came upon a whole family of nutrias, aquatic otter-like rodents, who were making strange vocalizations by the edge of a small stream. She reported that she thought they were fascinating and they edged closer since they had never seen anything like that before. As they watched, though, Martin picked up a large rock and threw it at the nutrias, who scattered screaming. Another highly ambivalent episode involving animals occurred much later in my field work when I was again walking with Maximiliana, this time in the community. She suddenly said, “hey, did you see the *tigre* that Nemesio found in the forest?” (*tigre* literally means “tiger,” but is used to refer to any of the several local species of forest feline, including the jaguar). When I said no she brought me over to Nemesio and Beatrix’s house, and asked Beatrix to show us the *tigre*. Apparently the thing it had become a source of fascination for everyone in the community, and people had come repeatedly to ask to see it. It was in a cloth bag, and smelled like it had been dead for several days. Beatrix reached into the bag and pulled out what they called an

oncilla, a small feline, stiff with rigor mortis. She said that her husband had found it in the forest already dead, and that someone had “shot it and just left it.” I asked what they were going to do with it. She said Nemesio would skin it and make it into a skirt for demonstrations of Kichwa dancing. Fairly often small boa constrictors would make their way into people houses, especially the roofs, looking for rodents. Sometimes people would catch these and keep them, showing them off to neighbors and unsuspecting gringos. Once I walked up the group of newest houses up on top of the hill to find a gaggle of children and adults poking a fairly large boa constrictor with sticks and laughing; they eventually let it slink off into the forest but did so mostly because they could see my disapproval.

Perhaps the most pervasively consistent negative attitude toward forest animals I encountered was toward snakes. Snakes were almost reviled, and considered dangerous and to be either avoided or, if encountered, immediately killed. They were, especially the constrictors generally referred to as *boas*, also considered immensely powerful in a supernatural sense. Large *boas* were said to have the capability of hunting men in the forest, making them dizzy and lost, and killing them. They are also said to be frequent visions of those who take *ayawaska* (I will return to these snake-related themes in Chapter 2). Returning to the community once with Maximiliana from her family farm carrying large sacks of dried, unhulled coffee beans, we suddenly came upon a tiny, white snake, hanging off a plant that stuck out into the trail. Maximiliana immediately stopped dead and became very worried. She wanted to kill the snake right there before we moved on. I dissuaded her, despite her protests. Later in my field work, Maximiliana’s older brother, Felipe, had a baby with his partner, Paloma. Just after the baby was born, Maximiliana reported, Felipe had encountered a snake on the school grounds, which he proceeded to kill with his machete. However, because both Felipe and Paloma were

forbidden to kill animals for fifteen days after the baby was born, this act jeopardized the baby's health and life. Killing the snake caused the baby, that same night, to twist around uncontrollably, turn red, and refuse to breastfeed. In order to save the baby's life, she said, they had to pass the baby over the smoke of a burning candle. Felipe's mother, Micaela, was irate with her son and yelled at him for his stupidity in killing the snake. Later still, Maximiliana told me she had found an *equis* (a type of pit viper), while walking on the path to a neighbor's house in *Nuevo Renacer*. Her husband, Martin, and her sister's husband, Paco, immediately killed the snake and burned the body. She said that if one does not burn the dead snake, another will come and hunt you down for doing so. She also said that she worries about Martin and Paco when they go hunting together at night, because some snakes are attracted to light, and shining a flashlight on them by accident will cause the snake to track you down and attack. Medicio, the patriarch of *Nuevo Renacer*, reported to me that people of the Upper Napo were "enemies" of snakes and that he himself had twice been bitten while in the forest and had come close to death. He said that in his own fields behind his house there were few snakes because he had killed so many of them himself, even though Mr. E, the founder of the NGO, "told them not to." In the discourse on snakes it is clear that historical constructions of frankly supernatural danger are running up against new sorts of "conservationist" attitudes. In the case of snakes, especially venomous snakes, however, these attitudes valuing eradication seem to run especially deep.

The push-and-pull of simultaneously performing the conservation of animals and callousness towards them was paradigmatic, however. Once, walking in the community one evening after dark, Maximiliana's father Pepe called me over to a group of people standing around a *guava* (ice cream bean) tree by the river's edge. He shined a flashlight about ten feet up on what turned out to be a three-toed sloth. I asked him what he was going to do with it. He said

“I’m going to kill it, of course. I’m going to skin him and make a skirt. You can make a really nice skirt out of the hide.” The next morning I talked to one of the head guides at the eco lodge, who I knew had been in the community the previous night. I asked him if he’d seen the sloth. He said yes, and I asked him if he knew of their plan to kill it for its hide. He said, “I told them not to kill it. They left it alone, they didn’t do anything with it.” A few weeks later, having heard nothing more about it, I again asked Pepe what had happened to the sloth. He said “yeah, I killed it and skinned it. But the hide just rotted, and I ended up feeding it to my dogs.” This episode was especially telling to me for two reasons: first, it told me that the lodge guides were spreading (or claiming to be spreading) explicitly “conservationist” notions to people in the community, that is, that beyond simply occupying the position of “prestige job” that pays well, they were also using the corollary discourse of the occupation. Second, even though I have no idea what really happened to the sloth in question, Pepe was feeding off a very different set of expectations regarding animals, by asserting the lack of inherent worth the sloth had for him. He was, essentially, performing a version of a manly, “I don’t care” attitude toward the sloth. The performativity of this episode on both the part of Pepe and the lodge guide highlighted the ambivalence toward animals I hypothesized above.

Perhaps the most drawn out, and also traumatic, event involving forest animals and the polarized local attitudes toward them happened over the course of the first several months of my field work. Fairly early in my time in the community I walked up to the lodge one evening and Mariano, a young man working at the lodge as a waiter, receptionist, and part-time guide, and who had graduated in the last year from the NGO-led boarding school, asked if we had seen the lodge’s “new addition”? He led us to a *choza* (open air thatched roof structure for cooking) by the dining hall, where, all wrapped up in a towel, there was a tiny baby nutria. Mariano said that

one of the lodge guides, Agustin, had been upriver in La Comuna, on his way to the lodge from Tena to meet a tourist group. In La Comuna he had met a few young men who had this nutria baby. They said they had found the nutria somewhere in the forest “all alone,” but Mariano said, they “had probably killed the mother and taken the baby.” They were going to keep the baby as a pet, they said, but Agustin, sure that they would not know how to take care of it, offered to buy it. They sold it to him willingly. Over the next several months, the nutria, who they named *Yaku* (Kichwa for “water”) became the center of lodge life, running where it wanted, and following lodge workers all day as the cooks prepared meals and the maids cleaned. She spent lots of time with both Mariano and Manolo, who took her care as their special charge, to the point that she slept in Mariano’s quarters in the lodge. He would incessantly take pictures of himself and the nutria together, and when she was nowhere to be found people would look everywhere to find her. The nutria was so small that she could not swim very well, or catch fish to feed herself. The lodge had a small manmade pond, fed by a small waterfall, which someone had seeded with tilapia fry at one point which had rapidly taken over the whole pond. Several times a day, starting at around 6AM, one of the lodge workers could be found with a long stick in hand that had a string and a fishhook tied to the end of it, fashioning a makeshift fishing pole with which they would catch small tilapia to feed to the nutria.

Eventually, however, *Yaku* got large and bold enough that she wanted to swim in the river herself. One day she finally swam across the Napo, where some distant relatives of one of the families in Sacha Loma were waiting for a canoe to take them across to the community. *Yaku* left the water and, having spent months with people, went right up to the family. A few of the men in the family, rather than leave her be, saw dollar signs in her hide. They took up a large rock and hit her in the head. Manolo later told me that he could “hear her crying from across the

river.” He jumped in a canoe and crossed the river, where he confronted the men, who claimed they had no idea the nutria was a pet. Manolo told them, “usually wild animals don’t come up to try and get to know you, they run away.” He then took the nutria back to the lodge and placed her at the foot of a tree, where she died. The lodge workers held a funeral, complete with eulogies, a burial, and a wooden cross headstone. At the annual Christmas dinner and dance that the NGO held at the lodge for its employees a few days later, one of the lodge managers set up a projector, hooked it up to his laptop, and played Mariano’s pictures of himself with Yaku on infinite loop before dinner was served.

The paradoxical qualities of Sacha Loma – the fact that it was simultaneously a place that was *in* the forest, populated by families that self-consciously considered themselves *of* the forest, and also self-consciously *removed* from the forest both physically as an aggregated “community” and in terms of its everyday orientation, proved to be the fruitful basis for my inquiry in this dissertation. Because of these simultaneous qualities, it proved to be an ideal place to ask questions about the nature of reasoning and cultural change, and whether there was any systematic relationship between the kinds of things people thought about the forest and what they did, or planned to do, in relationship to it. The complexly-simultaneous nature of aspiration, self-identification, and striving is a theme I pick up in the next chapter as I explore ethnographically the important roles of both tradition and self-conscious modernity among Sacha Loma residents.

Chapter 2: Profiles in Paradox: Reconciling Multiple Logics of “How to Be” and “What to Value”

The Call to Arms in Studies of Biological Knowledge Loss

This chapter attempts to portray something of Sacha Lomans’ complex negotiation of their own understandings of “tradition” and “modernity.” As such, the chapter self-consciously goes beyond my narrow focus on local complexes of understanding and practice related to the forest. It does so in order to make the point that the conscious negotiation of what local people perceive to be “modern” is generative of new ways of knowing, but is importantly related also to notions of how these people think of themselves as original inhabitants of the forests surrounding the upper Napo.

In a more pragmatic sense, the current study is an outgrowth of preliminary work on plant knowledge acquisition and its devolution I helped to conduct in Chiapas, Mexico, from 2005 to 2007. This work (Shenton, et al. 2011) was conducted in the Tzotzil Maya municipality of Chenalhó, Chiapas. In the paper we were able to measure differences in both the structure and content of plant name knowledge as a function of two different locations within the municipality. One location was the municipal town center, which in the last few decades has seen a rapid uptick in both settlement by majority-culture mestizo families and material modernization including electrification, paved roads and taxi service to surrounding cities, the introduction of free, state-run health clinics and formal schooling, and media such as television and video games. Practice vis-à-vis the forest has also changed fundamentally there, as indigenous families moved to the municipal center in order to take advantage of the perceived benefits of these material changes, which include new sorts of non-forest-based occupations such as construction work and taxi driving. As such, people now living in the municipal center spend less time in the

forest, and less time engaged in practices such as subsistence *milpa* farming. The second location was a small outlying hamlet in the municipality which had seen little of that material change; as of 2007 in order even to get to some form of public transportation required a forty-minute walk down the hill from the hamlet along a dirt road. Plant name knowledge was evaluated in both children and adults in the two locations, and participants were broken into four groups (under eight year-old children, eight-to-ten year-old children, children over ten years, and adults) so that we could reconstruct something of the developmental trajectory of plant name acquisition for the two locations, as well as evaluate the overall plant name acquisition ceiling. The age-based comparisons between the two locations in the municipality were clear and striking: within a large and robust shared model of plant names across the two locations, participants in the municipal town center showed systematically less knowledge. Further, there was some suggestion that the ceiling for plant name acquisition itself had begun to change, as the comparison of adults in the two locations also showed that those in the municipal town center systematically had a less robust model than their counterparts in the outlying hamlet.

We interpreted these results as indicating that changes in practice in the municipal town center, enabled by the material changes outlined above, were driving the observed knowledge disparities. We thus hypothesized that there was both a delayed uptake, as well as permanent changes to plant knowledge acquisition ongoing in the Chenalhó town center. We further hypothesized that these changes in the acquisition and overall trajectory of biological knowledge formation should have implications that go beyond the strict loss of propositional knowledge, because the knowledge about individual tokens in a given domain, such as species in the domain of folk biology, are used in a dynamic manner for *ad hoc* reasoning about causes and effects in the forest environment. This means that the ability for such reasoning would be compromised in

those people acquiring the impoverished model (e.g., Atran, et al. 2002; Ross and Medin 2011). This, in turn, would change the very basis on which young people in Chenalhó would be able actively to construct a rich causal model of forest and human-forest interactions (e.g., Burnett and Medin 2008). In the paper, however, we were unable to draw a direct link between what we were calling “modernization” and biological knowledge loss. Instead, we used that forum to ask a few provocative questions of our speculative conclusions, namely: “What are the specific (ideational, ideological, material, and practice-based) conditions for certain patterns of knowledge acquisition and devolution?” and “How do patterns of propositional knowledge formation feed into inference making, the generation of framework theories, and further patterns of knowledge-value generation?” (Shenton, et al. 2011:363). It is clear from these questions that the nuanced delineation between differences in “models” that particular people in particular places hold about domains such folk biology can only take us so far. Or, they can tell us *that* something has changed to a much more definite extent than just *why* it has changed.

In a recent meta-analysis of 84 studies that explicitly claimed evidence of folk-botanical “knowledge loss” in young people in different contexts worldwide, Hanazki and colleagues (2013) point to several potential flaws in such claims. They argue that the claim for folk botanical “knowledge loss” among young people is often too easily made, and data patterns that might be interpreted this way could be due to a multiplicity of factors and processes, including: 1. Age-based effects due to lack of experience that still place young people on a “normal” acquisition trajectory, and 2. what they call the “shifting baseline” problem, or the fact that contextual shifts, like declining biodiversity and access to forest resources, also change alongside social transmission and culture. Various, different studies have attributed declines in plant knowledge to “social factors” like family ties and access to traditional healer knowledge (e.g.,

Vandebroek, et al. 2004), disruptions in chains of social transmission (e.g., Badshah and Hussain 2011; Della, et al. 2006; Giday, et al. 2010; Quave, et al. 2008), “loss of knowledge” (Case, et al. 2005; Hanazaki, et al. 2000), “acculturation” (Benz, et al. 2000), or “modernization” (Quinlan and Quinlan 2007). Other studies cite “lack of interest from youth” regarding “plant resources and associated practices” (Almeida, et al. 2012; Franco and Barros 2006; Giday, et al. 2009; Merétika, et al. 2010; Silva, et al. 2011; Yineger, et al. 2008), the relative accessibility of traditional versus modern health services (Figueiredo, et al. 1997; Matavele and Habib 2000; Merétika, et al. 2010; Quinlan and Quinlan 2007), and “changes in lifestyle and the environment in terms of availability of plant resources”(Seid and Tsegay 2011). Hanazaki and colleagues conclude that given the “complexity” of changes that might precipitate folk botanical knowledge loss, researchers should proceed with “caution” when making claims about causality for such loss:

First, changes in the landscape or in the abundance of plant resources may be associated with changes in ethnobotanical repertoires held by people of different age groups. ... Second, the relationship between the availability of resources and the current practices of using plants rely on a complexity of factors. Changes in plant species composition over time may result from socio-cultural and economic changes affecting a given human group. Such changes can cause changes in the reference (baseline) of different generations and consequently resulting in a framework of different intergenerational knowledge. (2013:8)

Because the complexity of processes related to such knowledge “loss,” or, as they prefer to redefine it, knowledge “transformation,” unicausal models of this transformation are perhaps insufficient to account for it: “It is essential to use an interdisciplinary approach, based on a wide variety of data to estimate historical changes and to understand the current changes in a social and historical context, since complementary data may support and provide reliability to informant’s reports” (2013:9).

A recent article by Gómez-Baggethun and Reyes-Garcia (2013) drives home the point that the field of ethnobotany is currently unsatisfied with the state of causal explanation for botanical knowledge change in the face of processes related to “modernization.” In comparing two widely-separated cases of traditional communities, the Tsimane’ of the Bolivian Amazon and farmers of the Doñana natural areas in southwest Spain, they find that various factors have had differential impacts on botanical knowledge loss, its transmission, and resilience. While both societies have seen drastic changes in the past several decades in terms of material modernization and market integration, the rich model of forest skills and species knowledge Tsimane’ hold has been affected to a far lesser extent than it has in southwest Spain. This is primarily due, the authors argue, to the continued reliance Tsimane’ have on their immediate environment, while farmers in the Doñana natural areas have experienced a confluence of factors (intensive mechanization of agriculture, a “fortress conservation” imperative on the part of the government, and the abandonment of a religious cycle tied to agriculture) that has precipitated more drastic loss in knowledge. The authors thus call for a more nuanced approach to understand botanical knowledge loss:

[B]y analyzing change primarily in terms of lost knowledge the usual research perspective tends to downplay the dynamic nature of TEK [traditional ecological knowledge] systems, and little emphasis is put in understanding particular changes in TEK as an adaptive response to new environmental, social, or economic conditions. Likewise, few researchers have examined how the causes of the loss of TEK (i.e., modernization, technology, schooling, or integration into the market economy to name the most commonly mentioned factors) actually affect the mechanisms that allow societies to generate, regenerate, transmit, and apply knowledge. (2013:643)

Both of the papers discussed above make the valid point that issues of biological “knowledge loss” should not be looked at in a vacuum. The issue with both the “shifting baseline problem” and the above quote regarding societal “mechanisms” that affect knowledge transmission, however, are related in kind and highlight the need for a more squarely anthropological stance on

the nature of intergenerational knowledge change. First, to consider that a “shifting baseline” of biodiversity is a confounding factor in biological knowledge loss is to make the tacit assumption that such a “baseline” affects knowledge orthogonally to changes in “culture,” that is, that only once we control for the “baseline” can we understand the effects of “culture.” This is to reduce the effect of “culture” to an independent variable. Relatedly, to say that “modernization, technology, schooling, or integration into the market economy... affect... mechanisms” that in turn change knowledge is to understand “culture” as an entity onto which such structural factors impinge. It becomes itself a mechanistic account of change.

In effect, the task going forward will be not only to identify the kinds of variables that are operative within the process of “transformation” of biotic knowledge in particular contexts, but to attempt to understand just *how* they are operative. A similar call has come from the opposite end of the folk biology spectrum, concerned with the cognitive psychology of categorization and reasoning with natural kinds (e.g., Atran and Medin 2008). The focus of these authors is to provide backing, with evidence from folk biological cognition, for what they term a mental “biological module” (2008:65). However, they recognize that this “module,” though perhaps evolved over evolutionary time, and adaptive for the human species’ need to relate to their biotic worlds, does not develop in a vacuum. Even though these authors construe the mental capacity for nature knowledge as based on “innate” cognitive architecture, such a “module” is only “responsible for generating folkbiological taxonomy under appropriate experience. The empirical specificity and scope of taxonomic categories, and the inductive use to which taxonomic structures are put, vary with people’s degree of exposure to the biological world and with their cultural background” (2008:65). From an anthropological standpoint, then, the call is clear: both the ethnobiologists and the cognitive psychologists believe that what is lacking is a rich

contextualization of particular locations in which biological knowledge transformation is ongoing.

An alternative way forward, one that takes the process of change seriously as an complexly-cause, emergent phenomenon, is the view of culture as a *distributed* set of representations. This view, at its core, rejects recourse to any essentialisms. In particular, I claim that to fully account for the effects of “modernization, technology, schooling, or integration into the market economy,” we have to consider such processes to be foundationally constitutive of continually-evolving cultural formations. In this construal, “culture” becomes nothing more (or less) than an empirical question: the relative degree of agreement, and disagreement, across individuals, and thus. The *causes* of such empirical distributions, however, are a function of the complex intersection of structural, practice, and value-based change in a given locale. As Medin and colleagues (2002) assert, defining what “culture” is for the purpose of cross-group comparisons is an exercise in chasing ghosts: one can neither control away “uncultural” aspects of social groups through the exhaustive comparison of orthogonal variables, nor can one put one’s finger on a variable that one could, after exhaustive control, label as “cultural.” Rather than define just what culture is, then, perhaps the way forward is to embrace the notion of culture as complexly-overlapping sets of representational agreement. Critically, in such a view patterns of representational agreement themselves should be looked at as necessitating explanation; agreement itself should be considered “neither necessary nor sufficient to define a culture” (Medin, et al. 2002:5). Considered from this perspective, the goal of empirical cultural research becomes “a theory about the distribution of ideas and flow of information” (Medin, et al. 2002:7). However, distributions of agreement are themselves only one measurable feature of a complex set of structural and discursive causes. The view begs the

researcher to bring together the measurement of knowledge distributions with nuanced ethnographic work that can speak to the nature of structural and discursive change.

In thinking about their own data on the Itza' Maya and folkbiological knowledge loss, Medin and colleagues state that rather than think of such loss as “degraded” from “some pure Itza' culture in the past,” Itza' Maya culture should be thought of as “a rich blend of ideas and habits stemming from different inputs,” which has resulted in a changing biological knowledge base (Medin, et al. 2002:6). Understanding the complex connections between “ideas and habits,” and their “inputs,” however, should be an endeavor that brings together both the study of distributed sets of representations and their ethnographic context. In addition, it points to what should properly be considered the object of study in research on both biological knowledge change and cultural change more generally: that is, the context in which members of a given group are reasoning, and making decisions, about what they know about the world. This is the conceptual justification for using the “epistemological framework” as the lynchpin concept in this research. When defined in terms of the empirical distributions of their representations within groups coupled with the ethnographic study of their causes, such frameworks become a powerful tool for the study of cultural change (Ross, et al. 2012).

Work in this line of research has attempted to address these issues of ethnographic context and their possible effects on folk biological reasoning. Perhaps most relevant to the current study is Ross' (2002a) work on intergenerational change in folk biological knowledge among the Lacandon Maya of southern Mexico. In the paper, Ross focuses on first- and second-generation adults (average age 34 years) living in a single rain forest community that had been founded in 1972. The differences between the two generations' material and ideological conditions were, as Ross puts it, “pervasive” (2002a:128): younger adults knew and planted

fewer crops, and had moved their households to a nucleated town setting, while older adults still lived dispersed from one another. Ross takes the step of linking these kinds of intergenerational structural changes to the idea of the “framework theory” from cognitive psychology (Wellman and Gelman 1992). As described elsewhere, these were originally conceived as something of an innate “skeleton” onto which experience of the domain was hung, given sufficient input conditions. Ross thereby takes the step of linking low-level schematics for natural human reasoning about cause and effect among natural kinds to much broader, evolving, and perhaps harder to quantify structural changes in intergenerational circumstance within one community. This line of inquiry, I believe, speaks to one potentially productive confluence between anthropology and the cognitive sciences (Beller, et al. 2012; Ross and Medin 2011). However, for this relationship to reach its potential, the structural conditions, patterns of practice, historicity, and discourse that feed such changes need to be more fully embraced. This requires much more of an emphasis on ethnographic contextualization within particular locations.

For his part, Ross (2002a) makes the claim that the “frameworks” under which the two generations of adult Lacandones vis-à-vis their forest are significantly different: while older adults reason about their forest “within a framework guided by tradition and the creation story evolving around *hächäkyum*, the Lacandon Maya creator god” (2002a:126), younger adults conceptualize forest behavior “in terms of outcome with respect to concepts such as ‘ecology’ and ‘sustainable management’” (2002a:126). This claim is certainly plausible, and does the work of both claiming an effect of structural change on default reasoning patterns for younger adults, and also productively expands the notion of the “framework theory” to include influences from structural and contextual change. However, there remains a gap in terms of causal explanation: Ross observes generational differences in the content and structure of the model of

forest species and their interactions, and then relates this to a generalized “tendency” to reason in accordance with a given “framework.” This “framework,” however, is fleshed out only in that it is circumstantially linked to processes of structural modernization in the community.

In related work, the same research group (Atran, et al. 2002; Atran, et al. 1999) used what they termed a “garden experiment” paradigm to assess folk biological models and agricultural behaviors among three groups inhabiting the same environment of the Petén forest in northern Guatemala: a group of Itza’ Maya indigenous to the forest, and both a Q’eqchi’ Maya and a Ladino group who were immigrants to the region. The study found that belonging to a Maya group was not a sufficient condition for practicing agriculture in a sensitive and sustainable manner: only the Itza’ coupled a deep connection to “place,” a belief system that included forest protector spirits (*arux*) also intimately tied to that place, and a correspondingly nuanced knowledge base about the local forest. In this capacity, this group perceived there to be supernatural sanctions for destructive forest behavior and corresponding incentives for its long term maintenance. The study was groundbreaking in that it provided evidence from social network data suggesting that there was inter-cultural transmission of knowledge ongoing between the Itza’ and Ladino groups, which was also reflected in the Ladino model of forest knowledge and their forest practices. It should be clear, moreover, from the discussion of Medin and colleagues (2002), above, that these studies do not proceed from the point of view of cultural essentialism; in fact they are notable in that they do just the opposite. However, systematic changes in environmental knowledge and reasoning do need to be taken in a wide-ranging ethnographic context, one which might help to account for intergenerational changes in local “tendencies of thought” from a multi-causal and multivalent perspective that includes evolving notions of value, aspiration, and structural change.

My goal in this project, then, is to go beyond the path-breaking studies cited above and the conclusions we were able to come to in the Shenton and colleagues (2011) article, in terms of characterizing the causes and effects of intergenerational changes in environmental knowledge and reasoning. In the Shenton and colleagues article, we took structural modernization as a more or less *a priori* independent variable within the municipal structure of Chenalhó and then looked for plant knowledge differences between the two locations. I would suggest that environmental behavior, environmental knowledge base, inferential reasoning, and structural change are bound together in a mutually-constitutive and irreducible complex. These components of change should only be separated only for the purposes of empirical inspection. Importantly, we cannot take, as Atran and Medin (2008) term them, “exposure to the biological world” and “cultural background” to be homogenous influences for members of a group. Rather, these influences are fluid and evolving, especially under conditions of rapid modernizing change. This fact puts the onus squarely back onto qualitative anthropological methods to explain the changes in folkbiological cognition that we are able to document formally. I would seek to begin with the very scope of thought and understandings about the local environment (a fundamentally ethnographic endeavor), and then to quantify both “knowledge” and “tendency of thought” only afterward (a quantitative task that is fully dependent on its qualitative prerequisite). In this way I would seek a confluence between qualitative and quantitative methods that uses formal data sets not in a manner that seeks to generate patterns that beg ethnographic explanation, but rather in a manner in which ethnographic experience allows for the generation of appropriate tasks and thus seeks to confirm or disconfirm ethnographically-derived hypotheses. These proposed methods do not deny that there is systematicity to be found in the practice and thought of members of a community like Sacha Loma, but only that this systematicity should be approached as an

empirical question, from the point of view of diversity. As such, I would seek to fully appreciate the theoretical and methodological implications of the distributional view of culture discussed in Medin and colleagues' (2002) paper.

Framing the complementary roles of qualitative and quantitative methods is particularly useful for the study of framework theories related to the biotic environment, especially in places, like Sacha Loma, that have undergone rapid structural change in recent decades and are experiencing new kinds of ideological and ideational influences. While both my qualitative and quantitative approach rely on a distributional notion of culture (e.g., Sperber 1996), I see this distribution as going beyond a simple appreciation that “intra-cultural variability” exists and is a fruitful locus for research on the nature of learning (Boster 1987). Rather, the external influences operating in Sacha Loma necessitate an appreciation that a deeper kind of change is ongoing there, one that requires sensitivity both to historical, relational modes of being with the forest as well as ideas related to a progressivist, post-industrial, modern ideal. The question thus becomes: “what is the nature of modernity that members of Sacha Loma experience, and value?” This is a question I can only begin to gesture at in this project, but it is one that impinges directly onto their experience, knowledge, and reasoning both in, and outside of, their forest.

Spirits, Shamans, Empiricism, Science, Morals, and Progress: Multiple Logics of Causality and the Second Part of The Paradox

If the setup to the paradox of Sacha Loma outlined in Chapter 1 was that it was a tiny, remote community with no road access in the middle of a dense rain forest, the second part of that paradox was how the place belied my expectations of a place like that. While people clearly valued their forest and saw it as integral to their feeling of belonging in the world, they also did not habitually engage with it as fundamental to their daily lives. Clearly people's values and

actions took them far away, both conceptually and in terms of practice, from the forest that quite literally surrounded them. From my outside perspective, I began to wonder: were these people really *of* the forest, in the manner in which I had read so many Amazonian groups portrayed, or were these really just people living *in*, or *surrounded by*, the forest, striving along with the rest of us for jobs, money, and some recognizable version of “success”? Were these people who saw themselves as thoroughly “indigenous,” and thus “different” from other Ecuadorians, or were they modern citizens of a progressive social-democratic state that desperately wanted to integrate them into its version of the market economy?

For both these questions, at the very end, my only answer is “yes,” Sacha Lomans are all of these things, and simultaneously. The narratives that people live there are multiple, and complexly interwoven. There is no clear path to how people “decide” a certain set of motivating values, and people maintain different kinds of negotiations of their multiple aspirations. What is clear, however, is that people are struggling with multiple narratives that implicate traditionalism, and the forest, in various ways. These include notions of “scientific” evidentiality, which compete with historical notions of cause-and-effect in the forest, embodied in shamanic practice and relationality with animals and spirits. Both of these are at work simultaneously among members of the community to differing degrees. Individuals have also used these to understand both “traditionalism” and “progressiveness” in individualized ways. What I would seek to do to illustrate this is, rather than deal with issues in a thematic manner that might try to define neatly the boundaries of local people’s thoughts about tradition and change, I would instead provide a few profiles of the various ways different Sacha Lomans think about these issues. I will do this by using a few actual Sacha Lomans as “centers of gravity” on these issues, as a springboard for talking about community variability in understanding and causal

reasoning, both internally within these people and across residents. The larger goal is to show how exceptional people currently living in Sacha Loma think about these issues in multifarious ways, and how these refract with competing and complementary views also operational in Sacha Loma. Tradition, and a distinct sense of “Kichwa exceptionality” are certainly not gone from Sacha Loma. However, this competes in interesting ways with other ways of thinking about how the world works, and about aspiration within those worlds. These competing ideas extend to the land and its use for material gain, the forest as a site of supernatural power, to money, to the role of shamanism in daily life, and to sickness, health, and death. These issues are not neatly delineated by age, but crosscut the lives of different people in different ways as they negotiate multifarious expectations and goals, both those endemic to the Upper Napo and also to their lives as modern, progressive, and educated Ecuadorians.

Perhaps before doing so, however, it might be appropriate to contextualize this undertaking a bit more in terms of its overarching goals. What I witnessed in Sacha Loma over the course of my field work was a community of individuals and families struggling with understanding, and making use of, “modernity” in its largest sense. This is a struggle that has been going on for centuries in the region, as economic, political, and structural constraints have ebbed and flowed over the region in different ways at least since Spanish contact. For the bulk of this project, however, I relegate myself to the implications of one particular manifestation of “modernity” as it has been taken up and deployed by Sacha Lomans in the wake of structural constraints placed on the community since the 1960s: this is the rise of a specific form of paternalistic “environmentalism” that posits a human-nature duality, “nature” as fundamentally fragile and “humans” as fundamentally parasitic. This breed of environmentalism, moreover, is built on a dais that portrays capitalistic exploitation of the region as both necessary and

inevitable. This narrative comes from two major sources: the government, mostly in the guise of its local arm of the state-run oil company, and the local NGO. These discourses, in turn, are mediated and rendered legible to young people through the daily practice of formal education in the local public school. As I will argue, these narratives share an underlying assumption of environmental “fragility” that is becoming increasingly legible to local people. The narratives differ, however, in the ends they see as desirable in terms of forest use. On the part of the oil company the discourse on “fragility” comes in the form of preemptive apologies for the necessity of the extractive actions they will take in the forest, as well as assurances of “minimal impact” on local people’s farms and to the river system; at the same time however, the company wants to assert its right to explore, and perhaps drill, on land owned by community members.

Conversely, on the part of the NGO, “fragility” springs from a particular vision of “ecological entrepreneurialism” that it posits to be the logical corollary of environmental “sustainability.” Formal state schooling, with its rigorous regimentation of time, space, and curricular content, mediates the difference in these narratives by propounding a deductive and empirical logical frame that underpins these versions of environmental causation.

However, while I place most of my emphasis in the following chapters on the fallout from these particular constructions (which have both structural and discursive antecedents), the ongoing local struggle with narratives of “modernity” goes well beyond issues of land use and the conceptualization of nature. This can be seen plainly in the parallel work of Jamie Shenton (n.d.), who explores a similar struggle with “modernizing” narratives in Sacha Loma as they pertain to women’s bodies and women’s aspirations. She argues that evolving ideals of beauty, childbirth and childrearing, education, marriage, and employment among young Kichwa women in Sacha Loma are all deployed dynamically in the service of augmenting and reaffirming a pro-

social, convivial, and particularly Amazonian understanding of living “the good life” (Fischer 2014). In this way women synthesize local interpretations of both “traditional” and “progressive” being, thus moderating their own lived middle-ground vis-à-vis their own bodies and the family body.

The idea of local people actively mediating their images and interpretations of “modernity” has been called many things over the years, though perhaps the most apropos is Knauff’s (2002) use of the term “vernacular modernities,” which emphasizes the local, ground-up, and contextual character of their formation. This term also clearly delineates the understanding of “modernity” from the sometimes simple-minded invocation of the “hegemonic” influence of “Western” discourses and ideologies. It is probably true, of course, that notions linked to “global modernity” do have a particular flavor: for example, Giddens (1990) typologizes “modernity” as opposed to “pre-modernity” in terms of three fundamental shifts in: 1. the jettisoning of *kinship relations* for *personal relationships*, 2. the jettisoning of *place* (with the “local community” as the paradigmatic example) for *abstract systems* which establish relations across “time-space,” and 3. the jettisoning of *religious cosmologies* for *future-oriented*, “counterfactual” thought. These shifts lead to differences in “risk,” which include the dangers of modernity’s *reflexivity* over danger emanating from *nature*, and the threat of *personal meaninglessness*. Both of these dangers emanate from the “disembedding” quality of modernity: as Giddens says, “Modernity is inseparable from the abstract systems that provide for the disembedding of social relations across space and time and span both socialised nature and the social universe” (1990:151). For Giddens, and for Sacha Loma residents, what might call for new modes of “negotiation” under the auspices of “modernity” is fundamentally related to new forms of experiencing space and time.

All of the causes and consequences of Giddens' process of "disembedding" are present in Sacha Loma, as will be evident in this and the following chapters. However, as Knauff (and others) have put it, and as Merrifield and colleagues have recently observed, it is too simplistic to characterize "modernity" as *only* a set of monolithic impositions. Rather, we should understand modernity "as a partial and differentiated hegemon, rather than a closed system" (Merrifield, et al. 2013). The first realization attached to this is that "vernacular" modernities are really co-constructions, between local people, social forms perceived to be "traditional," and structural evolution in a given locale. This means that while the imperative toward "disembedding" may be promulgated wholesale through discourses and practices implied in structural assumptions of "progress" and "development" at the hands of state and non-state actors, the reuptake and deployment of these assumptions will take new, and perhaps even personally idiosyncratic, form. As Knauff says, "the alternatively modern is not just a reflex of infrastructural forces but a force of distinctive identification and subject making" (2002:17). "Modernity," thus, "can be defined as the images and institutions associated with Western-style progress and development in a contemporary world" (2002:18). However, understanding modernity as "relative" obligates us to understand the effects of what might be called "hegemony" in new ways:

[R]elativized notions of modernity harbor a theory of how modern powers and agents extend their influence. In particular, they suggest that modern images and institutions become forceful through the very opposition and reciprocal definition of progress or development vis-à-vis notions of tradition or national neotradition. These competing tropes and meanings of what indicates authenticity and what indicates development and progress are locally and regionally mediated. They are highlighted as actors negotiate their desire for economic success or development vis-à-vis their sense of value and commitment to longer-standing beliefs and practices. These articulations develop through schism and discontinuity – for instance, as disjunction between images of economic and material development and those of cultural or historical identification. The alternatively modern thus harbors a dialectical notion of how becoming locally or nationally "developed" occurs through selective appropriation, opposition, and redefinition of authenticity in relation to market forces and aspirations for economic and political improvement. (2002:25)

Under this revision of the nature of “hegemony,” it is clear that the task at hand is not only to understand the effects of its imposition, but rather to understand the local or regional nature of the dialectical process by which the imperatives of “Western-style progress” come to be evolved into local ideas of productivity.

To foreshadow, while Knauff and other anthropologists would take Giddens’ notion of “abstract systems” and investigate these at the level of their local articulations, I would take this process one step further and look at the way in which these local articulations are bound not only to local systems of valuation but corollary epistemological frameworks within which local people reason (see Chapter 3). Here again, I have recourse to the domain of environmental reasoning, which is a rich pre-existing body of literature from which to draw and to link to the effects of vernacular modernity as it manifests currently in the Upper Napo. Below, I would seek to begin the process of characterizing the local breadth and depth of these versions of vernacular modernity, as well as the dynamic lengths to which local people go to aspire within and make use of these various, simultaneous articulations of desire, filtered through the lenses of locally-articulated “tradition” and “progress.”

For his part, Uzendoski (2005a) has begun the process of thinking through Amazonian people’s presentations of what he terms “alternative modernities” (e.g., Gaonkar 2001) through the idiom of nature. The Amazon, he says, is “a place at the fore” of these “alternative modernities” (Uzendoski 2005a:224). Reviewing articles by Passes (2000) and Griffiths (2001), Uzendoski agrees that “value in Amazonia is based on convivial sociality rather than a strict economic logic; things are subordinated to the needs and relationships of kinship and community rather than the powers of market forces.” This is because, he says, “contrary to the productive logics of capitalism, Amazonians continue to insist that nature is a complex, sentient being with

whom one must relate socially” (2005a:235). To this assertion I would say only that I believe, based on both my ethnographic and formal data, that the picture of modernity in Sacha Loma is decidedly more ambivalent than that. This is not a case in which the cultural resilience of an indigenous perspective on nature has “won out” over soulless capitalistic bean-counting. Rather, people perceive value simultaneously in both modes of being. Personal striving for success within the cash economy is seen to be just as fundamental as understanding the forest as a socially-relatable and “sentient” entity. Indeed, this in and of itself is, and should be thought of, as paradoxical: in many instances, as we will see below, capitalistic and relational modes of knowing come into conflict with one another, and are not always seamlessly reasoned out. It is the simultaneous nature of these understandings that is particularly fascinating. Uzendoski goes on: “While nature can be ‘giving,’ she can also be vindictive and predatory just as people can be – a quintessentially ‘Amazonian’ way of conceptualizing the world. Modernity, if it is to work at all, has no choice but to adapt to the complexities of this persistent Amazonian reality” (2005a:235). I would say that while it may be true that such conceptualizations remain persistent, viable, and productive of a particular mode of sociality, the inroads and adaptations that “modernity” has made to this “persistent Amazonian reality” cannot, or can no longer, be denied. Rather, they are lived, valued, and striven for there, even by people who consider themselves to be *sui generis* denizens of places like the Upper Napo. Perspectives on the “modern” in such places are co-constructions between people and the narratives of “progress” they are told, or see implied in the structural realities in which they participate. Modernity, in this way, functions just like the creeping network of roads cut in fits and starts, but mile by mile, into the dense forest of the Upper Napo. Such things do not immediately make the place un-

Amazonian, but they do reconfigure the nature of possibility within that place as it is built and rebuilt from the ground up.

Perhaps the clearest formulation of a properly “Amazonian” system of value for the Kichwa of the Upper Napo comes from Uzendoski (2005b). Building on seminal work by Whitten (1976) on the related culture area of the Canelos Kichwa from the Pastaza region to the south of the Napo, Uzendoski sees Kichwa values to be foundationally related to the active production of people. People, in turn, are produced through the continual, socially-mediated circulation of “life force” (Kichwa: *samai*). This “life force” is circulated between people in terms of exchange, paradigmatically of locally-produced plant and animal foods (manioc and hunted meat) and pro-social action (rearing, marriage), but also in the form of commodity exchange and consumption. These elements, exchanged as manifestations of “flowing” life force, build individual people in physical, psychological, and shamanic “strength,” and also mediate the transition of people conceived as affines into consanguines. This system is built on a conception of the universe that posits the circulation of “life force” across deep time (Kichwa: *unai*) both in a lineal manner between generations of human beings and also permeating the world: for Uzendoski, this circulation constitutes a “somatic, millennial, pragmatic, and aesthetic quality of the human condition” (2005b:50). These qualities are embodied paradigmatically in the form of the shaman (Kichwa: *yachac*). Rather than “being” yachac or not, however, shamanic ability is rather a relative expression of one’s “strength,” built over time in the pro-social manner cited above. People are more focused on “doing” shamanism than on labeling those who are shamans (2005b:57). As such, shamanic power, and the related capacities of shape-shifting (paradigmatically with predatory animals like jaguar and anaconda), and mediating community health and sickness are tied into the expression of the community-based

recirculation of life force, conceived as a balance between the convivial and predatory impulses inherent in the social world of the Upper Napo.

To be sure, the ethnography concerning the Kichwa-speaking populations of the Ecuadorian Amazon have acknowledged the fluid historical and conceptual relationship that these groups have had to majority culture structural-political impositions and attendant notions of “progress” (also see Chapter 4). Whitten (1985), for example, gives a summation of social life for Nuevo Esperanza, a Canelos Kichwa hamlet near the Pastaza River, that echoes what I have postulated for Sacha Loma in terms of its relationship to pervasive structural-economic change:

Stable though Nueva Esperanza may seem to be as a little community in a beautiful location steadily incorporating into the regional culture of the nation of Ecuador, the hamlet and all others like it also represent a regime of chaos that mediates the antinomies of indigenous society and its system of ecosystem exploitation and maintenance, on one side, and national developmentalist, stratified, capitalist society, on the other. People flee the chaos born of contradiction; their flight reinforces the growing structure of antinomy that envelops them. To understand such strange, contradictory mediation it is necessary first to come to grips with the syncretic patterning of Upper Amazonia wherein the Canelos Quichua have emerged ethnically over the past few centuries, building upon previous cultural syncretisms and thousands of years of environmental and cosmological knowledge. (Whitten 1985:57)

Such “syncretism” is foundational to ethnic formation in the Upper Amazon, as I have acknowledged elsewhere in this project. What I would suggest by way of the ethnographic section that follows is simply that today, this syncretism includes an ongoing wrestling match with reconciling one’s active participation in local perceptions of “the modern.” In Sacha Loma it is not a case of “flee[ing] a chaos born of contradiction,” but rather of meeting that contradiction head on and living it fully, and in parallel, with the world Uzendoski and Whitten describe.

Medicio

Medicio, who I introduced earlier as the patriarch of the *Nuevo Renacer* section of Sacha Loma, is a dynamic character in community life. He is in his mid-50s, born to the southwest of

Sacha Loma in an indigenous community called Arajuno, over the border in Pastaza Province (see Chapter 4). He now lives on a large farm that reaches the banks of the Napo, where he and his immediate family have built a small cluster of one-room clapboard houses, on stilts to avoid flood damage from the nearby river. His cacao fields extend right up the hill above the houses, downriver from the public school. Medicio is considered to be one of the most knowledgeable people around for forest plants, and he considers himself to be what he terms a *curandero* (“curer”), which he explicitly delineates from the term “shaman.” The difference, he says, is that a *curandero* relegates himself to his expertise in plant-based medicine, the results of which he considers to be more “evidence-based” than what shamans perform (more below). However, he does believe in the efficacy of, and performs, “cleanings” for people who have symptoms of culture-bound syndromes like *mal aire* and *espanto*. These sessions involve singing shamanic songs, ritual cleansing of the body with a bouquet of fragrant leaves such as the citrus-scented *malaria panká*, and home-grown tobacco rolled up into a large cigar, smoked by the *curandero* and blown over the body of the afflicted. Sometimes other fragrant items such as cologne are used. An alternative treatment (mentioned more often for *espanto*, which afflicts children more often than adults), is to take an egg laid by a hen that same day, pass it over the body of the afflicted person, and then break the egg in a glass of water. The egg will have extracted the “dirtiness” from the patient, and this can be seen by the milky color of the egg white in the water. While these sessions are also performed by those considered to be shamans, Medicio has a militant focus on the efficacy of his medicine, and only uses plants, medicines, and performances that he claims to have seen work. He constantly has preparations of various different plants on hand; usually these take the form of boiled extracts of plants, kept in old 1-liter soft drink bottles. He sells these to community members to combat afflictions such as gastritis. While he says that

much of his knowledge comes from his father Alanzo, who is also a *curandero* and still lives across the river, he claims also to have studied plants formally in Tena. He also considers himself to be a *partero* (midwife), and claims to have aided at the births of over 100 babies, without losing a single one. As such he sets himself up as an explicit alternative to both the local clinic in Sacha Loma, which admits women as in-patients for childbirth, and also to the hospitals in Tena, where some local women go to give birth. However, local women have a preoccupation with avoiding cesarean sections, which are closely associated with childbirth in hospitals. Medicio is vocally opposed to cesarean childbirth. However, during my main year of field work Medicio's oldest son's wife gave birth in a hospital in Tena via C-section, due to a late-term infection she contracted.

Medicio is a man who seems perpetually in search of attaining more material success and knowledge. He is a person who always has some sort of ambitious undertaking in mind, and thereby embodies in a literal sense the multifarious quality of striving in the community. He is the consummate politician, and when in public is forever dressing a few notches above the norm for the region, in slacks and a button-down shirt; he is the only Kichwa person I have ever seen in the region wearing eyeglasses. Medicio's family simultaneously reflects tradition and integration in the market economy, and the breadth of the role Kichwa play in mediating ethnicity and "civilization" in the region (see chapter 4). His oldest son, Edgardo, had a traditional marriage with a Kichwa woman from the Puyo region. The couple now lives just up the hill from Medicio with their young children. Another of Medicio's daughters was married to a mestizo colonist man whose family has a farm on the north side of the river in Sacha Loma, and came there from Bolívar Province over 25 years ago.

During 2011-2012 Medicio served as Sacha Loma community president. During this time he repeatedly held meetings both in Sacha Loma and between regional community leaders regarding community electrification and road paving on the far side of the river for the connector roads that had been punched through to the Napo and connected the north bank to Coca. He also spearheaded an initiative that first forbade, and then later strictly limited, the amount of beer that people could buy in the community, by rallying community support to put pressure in the three small, family-run stores in town not to buy beer in bulk from the salesmen at the markets in La Comuna and Agua Santa each week. This had the explicit goal of avoiding what he, as well as other people in the community told me was a “scourge” of communal, all-night drinking sessions by men in the community. A major concern with this was the inevitable devolutions of these sessions into spousal abuse in the home. Some people in the community, however, felt that Medicio was being somewhat hypocritical on this point, and accused him of becoming a teetotaler on behalf of the community right after he himself had stopped drinking only because he had recently developed severe and persistent stomach problems. Some of the store owners even said that the rest of the community simply wanted to run them out of business because they were jealous and not getting a cut of their profits. But Medicio seemed to see these initiatives in larger terms, as a function of the larger goal he had of the moral “betterment” of the community.

As he told me in justification of his initiatives:

I don't want to be a conformist. I always want more, much more. ... All the time in community meetings I council people to change themselves, because the people here, they don't want to change. I'm always insisting that they change, just like I do, just like I'm changing. I say “work the land, change yourselves, don't be slanderous....” I don't want any of that. What I want is “everything forward, everything positive,” nothing else.

This kind of interpretation of drinking behavior is in conflict with attitudes toward drinking recounted in Uzendoski (2005b), where such action is perceived as “pro-social” in that it

functions as a manifestation of a strong, male “will” on the part of adult men (2005b:43). These competing conceptualizations were an locus of active mediations in the community, wherein drinking stood in as a shorthand for the discourse surrounding the meaning of “moving forward” as a mode of teleological betterment for self and community.

During my many sessions with Medicio, he talked about several “projects” that were intended to make him, or the community, a profit. Many of these, I think, have a very low probability of coming to fruition, but he seems to have an intense interest in entrepreneurial actions (see Chapters 6 and 7 for background on the discursive and epistemological constructs related to “entrepreneurialism”). He wanted to open a tourist attraction on his land including a lodge, a medicinal plant garden, and a tower that would be built into a large *sandi* latex tree up on top of the hill behind his house, overlooking the Napo. He had plans to write and self-publish a book on local medicinal plants. He self-consciously put the imperative to “save” plant knowledge in terms of codifying the knowledge in print, rather than by some other mode of apprenticeship. He told me people tell him, “Don [Medicio], ‘if you die how will we know anything about plants?’ So I want to put together a book.” His oldest son, Edgardo, who works as a cook at the NGO-run boarding school, shows little interest in taking ownership of his father’s knowledge. Medicio spent much of his free time during 2011-2012 in driver’s education classes in Loreto, and succeeded in getting his driver’s license by the end of the year, becoming the first person in the community to do so. He had plans to save up to buy a used truck, and told me the point of this was to be able to drive his crops directly to market, avoiding the low prices of all the middlemen who come to the community to buy cacao. Finally, in addition to his work as a *curandero*, Medicio strove over the course of the year to become a representative of a company that sold what he called “Chinese medicine.” The company held what he termed

“training sessions” in the major Pacific port city of Guayaquil, and he traveled there several times over the course of the year. His plan was to purchase the medicines in bulk and resell them locally and in communities throughout the region. Though he “lacked the money” to do this on the scale he would have liked, by 2012 he had resold small amounts of the medicines. Medicio told me the medicine company has a “star” system wherein if a franchisee meets sales goals they are awarded get a star; enough “stars,” Medicio said, and the company gives you a free trip to China, which was his goal.

As might be clear from the above description, Medicio treads the line in very interesting ways between being fiercely “traditional” on the one hand, and militantly “progressive,” on the other. This sort of thinking extends directly to his thoughts on medicine, plants, and the Kichwa shamanic complex. As community president, he seems keen on forging his own bond with the elements of tradition and modernity he is confronted with:

With the old customs, some are bad, and some are good. The good ones I want to save, and the bad ones I don't. For example, the “good” customs are our medicine, we need to save that – we need to save the practice of curing (Spanish: *el curanderismo*). But the shaman shouldn't exist. The shaman just makes a lot of problems. The shaman is a thief, he just makes people in the community fight with one-another. For me the shaman is bad, bad, bad. So, with the illness that I personally have – say someone had gastritis. The shaman can't see, he doesn't know – he just lies and says it's “witchcraft.” “Some other person injured you, did you wrong.” So, he says, “pay me some money, one hundred dollars, two hundred dollars for me to cure you” – those guys charge a lot. And then they pretend to suck out the sickness, but it doesn't cure you. It does nothing, and then they say “no! I need more money!” And the person pays more money, and still it does nothing. But it doesn't help because it's *gastritis*, it's *not* witchcraft. So, they're just lying and robbing people. I've investigated this and I know about these guys; there are lots of them. For example, there was one case where a guy burned his foot, his ankle. What did the shamans say? They drink *ayawaska*, you see, [steps on the ground] and they say “this footprint here?” They say, “oh, they've taken the ground you stepped on to Baños [a small city in the mountains considered especially holy because of the presence of *Nuestra Señora de Agua Santa*, who allegedly performed miracles there] and they're holding a vigil there with a candle. They're holding a vigil with the saint. You're going to die,” is what they say. “That's why you burned yourself. So, you need to pay me five hundred dollars to get rid of that footprint and to put out that candle.” And the poor guy says “*Pucha!* I'm going to die!” And so he pays the five hundred dollars. And – I've

seen this before – the guy here who’s doing this, he has a cell phone. Today this is all much easier, because they have cell phones. The shaman asks the man’s name, his birthdate, and all of that. And they tell all of this to the people in Baños, and then the shaman goes there to get rid of the “footprint.” And the name and everything is already there! The name is in a book [in the church]. And then the sick person also goes there, and he finds the name in the book already there, along with the footprint and the candle. It’s just lies – just communication between thieves. *They* wrote in the book. And they gathered up dirt in Baños, stepped on it, and put it with the candle. Just to mess with people. It’s very, very shady.

But then later, the sick man comes to me. And I say, “sir, this not witchcraft, this is a lack of calcium,” or “this is rheumatism; we’re going to give you an injection.” And I go and get the vitamins, called “Benutrex,” and I inject him in the buttock. And guess what – no more pain! And it costs twelve, thirteen dollars for a “Benutrex.” But the shaman, he’s stolen five hundred dollars from him, and I’ve cured him for thirteen bucks. See? Look at the difference! That’s why I don’t believe in shamans. I don’t believe in them, and I don’t value them. Sure, there are shamans who know a little about plants – they gather them, put people on diets. And with that, some of them do cure people. But a lot of them are just liars. And I tell them, “look, please just don’t lie to people. If they have a sickness that comes from God – gastritis, an ulcer, gallstones, pancreatitis, that kind of thing, those sicknesses should be cured in a hospital, or with medicines.” I want them to think that way – more seriously, more frankly. Just for nothing they blame people, and say “your colleague has done witchcraft on you. Your neighbor has done witchcraft on you. Your co-parent has done witchcraft on you.” Lies! And then the neighbors fight, they’re made to fight, until sometimes they kill each other. Terrible. I don’t like it.

As is evident here, Medicio has a very pragmatic and skeptical view of those things he deems to be outside the purview of what he sees as progressive science. He seems to have picked and chosen those elements of what he considers “traditional” to be useful based on what he sees as visual and experiential evidence, overlaying a veneer of pragmatic scientism on top of the medical practices he performs. It’s not inconsistent, then, that he would continue to perform ritual “cleanings” on people for sicknesses like *mal aire* and *espanto*, because he has seen the symptoms, and the cures, with his own eyes. When I asked him to tell me about *espanto*, for example, he had ready a specific list of symptoms: “This happens mostly to children but also to adults who have a predilection to nervousness. They won’t eat, they’re always tired, they have night terrors, they’re always crying, always sweating, always jumpy and frightened, they get

very skinny, and they have diarrhea. The worst cases are when people fall into the river, but it happens when people fall in general, or when they see a snake. People can remain *espantados* [e.g., afflicted by *espanto*] until it kills them.”

One way in which people in Sacha Loma have redefined culture-bound syndromes is *in terms of* biomedical treatment. Under this logic, the very definition of something like *mal aire* or *espanto* is a condition which biomedicine cannot cure with its medicines. Thus, while Medicio is very clear that most medical conditions have a physical basis and should be treated as such, it is simultaneously true that some conditions that Sacha Lomans contract have ultimate causes that extend beyond this physical basis. The person who put this most clearly to me was Segundo, also introduced in Chapter 1. He told me the following about the condition *mal aire*:

Sometimes a child or an adult feels bad and they're brought to the hospital, and they [e.g., doctors] don't detect anything. The person feels nauseated but they can't find a reason, or they go to the clinic and they don't have diarrhea, nothing like that, just a malaise [Spanish: *malestar*], and nothing else. But they go there, and if there's no cure in the hospital, or with what they're given in the clinic, it's clear they can't cure the problem. So they go where someone knows about these things, to a *curandero*. And he cleans the person with a leaf, with *mal aire panka*, the *curandero* rubs the person with menthol, or tobacco, or ginger, and with the scent, he makes it go away. The person needs to go on a special diet, too, for two or three days – they should not be fed rice, or eggs that come from the city. Local eggs, though, yes. Also local chicken, because it's natural, without chemicals, anything like that. Everything that comes from the city is full of chemicals. What is ours, though [e.g., comes locally from Kichwa people], is natural. If doesn't affect the person. For example, if a child has diarrhea and you give him or her food from the city, the symptoms go away, but they come back just as quickly. It's a double-complication.

Segundo, in some ways, takes Medicio's convictions to their logical extreme: there is an absolute acceptance of the efficacy, and perhaps even primacy, of biomedical practice. However, there is simultaneously absolute conviction about the exceptionalism that comes with being a person “of” the place, and the necessity of keeping at bay the creeping negative aspects of modernization from local people, lest they cause “sickness.” In addition, this idea of “purity” is conflated with

ideas about the “cleansing” power of local foods like eggs and chicken (even though these themselves are imports), as well as the efficacy of local plants at cleaning out the “corruption” of this urban influence on the area. Finally, this is also an example of a discourse I heard over and over when people talked about how Sacha Loma, and forest life in general, is different from the city: it is “natural,” while urban areas are “dirty and full of chemicals” (also see Chapter 6). While people are generally ambivalent about the city since they also see it as a dynamic place, and the seat of the progressive future, they are unequivocal about why it’s “good” to live in the forest where they do: it is “quiet” and “tranquil,” they can “breathe,” and it is “clean.” In the above quote, then, I see Segundo struggling with the reconciliation of large-scale binaries: “rural-urban,” “clean-corrupted,” “natural-chemical,” and “biomedicine-shamanism.”

As a corollary to Medicio’s negative predilection toward shamanism were his views on the ingestion of *ayawaska*, a hallucinogenic mixture of two plants that are boiled together and perhaps the paradigmatic feature of shamanism in this part of the Amazon Basin. While he agrees that the ingestion of another intoxicating plant, *wanduk*, can be therapeutic (I have heard of the plant, anecdotally, being used to cure drug addiction and alcoholism), he thinks that the specific attributions that shamans make regarding *ayawaska* are untrue. *Ayawaska*, he says, cannot be used to diagnose or cure sickness. According to the shamans who ingest *ayawaska*, it allows one to see the source of the social culpability of the person’s sickness, that is, the person who “sent” the sickness to you (cf. Whitten 1976). Rather, Medicio says that the only use of *ayawaska* is to take it “for sport,” as he has on occasion. Taking it this way can allow the user to see into the future. For example, he told me of a time when an aunt of his was on her deathbed and gave him *ayawaska*. He said he got very languid, like he couldn’t move, and then suddenly began to hear a buzzing noise in his ears, like a boat motor or a fly, but there was nothing there.

This got louder and louder, and eventually he thought he was going to die. He looked over at his son, who was lying in a hammock, and saw that the boy was resplendent with beautiful flowers decorating his body and strewn beneath him. He looked in the boiling pot of *ayawaska* and saw that it was filled with a huge, coiled snake. And he looked at his mother, who was past childbearing age, and saw that she had a baby slung on her back. He asked “Mother, are you there?” She said yes, and he said “why do you have a baby?” She said, “What baby? I don’t have a baby.” This was funny at the time, but later he found out that it was actually a prognostication: less than a year later, another one of his relatives had a baby out of wedlock, and Medicio’s mother decided to raise it. Here again there is a clear simultaneous valuation and devaluation of a very indexically traditional practice, but reinvented on terms that attempt to strip the substance of some of any socio-centric cultural loadings of sickness and health (e.g., Uzendoski 2005b) that go beyond the level of the nuclear family. These are replaced with what he perceives as the “objective” effects of the drug, which include a certain limited degree of personal revelation and prognostication.

Regarding land use, Medicio is very clear that his own practices do not damage the local forest. Rather, he foists a lot of this blame onto the colonists that have entered the region, and explicitly draws and us-them distinction between Kichwa practices and colonist incursions. This may have a lot to do with the troubled history his family and the larger community have had with colonists (see chapter 4), but it is instructive to see the clear delineation:

The colonists continue to destroy the forest because they have much more cattle. That’s really what does it. Totally destroying fifty hectares. *We*, on the other hand, or me, I pretty much just have cacao and coffee. And “other” people here don’t destroy much, just two, three, four hectares, or less. Just two hectares for Kichwa people, and that’s it. ... The [indigenous] people, they say ‘I don’t shoot [animals with my gun], I don’t damage the forest, that’s what we say. But “other” people come in here and they’re hunting. So, that’s destruction – and lots of birds, lots of fish are all in danger of extinction. As time goes on they’re being lost. ... The way to fix it is to bring in

“projects,” like the group of Swiss people coming in and giving cuttings of cacao in little bags to all the people. This will make the people work, to build, and not damage all the birds. . . . The cacao grows up and becomes like a tree. What really destroys things is making pastureland, grass for cows to eat. That’s just for hay, and in those places there’s very little vegetation.

Later, in another interview, Medicio linked these sorts of “destructive” forest practices to larger issues with the climate. We were talking in February, which, he calculated, should be the “beginning of winter,” when it rains quite a bit. I pointed out that the weather had been hot and dry for an extended period, and he said it was because “there are not many trees anymore.” I asked him what the link was, and he said that cutting trees affected how water is taken up and then dispersed in the jungle. This made the pattern of rainfall unpredictable. What is instructive in Medicio’s thinking here is the fact that the terms on which he conceives of forest “destruction,” though clear along Kichwa-colonist lines, do not also oppose “traditionalism” as “sustainable” and “progress” as “unsustainable.” Medicio in no way sees himself as a protector of an untouched forest that is being encroached upon by hooligans. Rather, he sees his own land use practices, as aided by outside groups with global reach, to be more carefully considered and “sustainable” than his majority culture counterparts, and simultaneously as reflecting his command of scientific and capitalistic discourse regarding plants, agriculture, and animals. This, it seems, is the power that being a Kichwa person “of” that place gives him: not the ability live in a pristine symbiosis with the forest, but rather to consider carefully the manner in which the forest should be intensively managed while freely capitalizing on material development and resources offered by external actors and institutions.

Chuy and Modesto

Chuy and Modesto are brothers in their early 20s, members of a family that lives just across the border downriver in Agua Santa on a farm on the south side of the river. Both young

men spent the first part of their lives living on a family farm and, in Modesto's words, "we knew nothing of tourism, we just lived in the jungle." They would routinely go for days *adentro* on hunting trips, and all the meat they ate came in the form of forest animals like monkeys, peccaries, and agouti. Most of the family is now intimately connected to Sacha Loma. Both Chuy and Modesto graduated from the NGO-led boarding school, where they were exposed to ecological entrepreneurship and sustainability that have been the curricular focus of Mr. E, the NGO founder, since the school opened in 2005. During 2010 Chuy was employed as a hospitality worker at the eco lodge in Sacha Loma. Having won a prestigious scholarship, Modesto spent that same year at a small college in Pennsylvania. During 2011-2012 Modesto was first employed as a teacher at the NGO boarding school, and then as a part-time eco lodge guide. Their younger sister, Guliana, attends the equivalent of 9th grade in the community public school, and rides the school canoe upriver each day to attend. Her stated ambition for the future was to go into "computer programming." Their mother, Rosa Maria, works in the community preschool, and their father, Carlos, is known in the region as an *ayawaska* shaman.

I have chosen to profile this family because of the simultaneous and fluid manner in which they have mediated their own sense of "traditionalism" and "progressiveness." Carlos attended Josephine mission boarding schools just upriver in the community of Ahuano when he was young. He was the first person in his family to attend school, and was sent so that he could help his family to negotiate the use of Spanish and the mathematics required to deal with majority culture livestock middlemen. Over the past several years Chuy had been training with his father to become a shaman as well, and his father has also taught him about local plants and plant healing. By 2012 he had backed off of the shamanic training a bit, both because of some negative experiences he had with *ayawaska* (more below), and because he was preoccupied with

his partner, Sofia, who gave birth to their first child in September of 2011. Sofia is from Cruzchikta, and Chuy was living with her and her mother there while he procured the materials to build their own house in Agua Santa. While the main family farm is located there, Carlos's brothers manage a large farm upriver, outside the town of Misahuallí, which the family maintains as a communal gathering place. The extended family also maintains a communal apartment home in Tena, open to anyone in the family. This means that the family seemed, like Medicio with his travels, to have a very fluid quality; Modesto and Chuy and the rest were always staying in a different place, based on their current projects and circumstances. This kind of mobile fluidity was common for families in the region.

Like Medicio, Chuy and Modesto were forever full of ambitious plans for starting businesses in the region and making money. What's more, these plans vacillated between taking advantage of a perceived interest that potential tourists had in local flora and fauna, and being thereby implicitly "environmentalist," and other plans that were more directly exploitative of the environment. There were several successive "plans" they had over the course of the year. For example, Chuy had a nuanced plan to construct a medicinal plant garden on the Agua Santa farm with his father, and then to cut a deal with NGO founder Mr. E to get tourist groups to make it a stop on their tours. He also had a plan to start a chicken farm, and said he planned to raise 1,000 chickens there on corn he would grow himself. Simultaneously, he claimed to have an angle on a job at a large eco lodge downriver from Coca called the Napo Wildlife Center, where he would work in some service capacity such as bartender. As a graduate of the NGO-run school in Sacha Loma, Chuy was for a time substitute teaching at a brand new high school that had just been built in Cruzchikta, and thought he might subsequently be given a more permanent position. When that didn't work out he worked for several months at a tourist hotel in Tena as the all-

around caretaker, and was given a small stand-alone quarters for himself, Sofia, and the baby to live in. However, he left that job after a rift with the owner, a white medical doctor, for what he perceived as over work and under payment, and also accusing the man of being “racist” towards him. By 2012, Chuy was trying to get a job with Petroamazonas, the arm of the state oil company that was developing seismic oil exploration in the region. He wanted to work as a “socializer,” basically as a person who is the first to go into remote communities to win over the landowners and to “educate” them on the “benefits” they would get from allowing the oil company to come in. All of these machinations, however, were subservient to the large family project of turning the family farm in Misahuallí into a tourist attraction. It was Modesto’s specific dream to implement profit-making eco-tourism projects on their family land; he said he had been “woken up” to the promise this kind of enterprise had while attending the NGO boarding school. With the help of Chuy and their uncles, he wanted to make the farm an outdoor adventure destination. The farm had a river with a deep, narrow channel they wanted to use for whitewater kayaking, and they had visions of building places to camp and a bar that would serve freshly blended drinks with fruit from their farm. The business plan was simply to piggyback on the tourist draw that they perceived the nearby town of Misahuallí to be.

I want to use portraits of these two young men as central because despite their rather cosmopolitan exposure and their youth, they were also two of the staunchest Kichwa “traditionalists” that I came across during my field work. In addition, they seemed to find their mixture of traditionalism, capitalism, and environmentalism almost completely unproblematic. For example, while for Medicio the prognostic quality of *ayawaska* was evidence that the shamanic assertions about the cause of illness is wrong, Chuy characterized the gradual assumption of power over *ayawaska* to be the replacement of visions of *one’s future self* for

visions of *others'* futures. He talked about his father's shamanism, and *ayawaska* in particular, in a completely matter-of-fact manner: his dad, as a powerful shaman in charge of the community's health, drinks *ayawaska* as much as the community needs him to, in order to help heal them – sometimes this is several times a week. However, as a novice himself, he was only able to see things about his own life in the visions and how he'll "turn out." But, as he gets older and more powerful he'll gain the ability to see the problems of others, too, and this will mark his transition to being a shaman. Much later, however, as his projects mounted and providing for his family began to take up his time, Chuy said he became "afraid" of drinking *ayawaska*. He had had a bad session in which he had something like an out of body experience, where he was "floating above the ground," and reported it as being so terrifying that he "almost died." His father told him, however, that he simply had to learn from these bad experiences and learn to control his visions. For Chuy, however, he did not see this experience as a sign that he should turn away from the pathway to becoming a shaman; rather it was an acknowledgement of the difficulty and danger of continuing on that path. One had to be completely committed in order to be successful and not harm oneself. With all of the other projects he had, he felt he was unable to carry out the shamanic education with the necessary commitment. For the same reasons, Modesto claimed that he was not interested in becoming a shaman like his father, even though he professed with absolute conviction his belief in the traditions of the Napo. In this way both young men embodied simultaneously a self-professed traditionalism and a progressivist, capitalistic environmentalism.

Some young people in Sacha Loma, however, thought that it was not worth trying to tread this line, and that believing in things like "spirits" was completely contrary to a modern, "progressive" life. For example, I asked 14 year-old Victor, a 9th grader in the community and

Anselmo's youngest son, about his notions regarding two particular Kichwa ideas: first I asked about *supai runa*, which have been described as "spirit persons" that are inherent features of the local landscape; they are also to be communicated with, placated, and used for help and protection by shamans. Swanson describes them as follows: "*supai runa* are similar to the dead in that they once lived openly in this world as humans and then retreated behind the surface appearance of this world. They now inhabit the invisible world behind plants and animals as well as inside mountains, earth, rocks, and oxbow lakes. ...[A]ll *supai*... have a superhuman quality. To see them is unnerving. They are overwhelmingly attractive, mysterious, and terrifying" (2009:60). I also asked Victor about *paju*, which Swanson calls a "spiritual gift" (2009:61); *paju* is normally thought of as a particular "capacity" to perform an important and difficult task, like gardening, hunting, or healing a particular disease. *Paju* can also be transferred from one person to another if the person who possesses the particular *paju* wants to give it away. To do so, the person with *paju* allows the knuckles of their hand to be cracked by the recipient, thereby transferring the "capacity" (cf. Uzendoski 2005b:42). Victor's responses to these inquiries were unequivocally dismissive, with an emphasis on empiricism as the basis of his lack of belief. When I asked him if he believes in *supai*, he said, "No, because I've never seen them. I've heard of them, people say *supai* exist, but don't say where they live." Regarding the definition of *paju*, he said "I don't really know. People say it has something to do with the sound your fingers make, but I have no idea what the significance is." Of course, these quotes do not necessarily reflect the literal knowledge that Victor holds regarding these notions; it's even possible that he wanted to *seem* like he didn't know, for my benefit. He was, after all, one of the teenagers in the community most staunchly focused on his ambitions (he wanted to be a nurse, like his father, or a doctor, he said), and also of impressing outsiders like myself with the kinds of things he

thought I would want to hear. However, this is precisely the point: using guiding principles like empiricism in the presentation of one's beliefs is indexical of a capacity to reinterpret the frame within which certain kinds of knowledge are valued, and portrayed as value-ful to others perceived as valuing other kinds of knowledge (such as tourists and anthropologists).

However, for other young people, the balance of “progressive” and “traditional” aspects of Kichwa being was very different, as it was for Chuy and Modesto. Modesto, for example, talked about *ayawaska* as if it were nothing more than a simple tool which would allow the drinker to see what the “real” world was like. This “real world” is pervaded by spirits in all sorts of places like rocks, swamps, and trees, and whole villages of these spirits exist in places like caves and waterfalls. Spirits in these “villages” can take people away from our everyday earth, and give them powers here if they manage to escape. For example, he told us about a young boy he knew, who went fishing with his brother. Walking home with a *shikra* (woven bag) full of fish, the boy was distracted by a beautiful woman with long hair. He attempted to run but was unable to escape. Finally, the beautiful woman with long hair convinced him to close his eyes, and suddenly he was in the world of the spirits. One year later, he found himself back in the jungle, the fish rotten in his *shikra*, but he returned to his family with a whole new level of knowledge and power. Spirits that populate the forest are tall, white, and beautiful, especially those that would normally appear to be powerful animals like boas. They can be either bad spirits or protective, but one must be careful, as all of these spirits wear broad smiles and are very inviting. These appear as they “really” are under the influence of *ayawaska*, and appear male to female people and female to males. Other kinds of “realities” that can be seen under the influence of *ayawaksa* are that the forest is populated with soldiers and military vehicles like helicopters, and that horses in reality have wings. The most powerful shamans do not even need

ayawaska to see this reality, and can change form at will, into animals like bears, tigers, lions, bats and horses. There are also other kinds of spirits which populate the world and can be seen without the aid of *ayawaska*. These spirits (Spanish: *duendes* or *cucos*) are seen at night and are both malevolent and annoying. They live in trees, can be big or small, are broad-shouldered, are black all over, and have an insistent stare he described as that of “Michael Jackson” in “Thriller” or a *lucha libre* fighter. Looking directly at the face of these spirits causes you to die, though you feel cold just having them nearby, and they molest you by trying to grab your body. If one of these is molesting you while you are sleeping in your bed, the way to get rid of it, his father told him, is to fend it off with your left hand, as the right hand will be tired from having worked all day on the farm with a machete. Modesto himself has had this terrifying experience on several occasions. A final type of spirit is a former person who has died, and become trapped in this world. They are visible but have no substance; your hand goes right through their body (for similar versions of Kichwa spirit cosmology and the relationship of *ayawaska* use to “reality,” cf. Kohn 2002; Swanson 2009; Whitten 1976).

For many people in the community, the “boa,” by which was meant both terrestrial constrictors and the aquatic anaconda, was the paradigmatic manifestation of power, as well as danger, in the forest (cf. Whitten 1976). Chuy, for example, explained that boas will hunt unsuspecting men when they are in the forest alone. The boa, when hunting a person, is able to make the person “dizzy,” and to get lost, always coming back to the same spot in the jungle in a circle as the boa stalks. Eventually the boa catches you, breaks your bones and swallows you. The way to break the boa’s spell is to take a jungle vine, tie yourself to a tree, and then run as fast as you can to break the vine, thus snapping the spell of the boa, who is then unable to have power over you. Another Sacha Loma resident, an 18 year-old young man named Jerardo, the

oldest son of Bartolo, told me a story of being in the forest alone upriver in Guacamayos, when a large snake appeared in front of him. As it began to “sing” to him, with a rising intonation “*kwa kwa kwa kwa*,” and then, “*turas, turas,*” and then “*sssssss,*” he got very tired and scared. He just stood there, asking himself what he was to do. Finally he left and came upon a large path; he hadn’t eaten or anything; he was saying to himself he had “gone crazy back there.” He realized he was way up on a hill and started to go down, getting all scratched up along the way. Finally he heard a shotgun, which he followed and found his whole family in the forest looking for him.

Several people in Sacha Loma expressed variations on a theme that linked the use of hallucinogens with notions of “power” and “wisdom” vis-à-vis the forest, and the ability to physically change form into a powerful animal, either a jaguar or a boa. For Uzendoski (2005b), this manner of conceptual relation to the forest is endemic to the region, and is reflective of a particularly Kichwa understanding of what has been called a pan-Amazonian “perspectival” ontology, which posits a pan-human nature to all living things, underneath an “envelope” of corporeal form (cf. Viveiros de Castro 1998). However, in Sacha Loma this conviction was almost always laced with the corollary that such things were no longer possible, and that there had been a progressive decline in the knowledge, ability, and power that people had regarding them. Perhaps it is a universal tendency for people to project transcendental power onto a mythical past, to assert that only the “ancestors” can perform feats like shape-shifting (cf. Whitten 1976:48 for the claim that “decline” of knowledge is basic to the Canelos Kichwa notion of “mythic time”). However, in Sacha Loma this predilection seemed slightly different, and rather sad: rather than simply pitching themselves as “less powerful” than some mythical “ancestor,” people seemed to think that they had only recently “fallen” from the possibility of this capacity, and that it was due to their orientation away from the forest; it was as if people

were watching this capacity irreversibly peter out in front of them. During a drinking session with Anselmo and Segundo, for example, they agreed with one another that the hallucinogen *wanduk* acted like a “vaccine,” and also conveyed on the user the capacity to turn into a jaguar or boa. In the old days, they said, men in this region “turned themselves into jaguars and went to the forest to bring food like it was nothing” (cf. Uzendoski 2005b:43). Other people brought it closer to home. Guliana, Chuy and Modesto’s younger sister, claimed that she knew of an old couple downriver from Sacha Loma who were also powerful shamans, and were caught in bed together as a pair of boas: someone had gone in to call them to dinner, and had seen two boas in the bed, and no people. On the other hand, she said, actual boas and anacondas could also turn into people. Snakes that live in water were known to come to women who were by the riverbanks in the form of tall, white men. They take these women to “where they live” and teach them all about shamanistic secrets, for they are actually powerful shamans. Sometimes the women return to their communities with special shamanistic powers, such as taking the form of a boa, and sometimes they never come back at all.

For Pepe, who runs the store by the public school in town and had lived there for decades, the devolved capacity to relate to the forest was both personal and empirical. He said that yes, there are still those who can turn into jaguars in the area, but it is *only* old people. He himself cannot, and there are no new people that can do it anymore. In twenty years, he predicts, “it won’t be possible anymore.” This is because kids today, he says, are “weak,” because they do not 1. Put hot pepper in their eyes, 2. Put tobacco water in their noses, or 3. Bathe in the cold river water at midnight. His own grandmother, in fact, slowly became a jaguar at the end of her life. This woman lived into her 90s, and had been a powerful and well respected person when she was younger, a person to whom everyone would listen for her “council.” When she was old,

however, she went to live with Pepe's sister down near Coca. The old woman was senile by then and was almost impossible to manage, dropping lit candles on the floor, spilling wax and burning clothing, even getting to the point where she would soil herself and wipe excrement all over herself and the house. This went on for over two years, by the end of which the sister and her husband were sick of dealing with her. But they said that in the evenings, about 7PM, the old lady's face started to change around the eyes, beginning to look more and more feline. Then they noticed that the neighbor's chickens were disappearing, and it turned out she was breaking into the henhouses and eating chickens raw, though she would deny it vehemently every day. When the old woman finally died they buried her in the local cemetery. A few days later, however, when they went back the grave was empty (his nephew claimed to me that he actually saw this). She had turned into a jaguar and gone off into the forest. Because Pepe had grown up with the grandma, she sought him and his family out at their farm in Sacha Loma. She would come at night, climb up the house, scratch the sand of his *ecuavoley* court, and steal chickens. He hung cooking fat from the *ecuavoley* net and she took it, and also dragged boots and pots into their corn field. They became scared for their oldest son Felipe, who was walking back and forth to the river to school at the time. So Pepe staked out his chicken coop one night with a shotgun; he saw the jaguar but it ran away when he shined his flashlight. He then went to his father, who lived then in Sacha Loma on the banks of the Napo. He was a shaman, Pepe said, and he drank *ayawaska* and saw that the jaguar was in fact the grandma. He then "blew" her away (with a literal blowing motion), and the grandma-jaguar never came back to the farm.

These kinds of stories, while not told commonly in the community, were reflective not just of the fact that the capacities associated with powerful people with a deep relational bond to the forest were inexorably changing, but also of just how woven into the fabric of life shamanic

practice still was in the community for many people. For example, when Pepe's wife, Micaela, was bitten by a spider on her subsistence farm on a nearby river island, she was given an extensive "cleaning" session around the site of the wound with a bouquet of *malaire panká*. She also visited shamans on multiple occasions for a crippling stomach ailment that she said the doctors both in Sacha Loma and Tena could not diagnose. She had ended up paying, she said, over US\$3,000 for these treatments in just one year. However, for most people in the community, different practices associated with "tradition" carried different valences for people, and were deemed "good" or "bad" according to people's individualized reconciliations of perceived "traditional" and "progressive" priorities. Jerardo, for example, was an interesting case of a confidently hybridized view on tradition. For him, however, this internal reconciliation had particularly Christian overtones. The community, he said, had chosen him as a Christian leader, and he was sent several times during the year to study with a Catholic priest, who was also ethnically Kichwa, so that he could come back and "teach" the community. This Christian revitalization Jerardo led was part of the larger plan that Medicio had to shore up morality, productivity, and cooperation in the community. When in the community, Jerardo regularly ran Bible study group in the community church, ringing the church bells to call the young people to worship. This was something unprecedented in the community. Like Medicio, Jerardo was eager to "pick and choose" which aspects of "traditional" Kichwa practice and belief should be kept, and which discarded. Because of his staunch Catholic faith, he was insistent that belief in *supai* was sacrilegious because they were nothing but "devils" (Spanish: *diablos*). However, at the same time he thought there were specific aspects of "traditional" Kichwa practice that should be maintained because they were morally upstanding. He particularly approved of the practice of preparing a big pot of *wayusa* tea on the hearth fire, which is shared among the family before

sunrise, during which time the drinkers share narratives of their dreams during the previous night, or experiences in the forest (cf. Kohn 2002). He says of this tradition that “we’ve almost forgotten it.” For Jerardo, however, saving the practice of early morning *wayusa* is something akin to reestablishing a morality and a standard of conduct in the community that many people say has let slip over the years. The culprit, both Jerardo and others say, is excessive drinking and spousal abuse. Jerardo thinks this can be overcome, however, by focusing on those aspects of being Kichwa that jibe with a squarely Christian sense of work ethic and sobriety.

Things are never so neat, however. Jerardo on several occasions either wanted to drink with me, or told stories about getting drunk with his friends to the point that “he didn’t even know where he was.” He also, for all of his talk about the evils of believing in *supai*, repeatedly told me stories of seeing them in the community, of communicating and learning from them, and also of drinking *ayawaska* with his father and godmother. With *ayawaska*, he said you see “marvels,” and “who the evil people are, who the people are who hate you, all of that. It’s good to try it, because it makes all the evil leave you. You can see yourself, how you really feel, how you really are, the changes you should make. It makes you drunk; it’s good, it’s really good.”

Similar to Modesto’s story, Jerardo also said that a cousin of his had been taken by “beautiful women” into “holes” that exist in the forest. He also said that the same thing almost happened to him, though at the last second, when he had followed the women were about to “take him deep into the forest,” his father yelled to him and stopped him from going. These were “devils,” and “bad people who just appear.” However, as a novice shaman himself, he said that he needs to go alone and get lost in the forest, to converse with the beautiful women there, and that this will make him a “strong, hard man.” The “boa,” too, as well as other “forest animals”

have the capacity to “teach you everything.” One time, he said, the “Santi Warmi” spirit appeared to him, and “taught me how to see, turned me around.” Of this, experience he said:

They say once that happens to you, you should never tell anyone what you saw, you should guard your secrets. If you tell anyone, when you’re walking “*pah pah*” they take you and punish you. This also happened to me, two times, once when I was upriver with my grandparents, as a child, walking at night with my brother, without a lantern or anything, we heard a sound, some people talking, thought it was just some kids talking, but it was actually the beautiful women. They took us and started talking, like monkeys, they wouldn’t let us pass, they almost killed me. They follow you until they get you, and they punish you, they leave you stunned and can even kill you. ... I have come across spirits twice here in the community. Once in the church, when I was just walking by, I saw something and I said “son of a...! What am I looking at?” [And I saw] a figure all in white. But the *supai* are others. They show up to teach you things, they know a lot. Sometimes they sound like birds in the forest. Sometimes the birds come to sing, but people say they’re really *supai*. Have you ever seen one? They say “*kwa kwa, kwa kwa, turu turu turu.*” When you hear that, you need to be completely awake; if not they’ll eat out your insides while you’re asleep. You’ll wake up in the morning and you’ll have to pee but it will all be just blood.

On the one hand, then, Jerardo expounds an empirically-based notion of Christian purity and motivation. This has, as its corollary, the absolute belief in the efficacy of ideas like biomedicine and “sustainable” farming practices like those taught in the NGO boarding school. On the other hand, he expounds as equally puissant a local world replete with shape-shifting spirits as a source of danger and knowledge for local people.

The simultaneous mediation of local perceptions of “tradition” and “progressiveness” was brought home late in my field work, when one of Modesto and Chuy’s uncles on their mother’s side, a healthy 37 year-old man who was married to one of Medicio’s daughters, died suddenly. This episode brought to the fore the sheer complexity of the many viable explanations on hand for such an occurrence for local people. For example, Nicola, a young mother of two and a daughter of Anselmo, who was also one of the most self-consciously and materially “progressive” people in the community (see Chapter 1), said that there was a debate over whether the cause of the man’s death was “pneumonia” or “witchcraft.” He had complained of a

backache, and then became unable to move from the pain. He was brought to the clinic in Sacha Loma, and the doctors rushed him to the hospital in Tena. He received medications and started to feel better, but then rapidly worsened and died within two days. Nicola's 13 year-old cousin Romeo said he felt the cause of the death was "jealousy," but had no idea on whose part.

Modesto claimed to have been with his uncle at his bedside in the hospital, just he and the man's wife, when he died. His uncle, he said, had never been sick until then, and in fact had been particularly resistant to pain. "He loved *ecuavoley*, and if he twisted his wrist, he kept on playing. If he twisted his ankle, he kept on running. If he had a fever, he kept on working, and it would go away, just like that. This time it was different. The Sickness grabbed him, *pah!* And it didn't let him go." His uncle had a "paralysis of the torso," Modesto said, and was "writhing" from the pain. From there he got a pain in his back, "just like someone shot him there." He had trouble breathing toward the end, and the doctors wanted to put in a breathing tube but were unable to do so. Modesto claimed that before his uncle died he was able to give prognostications for family members' lives. Prior to this, he had had all sorts of tests by the doctors but they "couldn't find anything." For all of these reasons, Modesto said "that's why we think there was more going on." He said, "if it was a normal sickness the doctors would have been able to see what it was, and to cure it." Because they could not, the only possibility was that his uncle was killed by witchcraft, or by "bad shamans." By drinking *ayawaska* and working together, the "good" shamans that his family knew had been able to "see" who it was who was responsible for the "attack" on his uncle. There were three people, specifically, whom their shamans said were directly responsible. Of these three shamans, the family knew one of them personally, and they "see him all the time in Agua Santa," which "pains us greatly." However, these three bad shamans did not act on their own, but only under orders from the jealous person. Modesto said

that the family felt that it wanted “revenge” for what happened, but it would be very bad to go about doing that face to face, or to ask directly for the people to be “eliminated.” Instead, he said “all we can do is have faith in God and in the shamans.” The shamans themselves, he said, would work together to choose the timing of how to target and “eliminate” the people responsible. This could be in a year's time or more.

I relate Modesto's reaction to this episode because it was a moment when the simultaneity of the different frameworks individuals in the community use to make sense of deeply affecting issues like sickness and death came into high relief. However, I would make clear that this was not a case in which a person's traditional “core” shone through a thin veneer of progressive modernity. Rather, Modesto put his sense that sickness could be caused by “jealousy” and “bad shamans” on absolutely equal footing with his sense that sickness could be caused by physical pathogens. This was similarly true for his sense that the forest had qualities that were both physical and trans-physical (see Chapter 6 for more analysis of Modesto's views on the forest in “environmentalist” terms). For all of his assertions that the “real” nature of the forest went beyond the limits of visible, corporeal reality, he was equally clear that the “ecosystemic” function of trees was equally valid. For example, when asked about the effects of oil exploration in the region, Modesto used clear scientific, conservationist logic. When the companies come, he said, it will be up to local people to “keep planting trees” where the companies have been, and “not to cut any more trees down.” This is because forest is resilient, and it will take up the “contamination” inside of it, and it will send it back to the atmosphere, and it will come down as rain, and it will water the tree, and this process will happen over and over. Over time, the forest will get clean again. This logic is shot through with ideals of “stewardship” over the land by those who truly care for it. For Modesto, the realization that the physicality of

the forest ecosystem is fundamentally precarious implies that it is up to him to educate others. It also implies certain capitalistic uses for the forest, such as tourism, over others. This is why he was pushing his family so hard to turn the farm in Misahuallí into a tourist destination.

Interestingly, the link that Modesto makes between scientific reality and stewardship of the land also provides an argument against the creeping allure of urban living. By getting his family to agree to building a tourist attraction, he said, he successfully stemmed the cutting and selling of trees on his uncles' land. A few years before, when his grandparents had first broken up their land and given it to the children, there was a period where the uncles were cutting and selling trees, he claimed, several times a week. This was in order to get a jump on their material advancement. But with his efforts he wants to get them away from just saying "I like TV, I like cars, I like buses," and to incentivize them to stay put, to keep working their land. He thus makes a series of clear links between the corporeal reality of the local "ecosystem," the need for "stewardship," the bond between "stewardship" and "conservation," and entrepreneurial advancement. This logic functions unproblematically in parallel with the simultaneous reality that the forest is not the forest we see, and the sickness and death of which we posit a physical cause is anything but.

My point in this section is simply to state that, like anywhere, people have multiple, and at times divergent and seemingly irreconcilable beliefs about themselves, the world, and about causation within it. Further, talking about these beliefs, and about causation, is loaded with the baggage of expectations about what people want, what they think they "should" want, and what they think others think they should want. All of this is brought to bear in a story about shape-shifting told to an inquiring anthropologist, or in a 14 year-old's denial of the reality of "traditional" beliefs. Therefore, talking about "what people think" in Sacha Loma, or even "how

beliefs are changing” there is tantamount to impossible if we assume them to be monolithic. An appreciation that this is a fact in a place that might be seen, naively, as “ethnically homogeneous” is vital both to my substantive and methodological claim in this project. This is why it’s important not to state such beliefs as blanket “truths” that people hold, but rather to show something of the contingent diversity between people who are both neighbors and relatives of one-another. In terms of substance, Sacha Loma is a place where to focus on the squarely “traditional” aspects of ontology and relationality would be disingenuous, for the people who live there are struggling equally with their perceptions of what a “modern, progressive” citizen looks like as they are living out some version of a “traditional” Amazonian life. This bargain is as much structural as it is conceptual, as we’ll see in Chapter 4. However, in terms of discourse and rhetoric, the new way of being has a particular flavor here, steeped in a positivistic scientism whose logical conclusion is a human-nonhuman dualism and a valuation of entrepreneurial environmentalism (Chapter 6). We have seen intimations of this above. In terms of methods, this section has brought to the fore the absolute necessity of looking at understandings from a *distributional* standpoint, that is, from the starting point of diversity rather than similarity. Rather than assuming homogeneity and seeing disagreement as noise, we assume patterned diversity to be the very object of study.

Chapter 3: Knowledge, Reasoning, and Education

Studying Evolving Relationships to the Forest in the Upper Napo

The relationship between nature and humanity has been a central concern of anthropology since its inception. Moreover trees, as Rival and Bloch remind us, in a Lévi-Straussian vein, are “good to think with” (Bloch 1998; Rival 1998). As such, trees function as polyvalent symbols for ritual transformation, collective history, and the nature of the social being. For the Waorani of the Ecuadorian Amazon, Rival (Rival 2002b) has characterized the forest as fundamentally social, in the sense that its “natural abundance” is the result of the actions of deceased ancestors on the landscape. This is in contradistinction to other Amazonian groups that see environmental and social productivity to be a function of one’s “work” within the landscape (e.g., Griffiths 2001). This conceptualization is closer to that of the Napo Kichwa, for whom I explore evolutions in the conceptualization of “work” in Chapter 4. What I would suggest by way of the rest of this project, is that tree “symbolism” in the sense in which Rival and Bloch understand it, is not negated but rather actively and constructively renegotiated when it runs up against the discourses of global modernity, including conservationism (Fairhead and Leach 1998). For young residents of Sacha Loma, the polyvalence of the entity understood as the “forest” is changing as their own aspirations change, along with experience with and in relation to the forest. Such evolutions of discourses on the nature of trees have been shown ethnographically. Mauzé (1998), for example, sees changes in the discourse on trees for Native peoples of the Pacific North-West as a move outward from an internal discourse rooted in experience, to a public discourse targeted at the majority culture that is fundamentally political.

In the rest of this project I attempt to unpack one focused aspect of cultural change in Sacha Loma, that is, the evolving relationship that it has as a small, isolated, but rapidly

modernizing indigenous Kichwa community to the local forest. That local life is an ongoing negotiation with structural modernization that leads to “vernacular” results is, I hope, evident from Chapters 1 and 2. Local notions of “modernity,” however, cohere around its concrete manifestations: the recent establishment of high school-level education in a state-run school, the eco-lodge adjacent to the community, increased travel to nearby urban centers enabled by motorized canoe and an ever-expanding network of roads, and the ever-increasing global connectivity through phone, television, and computer. Each of these function as a locus around which people productively cobble together novel sorts of aspirational frames and understandings. The research objective in this context was to ask whether it would be possible to generate a processual account of cultural change related to the local forest in terms of related knowledge, practice, inference, and valuation (see Chapter 1).

While the community is almost entirely indigenous and the focus here is on the effects and understanding related to processes of “modernization,” the object of the study is decidedly *not* to pit a static notion of Kichwa “tradition” and its “loss” against an objectified and homogenous notion of “modernity.” Instead, the object is to tell a ground-up story of how distributions of understandings of the forest are changing, and act as both consequence and cause of structural change. Also, “modernization” in no way implies the wholesale rejection of a Kichwa “model” by young people in favor of a “Western” one. While part of the emphasis in the dissertation is squarely on distributional cognitive aspects of culture (e.g., what people know and think about the forest), I see the methodology as going beyond recent efforts looking at traditional knowledge as “systems,” with its eye toward understanding indigenous approaches to environmental management or toward making policy recommendations incorporating such management (e.g., Berkes 1999; Hames and Vickers 1983; Menzies 2006; Posey and Balée

1989). Further, while the idea of knowledge and practice “devolution” plays a role in ongoing community change in Sacha Loma, the methodological perspective taken is not to document or lament loss of such knowledge (e.g., Nabhan and St. Antoine 1993), but rather to follow the consequences of what has been called “cultural support” (Atran and Medin 2008) for certain forms of ecological knowing in terms of changing epistemological orientations within a community. The project also echoes recent attempts in the anthropology of “traditional ecological knowledge” (TEK) to place the study of ecological knowledge into historical perspective and thereby emphasize that situated knowledge production is a contingent, ongoing process (Heckler 2009; Zent 2013). However, this project attempts to go beyond the documentation of whether local knowledge perseveres, is lost, or hybridizes. In so doing it takes the point of view that knowledge itself helps to form, and is formed by practice, inference, and valuation. The main object of the dissertation is thus to investigate and characterize the lifeworld of young people in the community vis-à-vis that of older people in the community, and to investigate ways in which knowledge, thought, and practice regarding the forest is implicated in the viscerally-lived construction of an evolving pattern of representations.

In order to make a convincing case for the processual aspects of cultural change, this study examines just one aspect of evolving cognition in a modernizing context, namely the relationship to the local forest in terms of folk biological cognition and forest-related practice, in order to attempt a holistic account of forest-related cultural change. To focus on the local relationship to the forest in the service of understanding culture change made sense for practical, theoretical, and methodological reasons. In a practical sense, for a community which has been historically agrarian and is currently experiencing major change, the domain of forest knowledge and practice seemed to be a good candidate if the goal was to measure change. Further, in such a

community the local relationship to the forest should be indexically related to all kinds of value-laden ideals for personal and familial desire. In this way Sacha Loma offered a prime opportunity to integrate the study of folk biological knowledge change into a more encompassing ethnographic account of ongoing change to the community and the region. From a theoretical and methodological standpoint, folk biology has been the focus of a long line of research over several decades, which has been particularly successful in its use of formal methods to examine distributions of knowledge. Recently, as reviewed below, this line of research has pushed at the fringes of the core issue in this dissertation, namely that various factors (occupation, contact with nature, cultural models) affect individual knowledge bases and reasoning patterns about the environment. The dissertation fits squarely into this ongoing line of research and pushes it further by looking at environmental reasoning patterns within a holistic context of change. Folk biological cognition is an example of a domain which includes vast amounts of quantifiable propositional information (individual plant and animal kinds), and as such is a clear candidate for examining the kind of distributional change examined in the dissertation: species names, plant-based skills, plant-animal interactions, and perceived forest expertise (see Chapters 5 and 7). An analysis of the degree of the inter-generational systematicity (both agreement and disagreement) of these distributions allows me to point to evolving intergenerational differences in how local people think about, and conceive of putting to use, the forest that surrounds them.

While the community in which I conducted field work certainly resembles other communities in the region both in terms of ethnicity and the realities of change that local social actors face, I am less concerned here with the overall “representativeness” of the community to the region, and rather more interested in the ways the structural changes specific to the community have affected the ways in which young people think, act, and aspire. As should be

evident from my discussion in Chapter 2 (also see Chapter 4), ethnographers of Kichwa groups in the Ecuadorian Amazon have done an excellent job in describing emic understandings of kinship, cosmology, and ethnic identity (Uzendoski 2005b; Whitten 1976; Whitten 1985; Whitten and Whitten 2008). While some studies of Kichwa communities in the Napo have focused on the relationship to the forest in terms of succession management in swidden contexts (Irvine 1987; Irvine 1989), others have approached the relationship of the Kichwa to their forest not in terms of codified “knowledge,” but as a relational and poetic process of “knowing” (Kohn 2002; Kohn 2005; Kohn 2007; Kohn 2013). While aspects of relational engagement certainly impinge on my project, I am more concerned here with the patterns of thought implied in formal distributions of folk biological cognition and forest-related practice, and how reasoning related to these patterns mediate ongoing processes of structural change. In this way the project is rather less about studying “culture,” and rather more about studying distributed flows of understandings. While the study engages with local perspective on “modernity,” it is certainly not engaged in pitting this against, or as impinging upon, a static notion of “tradition.” Rather, I take a more fluid, historically contingent view that understands the ideas of even the oldest members of the community as embedded in evolving historical and structural contingencies (see Chapter 4; also cf. Medin, et al. 2002).

I attempt to reflect this fluidity in my methodological approach to the project. Beyond pairing formal elicitation techniques with ethnographic methods, the manner in which I approach the analysis of the formal data also reflects this sensibility. Many of these analyses rely on the Cultural Consensus Model (CCM) (Nakao and Romney 1984; Romney 1999; Romney, et al. 1986; Weller 2007). The CCM is a factor-analytic technique that can be used to explore distributions of cultural knowledge, and consists of a principal component analysis conducted

over an inter-informant agreement matrix. While in its originally restricted, “formal” sense the CCM was used as a measure of absolute expertise within a (presumed to be static) cultural domain, this is not the manner in which more recent research has applied the technique (Ross, et al. 2012; Shenton, et al. 2011), nor how I apply it here. Here the CCM is used in an exploratory manner to reflect evolving distributions of knowledge and understanding. Critically, disagreement with the prevailing systematicity, if found, is considered not to be noise but rather potential signal, and thus as cause for further exploration of systematic distributions of understandings. The analysis of systematic understanding above and beyond that found in the CCM can be approached with the technique of residual analysis, wherein the empirical results of the inter-informant agreement matrix are compared to that predicted in the formal model on an *a priori* group basis (cf. Ross 2004). In this way the CCM can be used as a versatile tool for exploring evolving distributions of knowledge and inference linked to cultural change (for more on the CCM see Chapter 5).

Culture & Expertise in the Study of Folk Biology

This dissertation fits into and builds upon a line of research on folk biological cognition that has been developed over the past few decades. This research has self-consciously tried to bridge what it sees as gaps created by the disciplinary assumptions of both anthropology and cognitive psychology (Ross 2004; Ross, et al. 2003). On the one hand, by using cross-cultural comparison it seeks to challenge the assumption within cognitive psychology that patterns derived from Western undergraduate populations can be used as proxies for all of humanity. In doing so it has elucidated cultural relativity in patterns of folk biological cognition (Ross, et al. 2003). At the same time, this research has attempted to go beyond assumptions within psychology that culture can be treated as if it were an independent variable. In order to do this it

has tried to appreciate the anthropological imperative for historically-situated ethnographic description and participant observation to ground the kinds of relativity that it finds in its formal cognitive distributions. On the other hand, this line of research has also attempted to make the case that holistic claims based solely on participant observation maybe insufficient in terms of methodological rigor and reproducibility. This study attempts to take these concerns seriously by presenting a processural account of cultural change in a small community based on its relationship to regional historical/structural contingency, ethnographic description from participant observation of local discourse and practice, and also in terms of patterned folk biological cognition. In this way the dissertation functions as something of a “proof of concept” for the methodology championed in this ongoing line of research. Rather than taking a cross-cultural comparative approach, in this project I use formal cognitive methods and participant-observation to try to infer forest-related intergenerational cultural change.

While this project seeks self-consciously to bring participant-observation techniques from anthropology to the formal study of folk biology, this line of research has already been on a trajectory that has taken it from a more squarely cognitivist point of view to a more cultural and contextual one. Originally, folk biological cognition was brought under the rubric of the “framework theory” in cognitive psychology (e.g., Gelman and Legare 2011; Wellman and Gelman 1992; Wellman and Inagaki 1997). These foundational orientations were conceived as the innate skeleton on which a child’s developmental cognitive trajectory was hung: universal cognitive predispositions which guide individuals’ assumptions about the behavior of entities in particular critical domains during childhood development. The elements of such a theory include “ontological commitments, causal laws, coherence, resistance to counter-evidence, and unobservable or hidden constructs” (Gelman and Legare 2011:381). These frameworks are

hypothesized to exist for artifacts (folk physics), people (folk psychology), and living kinds (folk biology). The degree of universality of these frameworks, and especially that of folk biology, has been questioned; even Wellman and Gelman (1992) put forth a weak version of the argument for a framework theory of biology during development.

Key to the genesis of a line of research focused on the culturally relative aspects of folk biological development was the influential work of Carey (1985), who put forth a hypothesis for a universal model of folk biological development in children that was based on the idea that children coapt an early notion of folk psychology in their attempts to understand biological processes. Using cohorts of elementary school children in the United States, Carey came to the conclusion that the adult model of folk biology is fundamentally dependent on early anthropocentric reasoning. This result has been challenged by subsequent researchers in the field taking a cross-cultural developmental perspective (Atran, et al. 2001; Medin and Atran 2004; Ross, et al. 2003), who have made the case that children in both rural and indigenous contexts have more direct insight into biology from their early direct experience with it, and reason about biology without recourse to the human being as an ideal type. The pattern Carey found, then, may be an artifact of her cohort having been brought up in a post-industrial urban context in which non-human living kinds are not often reasoned about.

In contexts in which people have direct, rich experience with non-human living kinds, others have found systematicity in the manner in which biology is organized cognitively. Prominent here is the work of Berlin (1992), where cross-cultural similarities in the taxonomic organization of living kinds were hypothesized to be related to the inherent appreciation that human beings have for structural similarities across the biological world. This view challenges the more squarely relativist position that assumes that cultures should categorize

idiosyncratically based on environment, type of experience, the structural constraints of language, or symbolic cultural associations (e.g., Descola 1996; Descola 2013). Descola (2013), for his part has, in a classically ethnological vein, built a case for a four part typology that categorizes the relationship between human groups and their environments. These include “naturalism,” wherein shared physical form belies a contingent interiority, “animism,” wherein all living things share a common type of “interiority” but display wide surface-level variation (also cf. Viveiros de Castro 1998), “totemism,” wherein ontological equivalences are made both in terms of interiority and physicality, and “analogism,” which posits radical small-scale difference at the individual level both internally and externally. Conversely, working from the “framework theory” model noted above, other researchers have attributed cross-cultural systematicity in reasoning about biology to a “core psychological module” which guides biological reasoning in universal ways (Atran and Medin 2008; Atran, et al. 2005; Medin and Atran 2004). This conception allows for intracultural variation but only around the edges of this conceptual core.

The degree of relativity in folk biological cognition based on various demographic factors has also become central to this research. Indeed, a big problem in understanding universality in biological cognition is the sheer number of variables that impact what one knows about biology and how one reasons about it: factors such as age, education, literacy, livelihood, language, cosmology, etc. (cf. Medin, et al. 2002). Such considerations make intercultural comparison difficult, given the need to control for all such variables. However, studies have repeatedly shown that people in different places (López, et al. 1997) and with different levels of experience (Atran, et al. 2002; Atran, et al. 1999; Boster and Johnson 1989; Medin, et al. 1997; Proffitt, et al. 2000) exhibit different reasoning strategies in relation to folk biological cognition. This raises

the very real possibility that factors related to both “expertise” and “culture” do impinge on how biological kinds and processes are reasoned about, regardless of the status of folk biology as a universal “core module.” In cognitive psychology, perhaps, the fact that demographic variables are confounded between different groups presents a real challenge to obtaining “clean” data sets that are directly comparable. In this project I take a different approach which embraces differences in expertise, and the causes of differences in expertise, as directly generative of evolving patterns of reasoning in relation to the forest. In short, intra-group differences in knowledge, practice, reasoning, and valuation should be thought of as fundamental to long-term culture change, a point of view enabled by taking a holistic anthropological approach to the study of folk biological cognition.

Importantly related to differences in folk biological knowledge base and reasoning based on type of expertise is the notion of the “devolution” of biological knowledge (Atran 1998; Atran, et al. 2004; López, et al. 1997). The term “devolution” refers here processes to related to structural, experiential, and social factors that lead certain individuals or populations to have impoverished experience with the natural world; this leads people to know less about, and reason differently than, those with levels of interaction with the natural world more in concert with historical norms. The term “devolution” has chiefly been used to describe the lack of knowledge of the natural world among people in globalized, technologically-advanced societies. The hypothesis is that young people in such contexts have less emphasis on acquiring a rich and nuanced understanding of biological processes and species relatedness, and thus adult understandings in such places represent an anomalously impoverished version of biological understanding as a result of this lack of early input. Wolff and colleagues (1999), for example, documented a centuries-long decline in the use of language related to plant species as the

English-speaking world industrialized. American university students have been found to be able to discriminate biological kinds only at the crudest “life form” level (Bailenson, et al. 2002; Coley, et al. 1999). The process of biological knowledge devolution has been linked in the literature to the notion of “cultural support” afforded to interaction with the biological world (Atran and Medin 2008); a lack of such support, either structurally or discursively, should lead to devolutionary patterns in folk biology.

Much of the literature reviewed above makes a “West and the rest” point about biological knowledge expertise, reasoning, and devolution, pitting denizens of majority-culture, industrialized communities against rural, agrarian, and indigenous ones. However, that such differences have systematic effects on biological knowledge and reasoning offers an opportunity to use similar methods on an intra-culture and even intra-community level to elucidate processes of change. Studies like the Ross (2002a) work and the Shenton and colleagues (Shenton, et al. 2011) in Mexico, as reviewed in Chapter 2, suggest that practice, biological knowledge, and structural modernization may be importantly related to one-another on a local level. However, while this linkage might make intuitive sense it is not a properly causal account, as it lacks an analysis of the mediating factors of contextual motivation and reasoning, which may be most important in terms of understanding the long term formation and maintenance of new cultural forms.

A line of research related to that reviewed above has recently attempted to bring cultural understandings into contingent relationship with biological knowledge. This work has gone beyond thinking about biological reasoning in terms of knowledge base (that is, expertise), and has shown that more general-purpose, culturally based cognitive predispositions have the capacity to affect reasoning about environmental knowledge, and also lead people to reason

about the same knowledge differently (Medin, et al. 2006a; Medin, et al. 2006b; Ross, et al. 2007). In these papers the authors show how the predispositions of experts who come from different cultures but utilize a shared resource base can lead to negative stereotyping and conflict over resource use. These predispositions the literature variously labels “cultural framework theories,” “epistemological orientations,” or “epistemological frameworks,” and are hypothesized to “provide individuals with skeletal principles for meaning making, including beliefs about what sorts of things are relevant, worthy of attention and in need of explanation” (Bang, et al. 2007:13868). The term “epistemological” is meant intentionally to invoke the idea that the basis referred to as a “framework” here is *generative* of new inferences, and guides reasoning in novel situations. The notion of “knowledge” here should not (solely) be looked at as a stockpile of predetermined facts, but rather as a basis on which new sorts of understanding can be produced. The notion of the “epistemological framework” is foundational to this project in that it provides a relativistic way of thinking about folk biological cognition that is not based in an abstract typology of cultural-symbolic forms (e.g., Descola 1996; Descola 2013). Rather, it is based on distribution of knowledge, practice, and motivated reasoning which are conceived as evolving dynamically over generational time.

Bang and colleagues (2007) have shown that cultural differences in reasoning patterns linked to the natural world may be related to differences in epistemological frameworks. Following up on the results from a previous paper in which other members of the research team documented reasoning differences in the domain of freshwater fish interactions between native Menominee and majority culture fish experts in Wisconsin (Medin, et al. 2006a), the researchers found that reliable differences in values associated with the natural world mapped onto these groups as well. Menominee adults had previously shown a propensity to reason ecologically

about fish species (that is, as a function similar habitat), while majority culture adults had shown a propensity to reason taxonomically (that is, in terms of evolutionary relatedness). Here, while all adults showed “concern for” nature, Menominee adults showed a further propensity to hold values consistent with being “a part of” nature (that is, spiritual, holistic, and traditional with respect to nature), while majority culture adults showed a propensity to hold values consistent with being “apart from” nature (including a model of abstract “protection for” nature). The authors conclude that these orientations frame biological knowledge and affect reasoning within this domain. In a second experiment the authors also linked epistemological orientations to practice. In addition to being psychologically “closer” to nature, Menominee were significantly more likely to report engaging in activities in which nature is “fore-grounded” (hiking, berry picking, fishing) than majority culture individuals, who were more likely to report engaging in activities in which nature is “back-grounded” (laundry, sports, dirt biking).

While the above study linked biological knowledge content and structure to cross-cultural contextual factors, Waxman and colleagues (2007) showed that epistemological orientations are directly related to reasoning. Employing a task known as an “adoption paradigm,” which demands that participants reason causally about biological inheritance, the authors extended evidence from Brazil (Sousa, et al. 2002) showing that children there are willing to accept blood transfusion as a plausible “essence placeholder” (cf. Medin and Ortony 1989) for the transmission of biological kinhood. Waxman and colleagues compared three majority-culture communities to a community of indigenous Menominee adults and children in rural Wisconsin. The task specifically demanded that participants make judgments as to whether an animal in a hypothetical trans-species adoption scenario retains the kinhood of its biological or adoptive parents under certain conditions. All communities showed a reliable progression over the

lifespan in which the transmission of physical properties is increasingly seen as attributable to the biological parent as participants increase in age, an effect seen in other related studies (Atran, et al. 2001; Ross, et al. 2003; Sousa, et al. 2002). However, when presented with a scenario in which a sick adoptive baby animal is given a complete blood transfusion with blood from its adoptive parent of a different kind, young Menominee are selectively more likely to assert that the young animal will assume the kindhood of its adoptive parent as an adult. The authors claim that this selective effect is due to the widespread circulation of the idea of the “blood quantum” within the Menominee community. The discourse surrounding this idea associates the degree of “blood” one possesses with ethnic kindhood as Menominee. The widespread use of the idea even extends to specific patterns of nature-related practice, because those with enough “blood” to rate membership within the ethnic Menominee community are allowed a longer hunting and fishing season and higher catch limits on tribal lands. The authors claim that children seize on this notion and incorporate it into their causal biological reasoning. In this manner discursive and practice-based cultural support can be said to guide causal reasoning in culturally-specific ways.

That changes to generative epistemological frameworks is a key mediating term in the process of culture change is highlighted in studies that fail to find a direct link between superficial structural change to a community and models of knowledge and reasoning. For example, Zarger and Stepp (2004) conducted a restudy of a “plant trail” task in the Tzeltal-Maya speaking municipality of Ma’hosik, Tenejapa, Mexico, originally been conducted by Stross (1970; 1973). Here, children were asked to identify living exemplars of local plants. While Mahosik’ had undergone significant shifts in mobility (paved roads, trucks), population levels (from about 300 in 1968 to about 1,500 in 1999), and healthcare access (via a local governmental

health clinic) in the decades since the original study, the authors claim that plant identification rates among children were similar to, and in some cases higher than, they had been in the original study. Significantly, however, the authors observe that while there has been ecological degradation in the region surrounding the community, children's day-to-day practices in the environment have not shifted remarkably. Children still spent a significant amount of time farming and in the forest, and learned much of what they know about the biophysical environment from a small local network of people.

In another restudy, Ross and colleagues (2012) examined models of folk medical knowledge in the Tarascan-Purépecha community of Pichátaro, Mexico. The study built on a series of papers and monographs published over several decades by Young and Garro (Garro 1986; Young 1978; Young 1980; Young and Garro 1982; Young and Garro 1994), which concerned folk medical models and medical decision making in the community. Ross and colleagues found that despite a marked increase in the availability and use of Western-style biomedicine among members of the community, the model structure and content had remained remarkably consistent over the thirty years between the original study and the restudy. Both community experts and non-experts agreed more with one another on disease etiologies, symptoms, and treatments than with biomedical professionals, who held a significantly different model. In fact, the current pattern in Pichátaro, in which people readily utilize biomedical facilities but this fact does not impinge upon the content and structure of their folk medical models is the same as what Young and Garro (1982) found for the nearby community of Uricho, which had early access to a local medical clinic. The authors attribute the lack of change to the fact that hypervaluation of the efficacy of biomedical interventions preexisted the introduction of access to such care. Thus the introduction of biomedicine did not significantly alter the

conceptual landscape of folk medical knowledge. In these two restudies we see illustrated that “modernizing” structural forces cannot be said to be linked in a direct or inevitable manner to properly “epistemological” change, and that such structural change is related to changes in knowledge, its valuation, and behavior only in complex ways. What may be most important when talking about “epistemological” change may be an understanding of the conditions under which young people learn.

Cepek (2011) has shown that long term changes to habitual practice that do not reorient fundamentally the manner in which people learn also do not result in changes to knowledge, knowledge frameworks, or valuation. Cepek’s work focuses on the Cofán, a group located in Eastern Ecuador to the north of the Napo. Here he explicitly interrogates the idea that new forms of practice have led to fundamental changes in Cofán valuation of the local forest. In Zábalo, a large subset of residents underwent a fundamental change in environmental practice in 1999 when an NGO related to the Field museum in Chicago began intensive pro-conservation work in the town, which included recruiting local residents as workers and exposing all residents to American environmentalists and the technocratic standardization of environmentalist discourse and digital equipment. Despite this intense relationship with environmentalist discourse and practice, however, Cepek maintains that residents of Zábalo have *not* undergone a concomitant shift in environmentalist consciousness. Instead, residents working with the American NGO experience their work as a form of “alienated labor” (2011:502), wherein the regulatory and textualizing practices of walking along artificially-cut straight lines in the forest and counting the frequency of species with a western numbering system do not translate into subjective agreement or assent with the underlying assumptions of environmentalist understanding, discourse, or practice. Rather, Cofán people maintain a position in which their work with the NGO is

perceived as “external and potentially antagonistic” (2011:509). Cepek does claim, however, that local Cofán have shifted their understanding of the environment in terms of resource limitations, but through the more readily-intelligible medium of “culture- and context-bound discussions about shifting environmental conditions” (2011:508). These discussions are a reflection of a self-imposed system of “prohibitions” (*se’pi’cho*) which residents put in place in response to prior encroachments onto their land; the rules of this system, in turn, “derive much of their force from their articulation with long-standing elements of Cofán culture and social structure” (2011:506).

While in this case Cepek claims that changes to practice in isolated indigenous communities consistent with Western-style environmentalism are not internalized, valued, understood, interpreted, or willfully acted upon, this may in fact be the exception that proves the rule. Cepek’s claim is that structural changes causing changes in patterns of practice, *per se*, cannot be said necessarily to reflect changes in understandings, valuations, or reasoning more generally. In making this argument, Cepek calls into question Foucauldian readings of environmentalism in terms of their relationship to “governmentality” (e.g., Agrawal 2005a; Agrawal 2005b; Luke 1999), by claiming that it is insufficient to assume that *because* structural change consistent with Western codifications of the natural world has taken place that understandings and reasoning must also have changed. In short, Cepek claims that cultural understanding is more than just action, it is *meaningful* action. Rather than take Cepek’s point to mean that changes in practice *cannot* lead to changes in the valuation of certain knowledge, I take it to mean that practice and knowledge are interrelated only in interestingly complex ways, and must be approached from the empirical standpoint of understanding shifting learning environments and their consequences.

While the studies discussed in last paragraphs do not ultimately find significant epistemological change, they are notable in that they attempt to examine intra-cultural change longitudinally. Another recent restudy (Le Guen, et al. 2013) provides suggestive evidence that longitudinal structural changes to a community and regional context do in fact lead to biological knowledge devolution. The restudy built on a series of papers that had previously examined intercultural models of forest knowledge and valuation in the Petén forest of Guatemala (Atran, et al. 2002; Atran, et al. 1999). These papers showed that Itza' Maya indigenous to the forest for centuries held a model of the forest rich in both propositional content and cosmological conceptual support based on a notion of protective forest spirits (*arux*), which was also associated with sustainable forest management. This was in contradistinction to both Ladino and Q'eqchi' immigrant groups, which held impoverished models and did not understand the forest as an entity with "moral standing" (Le Guen, et al. 2013:781). In the restudy, the authors show that for younger Itza', structural changes to the community are associated with a lack of distributional coherence in the mental model of the forest found in the original study. Asked to rank order the importance of local plant species for themselves, for God, and for forest spirits (*arux*), young people did not display a shared model, while older people did show consensus (as measured by the cultural consensus model). Younger Itza' also showed a propensity to hold economically utilitarian values of the forest, for example ranking mahogany, a species sold for cash, high in their personal rankings while older Itza' ranked copal, a species used in religious rituals, more highly. At the same time, younger Itza' showed a lack of awareness of the specificity of the perceived interactions *arux* spirits have with particular plants, for example allspice and water vines. The same consensus pattern was also observed in a plant-animal species interaction task, where younger Itza' showed lower competence scores and a lack of

consensus overall. These changes in model coherence coincide with drastic regional structural change that the authors note, including language loss, sharp population increase through immigrant migration, a move from Maya religion to evangelical Christianity, road building and paving, reduced access to land because of titling requirements, and a rise in regional eco-tourism and drug trafficking.

This study is strongly suggestive that under conditions of drastic structural change there can be both propositional and epistemological consequences for folk biological knowledge. However, the study does seem to treat “devolution” as an end in itself: while older people hold a coherent and internally consistent view of nature and the place of humans within it, younger people seem to hold idiosyncratic models which might not be said to be “cultural” at all. Instead, it may be more productive to think of culture as inherently generative of new knowledge and constantly evolving in terms of motivated interest. To say that a cultural “model” is “epistemological” is to say that it is inherently non-static, and is thus not an all-or-nothing proposition: new propositional knowledge and new values are constantly impinging on how groups of people think about, and live, their worlds. Conceived this way, one cannot be said to “hold” an “Itza’ model” of nature (cf. Medin, et al. 2002). Instead, the relative degree of systematicity in the distribution of ideas about, for example, the *arux*, should be treated as an empirical object in a constantly-evolving system of motivated reasoning. This leads to a natural change in the question under consideration: rather than “how have young people lost what their parents had in terms of understanding?” we might ask “how is the motivated reasoning of young people constrained and guided in new ways?” While knowing less about the natural world (shorthand as “devolution”) is certainly operative here, it should not be considered a “fall” from rich and nuanced to impoverished and flat, but rather as a reorientation toward different

sorts of motivations. As discussed in Chapter 1, I see the formation and maintenance of cultural forms to be immanent in the recursive relationship between knowledge, its valuation, and habitual practice. As such, I examine cultural change not simply from the perspective of “epistemological frameworks,” but rather from what one might call “epistemological practice.” I define this as the generative synthesis between knowing and doing that guides motivated reasoning. When this is systematically distributed across a group, we might venture to call this “cultural.” When we see systematic deviations, we might call it “cultural change.”

Recently, Wyndham’s (2004) work with the Rarámuri in Chihuahua, Mexico has made an attempt at examining biological knowledge from a self-consciously distributional perspective. Her work is specifically helpful in that she focuses on the process of plant knowledge and skill acquisition during childhood. While Wyndham does find interesting differences between certain demographic populations (including attendance in a formal school), her ethnographic portrayal reveals the relationship of young Rarámuri to formal schooling to be particularly fluid in relation to that in Amazonian Ecuador. She describes a context in which the relationship to schooling has not changed much in intensity over several centuries, and where youth autonomy is so valued that the decision of whether to attend school at all is left up to the young person him or herself. In addition, the population is currently still dispersed on land that individual families cultivate, and so even the act of getting to school still involves engagement with the surrounding environment. Young people still spend significant time in the environment playing and performing chores (Shenton, et al. 2011; Zarger and Stepp 2004). Wyndham does find that there are significant differences in both the structure and content of biological knowledge within and between young people: young people agree on a different model of plant knowledge than adults. Second, because young people fell into three distinct schooling groups, she could test both the

quality and quantity of schooling. She found that unschooled children and those who attended a school in which the curriculum was guided by Rarámuri parents had higher knowledge and plant use coefficients than those who attended a school with a Mestizo curriculum. However, these effects were small, each accounting for less than 20% of the variance in answers. This may reflect the ethnographic context, which may be providing active cultural support for historical patterns of biological knowledge acquisition. Conversely, the major aim of this dissertation is to study knowledge change through ongoing revaluations of such knowledge in the context of changing practice, that is, in motivated learning, reasoning, and behavior.

Critiques of the “Frameworks” Framework

The idea that cultural knowledge should be studied directly in the service of understanding environmental relationships has been questioned on both methodological and theoretical grounds. Vayda (2009), for example, questions whether studying culture from a holistic point of view is productive in the service of understanding local environmental relationships. In so doing he provides a very different reading of causation in the process of environmental change, which, it is also claimed, entails its own methodological implications. Vayda takes a squarely pragmatic view on causation, stating that what should be thought of as a “causal history” of an event is contextual and dependent on the kind of information that a researcher wants to know or to convey. In this way he allows for, and even insists on, “latitude” in “what constitutes explanatory information and how much of it is needed” as well as about “the means used in research to obtain this information” (2009:44). What sort of evidence, and indeed what sort of explanation, is called for depends not only on the ethnographic context, but also upon the environmental problems the researcher finds there. Vayda uses this basis to critique, on the one hand, “interpretive” ethnographic approaches which claim (but, in Vayda’s estimation,

never achieve) agnosticism with regards to causation, and focus instead on “meaning” (also cf. D'andrade 1995). On the other hand, Vayda also critiques approaches which privilege either a certain type of analysis in causal explanations, or a certain type of data as particularly relevant to causal explanation. In the first camp he places quantitative social scientists and economists, who tend to rely heavily on statistical models in their causal explanations. In the second camp he places social scientists who stake a claim to the study of particular realms of phenomena, in particular ethnoscientists and political ecologists. All of these approaches, Vayda claims, run the risk of circularity in their causal reasoning. An over-reliance on statistical approaches is circular in the sense that even when using advanced techniques there is the ever-present danger of conflating correlation as causation, and in not controlling sufficiently for confounding variables. Ethnoscientists and political ecologists, on the other hand, run the risk of confirmation bias, that is, of claiming that a type of explanation (say, “mental model” or “political economy”) is causal for a given outcome after previously assigning it a privileged explanatory status.

Because this study makes use of statistical modeling and claims that such models are relevant to cognitive phenomena linked to environmental valuation, Vayda's critiques deserve attention. However, I do not believe Vayda's position on causation is all that different from the one deployed in this study. Vayda's methodological stance focuses on what he calls an “evenemental ecology,” in which environmental problems are approached pragmatically from a standpoint empirically open to many types of causes. These causes include, but are not limited to, knowledge or idea-based explanations, or to statistical summation. However, the sorts of explanation chosen should be contextually relevant to the problem, and the sorts of solutions at hand to solve it. Regarding the study of “indigenous knowledge systems,” Vayda claims that the main issue is that even though they share a “concern” with “economic development and

environmental conservation” (2009:80) they end up attempting to reify knowledge as its own end:

Claims made by anthropologists and others concerning indigenous or local knowledge tend to exaggerate the cultural mystique of so-called knowledge systems and, accordantly, the difficulties associated with rendering local knowledge accessible to outsiders and with ascertaining its utility for initiatives in economic development and environmental conservation. Related to this, researchers have been preoccupied with understanding knowledge per se rather than with understanding what knowledge actually influences human behavior in different situations or contexts and how and why it is so. ...[Our] approach demystifies ideas about local knowledge and makes productive investigations possible without requiring laborious investments in ethnographic fieldwork. ...[O]ur view is that anthropologists can deal more effectively and expeditiously with the matters specified... if they do not commit themselves to so-called holistic studies of necessarily shared or socially or culturally embedded local knowledge. (2009:79-81)

Two observations are in order. First, it seems that Vayda has in mind here a tradition of the study of “traditional ecological knowledge” (TEK) which is particularly concerned with promoting majority-culture recognition of indigenous rights, political sovereignty, and the depth and breadth of “traditional” environmental knowledge (Berkes 1999; Menzies 2006; Sillitoe 1998; Williams and Baines 1993). I see the research, reviewed above, which has sought to elucidate inter- and intra-cultural reasoning in relation to the environment as importantly different from research on TEK, as such. While this research (and the current project) does certainly involve the study of “knowledge,” it does not do so as an end in itself, but as a proxy for reasoning, inference, and valuation. Though this line of research has not been “problem centered” in the sense Vayda asserts as most desirable, it is importantly bound up in issues of environmental degradation and culture change. The fact that the research is not contextually problem-centered does not mean that it has no causal relevance to behavioral or environmental outcomes. Also, there is the ever-present issue of the picking and choosing, on the part of the researcher, as to what is “contextually relevant” to the “problem” in the first place: that is, who is

qualified to make this assessment, and on what grounds? Indeed, it seems odd that the gold-standard method championed here would be one which does not “require[] laborious investments in ethnographic fieldwork.” It seems equally possible that the systematic, ground-up study of the relationship between reasoning patterns and ecological knowledge and how these might be related to structural change on a regional scale would be a boon, even essential, to future problem-centered human-environment research. Vayda’s critique seems suited most specifically to methodologies which cleave to knowledge *per se* as causally expeditious. This dissertation self-consciously situates patterned environmental knowledge within a contextual ethnographic frame in the service of understanding cultural change. As such, it goes beyond a superficial interest in the structure of propositional nature knowledge by appreciating that the relationship between symbolic thought and propositional knowledge, in Albert-Llorca’s words “rests on social practice and at the same time induces social practice” (2003:241).

Vayda also makes the valid point that studies of local knowledge *per se* do not tend to take either disagreement, or lack of knowledge into account as consequential for behavioral or environmental change. This dissertation employs methods that explicitly take this criticism to heart, and shows how systematic lack of knowledge and divergence in reasoning from the majority is a driving force in cognitive, practice-based, and hence cultural change. Knowledge absolutely should not be treated as a self-contained, coherent, cross-generationally transmitted, embedded “system” if we are to use it to explain anything about a changing environmental and structural context. In effect, the goal of the dissertation research was to treat knowledge in the same way Vayda treats behavior, that is, as an open-ended, exploratory starting point for understanding the knowledge-behavior relationship. In addition, Vayda’s insistence on making particular *events*, or observed individual behaviors, the object of study is itself restrictive. A

more comprehensive goal would be to make certain *types* of behavior, or changes in behavior, understandable. In this sense the *global sharedness of ways of thinking about the environment* becomes important to the project of understanding environmental change, that is, the systematic agreement, disagreement, and ignorance of certain knowledge and understanding. These are also in accord with Vayda's insistence on both action and inaction, and knowledge and lack of knowledge, as being vitally important to change. But all of these are systematically related not only to action, but also to relatively perduring, evolving tendencies of thought.

Finally, Vayda's critique of the project of political ecology is worth noting, because this dissertation also tries to consider seriously the effects that structural change, and indirectly state-level policy related to rural development and formal public education has in a small, indigenous community. Noting that political ecology grew out of "certain features of human ecology or ecological anthropology as it was practiced in the 1960s and early 1970s," which he calls an "ecology without politics" (2009:129-131), political ecologists attempted to situate environmental practice and change within the context of state-level hegemonic economic policy and discourse, in order to break the mold of treating the (usually indigenous) "community" as a discreet, autonomous, and self-referential unit. To be fair, this was a criticism concurrently levied against "interpretive" anthropologists, like Geertz (cf. Roseberry 1989). Regarding how this project evolved in political anthropology, Vayda says:

As a general rule, more attention to political influences on human/environment interactions and on environmental change is no doubt a good thing, since such influences are no doubt often important. Many self-styled political ecologists, however, go well beyond asking for or paying more attention to such influences. Problematically, they assert that political influences – especially political influences from the outside, from the so called *wider* political-economic system – are *always* important, arguably more important than anything else, and should accordingly be given priority in research (see, for example, Bryant and Bailey 1997:5-7 on "putting politics first"). This is a prescription for question-begging research, that is, for concentrating on factors assumed in advance to be important and for thus missing both other factors and the complex and

contingent *interactions* of factors whereby environmental changes often are produced.”
(2009:130-131)

The critique levied here, while perhaps more strident than that levied against the cognitivists, is much the same: taking a restrictive focus on causation in many ways predetermines where one finds explanation. While Vayda’s critique could be seen as something of a straw man, in that unicausal explanations are very rarely seen as sufficient even in political ecology, the spirit of the point is well taken. This dissertation attempts to go beyond reifying either political economy on the one hand, or local knowledge on the other, by showing that evolving patterns of practice and thought regarding the local forest are mutually-instantiating reactions to structural and ideological change at the regional level.

Studies of knowledge have also been questioned on theoretical grounds, based on the idea that to study knowledge is essentially to reify a false construct. One of the most vocal critics here has been Ingold (Ingold 2000a; Ingold 2000c; Ingold 2004). Critically, Ingold’s theoretical work also positions him at the nexus of human beings and the environment (conceived broadly as both the physical world and relationships within it). Ingold (2004) claims that anthropologists generally treat “traditional” knowledge as a “substance” that is passed down through the generations and is independent either of individual variation in experience or interpretation. As a response, he asserts that “knowledge” should be considered inseparable from “being,” which is instantiated, and constantly remade, through embodied local practice. Thus he resists the separation, even for analytical purposes, of “mental” aspects of being from physical ones. In asserting the primacy of mental aspects of being as continually in-process, Ingold arrives at a formulation of “learning” that is fundamentally relational:

knowing is not a matter of being in possession of information handed down from the past, but is rather indistinguishable from the life-activity of the organism-person in an environment that has itself been, and continues to be, fashioned through the activities of

predecessors and contemporaries. It follows that knowledge is perpetually generated, rather than applied, in practice. This generative process is tantamount to the growth of the organism as it reaches out, along the lines of its relationships, into its surroundings. (2004:302)

By this logic, Ingold claims that the biological organism is no different from the cultural “person” who is generally thought to be the “carrier” of information; rather person, organism, and environment cannot logically be separated but together are in a perpetual state of “becoming.”

Ingold uses this conceptualization as a jumping-off point to criticize the commonsense notion of indigenous knowledge that has grown out of the tendency to reify the mental part of culture: he calls this “traditional knowledge in a modernist conception” (“MTK”) (2004:307). The consequence of thinking this way is that knowledge is treated like precisely the fungible commodity that Ingold insists that it isn’t. Because MTK is identified as “culture,” it is conceived as “passed down” genealogically, and thus variations in interpretation, or differences in knowledge, are treated either as faults in the copying procedure, or faults in transmission. Also, because MTK conceives of knowledge as nothing more (or less) than information, it does not appreciate that knowledge is intrinsically tied to place. “Place,” in Ingold’s sense, is more than geographical, but includes all of the ramifying contextual factors of biology, topography, and social interaction. As such, knowledge outside of place is completely meaningless. Finally, by reifying knowledge as “traditional,” it artificially locks its content and structure into a sort of stasis, negating the fact that in its perpetual generation, local knowledge is also perpetually evolving-in-context. Local traditional knowledge, says Ingold, is “continually generated and regenerated within the contexts of people’s skilled, practical involvement with significant components of the environment” (2004:307). As such, such knowledge is “not cognitive,” but “lies, rather, in the mutually-constitutive engagement between persons and environment in the ordinary business of life” (2004:307).

The fact that learning is fundamentally situated and continually in-process is a guiding principle for this dissertation. In fact, it would be hard to conceive of knowledge change without this being true. However, conceiving of “knowledge” as a “thing,” for analytical purposes, as this dissertation does, and therefore as fundamentally measurable (or at least inferable), is not the same as reifying knowledge as a fungible, decontextualized construct. Rather than “codifying” knowledge as some sort of “system,” this dissertation seeks to use proxies for ecological knowledge and *ad hoc* ecological reasoning to show that mental aspects of “knowing” are just as intrinsic to the process of “becoming” or “being-in-context” as the aspects of practice that Ingold holds to be fundamentally generative. Further, the fact that reasoning about the environment points to a certain kind of valuation, distributed across local actors, is meant as another non-absolutist proxy for change. The point here is emphatically *not* that “all people of a certain age” think the same way, in fact there is significant room in the analyses the dissertation presents for dissent, variability, and disagreement. Many of the analyses actually *depend* on (distributionally structured) dissent. The analyses are exploratory and descriptive portraits of patterns of response, not *a priori* hypothetical constructions. Finally, I find Ingold’s insistence that local knowledge is “non-cognitive” as problematic less on theoretical grounds than on methodological ones. Ingold likens the process of formation-in-context to a subterranean fungus extending its tendril-like *hyphae* into the surrounding biological context, and as such in some sense *becoming* the environment as much as extending into it (2004:302-306). While I agree with him here that knowledge is constantly negotiated *in situ* and according to multifarious contextual factors, by refusing to reify knowledge as *at all* “cognitive” he essentially strips knowledge itself as having any explanatory force for human action. That is, if we cannot measure knowledge and consider

its implications in the generative process of change, the fact that knowledge is implied in practice remains descriptive and methodologically uninteresting.

Finally, Ingold's conception of knowledge, while in his descriptions relegated to "traditional" indigenous contexts, could easily be applied to postindustrial contexts and contexts of modernizing change. Because "environment" is conceived in its broadest possible sense here, humans could be said *always* to be relationally coming-into-being through practice, regardless of their physical or ideological circumstances. Whether or not this reduces Ingold's claim about being to the level of mundane truism, the "relationships" with "environment" within which humans are "in process" should also logically include structural contexts of power and hegemony. However, Ingold seems not to address this as a logical extension of his theory, but rather seems to see relationality as in opposition to default conceptions held by the apparatus of the State. He suggests that researchers and "lawyers, bureaucrats, and politicians" (2004:306) should use his observations about being-in-context in order to "find a way of talking about tradition that chimes more accurately with local sensibilities, and to reconstruct our theory of 'traditional ecological knowledge' around this" (2004:306-307). This is a far cry from asking what I think is the more pertinent theoretical question, which would be to ask how the preconceptions and assumptions of "lawyers, bureaucrats, and politicians" regarding "tradition" and "ecology" come to form a significant part of local people's "becoming." I contend that it is precisely in the study of knowledge and reasoning that issues of "becoming" are rendered visible to the researcher within contexts of modernization, structural power, and cultural change.

Schooling as a Conduit to Modernizing Epistemological Change

In Sacha Loma, the major site of structuring practice for modernizing change among young indigenous people has been the recent introduction of state-sponsored formal schooling up

to the high school level. In Sacha Loma, it has only been since the mid-1990s that access to anything approaching a comprehensive education has been possible. While the families in the community still maintain cash cropping farms inland from the Napo River and also engage in subsistence farming, since its inception the community school has become the main organizing force within the community. The community school has grown rapidly from a single room on the banks of the Napo to a network of buildings which forms the core of the community geography (see Chapters 1 and 4).

From an anthropological standpoint, the nature of learning in formal school settings should be decoupled from the notion that learning is a strictly mental operation involving the transmission and internalization of abstract knowledge. Theoretically influential here has been Lave and Wenger's (1991) notion of "situated learning." Their contribution was to link the process of "learning" to "participation," thereby relegating knowledge *per se* to an auxiliary role in the process of becoming "expert"; here "expertise" should be defined as the assumption of a role of full social inclusion, constructed through practice. Learning, therefore, is as much about constructing membership within a "community of practice" as it is about propositional knowledge. In this way, Lave and Wenger place their emphasis on the practice-based construction of "skill," but also marry this to the observation that the acquisition of skill is fundamentally *social*, in the sense that skilled expertise represents inclusion into a community of practitioners. Lave and Wenger go on to expand the lay definition of "apprenticeship" to the status of theoretical construct by rendering it the model of "situated learning" par excellence.

"Apprenticeship," conceived broadly as the gradual, social inclusion of a fledgling practitioner to an "expert" status (what Lave and Wenger term "legitimate peripheral participation"), posits that almost all learning is social, active, iterative, and relational. Looked

at in this way, any social and physical environment within which one learns forest knowledge, from active participation in farm work to the structured setting of school, are both forms of forest “apprenticeship.” What is different is simply the particular *form* of “participation” each one demands. Formal schooling, then, is anything *but* the passive transmission of facts: rather, it does nothing less than constitute a fundamentally new manner of constructing truth. Rather than learning about the forest from the perspective of physical, relational engagement, students learn *about* the forest, or about “forests” in general, about “environments,” or “ecosystems,” from the vantage point of the classroom’s interior. New parameters for learning, moreover, do much more than change the content of forest knowledge: in contexts such as eastern Ecuador that are experiencing formal state schooling for the first time, pupils are explicitly taught how to “be” in new ways, in accordance with state-level expectations of aspiration and economic behavior (cf. Rival 2002a). This links young Kichwa individuals, already experiencing unprecedented levels of infrastructural change in the region, directly into an imagined community of wage-earning members of the post-industrial, social-democratic state economy that Ecuador aspires to, and for which education is the stated conduit for inclusion.

In this way, a study of the introduction of formal schooling into a place like Sacha Loma becomes intrinsically a study about power, and, in particular, globalizing power. For Popkewitz (2006), for example, the role of schooling in the modern construction of power takes root through the fact that schooling imposes a certain kind of “reason” on participants, which in turn affects who they both want to be, and seek to become: “A particular ‘fact’ of modernity is that power is exercised less through brute force and more through systems of reason that order and classify what is known and acted on. ... The rules and standards of reason are effects of power that generate principles about who we are and should be; and thus stand not against the real but

are embodied in its productions” (2006:10). Pitched in this way, schooling has the capacity not only to define what is “true,” but also to render tangible and desirable new kinds of realities, like the post-industrial service economy, in which a person might aspire to participate.

For students not already versed for generations in a school-based educational epistemology, and especially indigenous students, the stakes here are particularly high. This is because historical modes of “knowing,” or relating to entities like the forest, or family structure, may be upended by redefining “reason” along Western, Enlightenment ideals. This act, in turn, threatens the taken-for-granted status of historical modes of being as valid:

Reason is a calculated subject and instrument for change itself, as pedagogy is to create the modern self and citizen through ordering children’s reflection and action. The reason of the Enlightenment, however, was not only about the reasonable child/citizen. It embodied a comparative mode that placed human beings along a comparative continuum of values that divided the civilized from those who did not have the capabilities of reason. (2006:12)

In this way, structured school-based practice has the power to reorient the student away from relational forms of knowing, by changing who, and what kind of knowing, should be considered “expert”:

knowledge is not merely there to express the subject’s intent but produces intent and purpose through the rules and standards of reason that generate principles of action. The bifurcated world of theory/experience and ideas/context obscures, divides, and erases traces of how expert knowledge works dialectically in the forming of social relations. (2006:14-15)

Crucially, this reorientation of knowledge and valuation comes about *not* because of the content of the curriculum, but rather precisely because of the mode of knowing that school purports as “truth,” that is, one that “bifurcates” knowledge from doing, being, and relating. In this way, knowledge ceases to be, as Popkewitz says, “social,” and instead becomes universal. This is because school negates the existence of the “dialectical” nature of learning.

However, if we read Lave and Wenger's work back onto this analysis, it is clear that school is, just like any other learning environment, deeply relational. Put simply, school is just relational in a different kind of way, and constructs its version of "apprenticeship" accordingly. In preparing students for participation in the information economy school in Sacha Loma reifies not necessarily knowledge, but rather the mode of acquisition that knowledge should have as a compendium of prefigured, abstract facts (see Chapter 6). This includes knowledge about the forest, which is still there, right outside the grated windows of the school. It also gains authority by asserting that the sociality of this knowledge lies in acquiring it among other peers who are similarly placed into a context, the classroom, that itself is capable only of implying disembodied facts. This artificializing of the learning context and the production of a new (imagined) sociality is, in turn, easily scaled to the level of the nation state, in that it imagines students as fungible reflections of a universal pathway to becoming a successful citizen. As Bloch and colleagues (2006) note:

Current politically based education initiatives are framed by reasoning through which childhood itself is understood as universal— that all children pass through similar stages and learn in similar ways. Thus, the child is understood as having particular characteristics, which curricula are to address in planning his/her education and preparing him/her to participate as a "good," "productive," and "educated" citizen, or community member, in the future. Too often, the values implicit in such concepts as childhood, best practices, education, and democratic citizenship remain unquestioned as they are implemented across the globe in differing cultural, economic, and political contexts. (2006:20-21)

In Bloch and colleagues' eyes, then, schooling becomes a method of quantifying, and thereby rendering legible, the potential citizens under its purview.

The manner in which schooling works to redefine knowledge on new terms for rural, indigenous people has been acknowledged recently in the anthropology of education. Coe (2005), for one, explicitly links the project of state schooling to the project of citizen-making

through the redefinition of what constitutes “valid” knowledge forms in her ethnography of educational practices in modern Ghana. As Coe states:

In general school lessons transform the practical into the theoretical, or students’ experiential, embodied knowledge (of farming and cooking, for instance) into “school knowledge,” into facts that can be memorized and regurgitated on an exam. Schooling is therefore a process of alienating students from what they know as they struggle to articulate their everyday experiences... in the particular forms required by school knowledge. (2005:187)

Here, Coe is mainly concerned with the redefinition of the “traditional” in codified, propositional terms that can be fed back to local people in a manner digestible by the state (also see Scott 1998, and Chapter 6). For example, she points to local festivals which are reduced in school to series of lists of constituent elements and functions, and to the reduction of “culture” to specific, superficial elements like drumming and dancing (see Chapter 5 for an analogous effect of schooling in Sacha Loma).

The revaluation and codification of knowledge through formal schooling has also been seen as having consequences for the formation of indigenous young people in terms consistent with modern citizenship. Writing about the Bolivian Aymara context, Luykx says:

Students (especially “ethnically different” students) are disarticulated from particular social identities and rearticulated to others via their placement within selective discourses. This process of dis/rearticulation is aimed at producing “citizens” – at weakening those bonds of identity which challenge or compete with the nation-state, and creating in their place subjective bonds of self-identification as professionals and *bolivianos*. This process, and the naturalization that accompanies it, are manifestations of ideology, understood as “a practice of representation; a practice to produce a specific articulation, that is, producing specific means and necessitating certain subjects as their supports” (Coward and Ellis 1977:67). (1996:264)

While not explicitly using the term “epistemology,” this quote aptly encapsulates the project implicit within state-sponsored indigenous classrooms. At issue here is essentially the production of the modern person as a fungible entity under the purview of the nation (sensu Anderson 1983). The claim is that the State is an entity that is actively constructed through the

production of the citizen, made similar in all corners of the nation. That school is implied in the formation and maintenance of knowledge in ways that go far beyond the nuts and bolts of the curriculum is well documented in the sociology of education (Levinson, et al. 1996), where this has come to be known as the “hidden curriculum” (Bennett deMarrais and LeCompte 1995; Giroux 1983). This concept places the focus of the “work” schooling does on the individual in terms of the normalizing function of valuing certain routines over others. The focus here is on the actual *structure* of schooling over its content. In short, this gives us a way in toward thinking through how particular epistemologies come to be valued over others within the school setting.

Schooling and the Rearticulation of Forest Knowledge

A corpus of ethnographic case studies from all over the world has now shown that attendance in formal schools is associated with a decrease in local environmental knowledge for indigenous peoples (for a review cf. Zent 2013). In a recent review of the anthropology of environmental learning in childhood, Zarger (2010) leads the call for this sort of research, and links it to processes of modernization and environmental change among Maya populations in Belize (Zarger 2009). Without fully analyzing its implications, Zarger observes that:

In Maya communities in Belize, changing trends in formal schooling, such as mandatory attendance in primary school and more young people pursuing tertiary degrees, are fundamentally impacting how and what children are learning about local landscapes and cultural practices. (Zarger 2010:360)

This leads her into proposing a research program focusing on contexts in which these processes are ongoing: “What do intracultural and intercultural variabilities in knowledge and skills suggest about how social networks and social groups structure learning opportunities during childhood?” and “How does social and cultural change – such as the complex set of relations often glosses as “globalization” – affect what children know about local ecologies?” (2010:360).

If read backwards, key to this call is the gesture toward the understandings that processes implied in “globalization” should have effects on biological knowledge (question 2), and that local formations of social learning should also imply variability in biological knowledge and skills (question 1). The relationship between the “structure of learning opportunities” (read through the lens of “globalization” and instantiated in formal schooling) to ecological knowledge forms one focus of this dissertation. Also equally important, however, is the inverse, that is: how do changes in biological knowledge imply new sorts of understandings about nature, and imply new valuations of certain types of learning over others? What young indigenous people learn about their ecologies is certainly crucial to the fate of local environments, but how that learning is structured, and the valuations it entails, are crucial to a conception of knowledge that appreciates it as dynamically re-embedded into a more general process of knowing.

The idea that citizenship is produced through schooling has also been linked anthropologically to the idea of de-localizing indigenous young people, even those who still live physically in their historical environments. This is chiefly due to the fact that when state-sponsored schools are brought even to small, remote, places, they still exert a tremendous effect in terms of defining expectations and aspirations for people both explicitly, in terms of their stated goals of order and reason, as well as through the reformation of routine community practice. Rival (1992; 1997; 2002a) has written extensively about the “modernizing” effect of formal schooling in the indigenous Ecuadorian Amazon. Rival conducted field work with the Waorani, a small, historically isolationist group whose territory abuts that of the Napo Kichwa. As such, it provides both context and counterpoint to the role that formal schooling has played in Sacha Loma. Rival mentions explicitly that the effect the advent of formal schooling has had on Waorani is to “de-skill” young people vis-à-vis forest knowledge by removing them from

habitual practice within the local environment. The most important factor in the establishment of schools in Waorani territory is to have constructed new “communities of practice” (sensu Lave and Wenger 1991). While curricular material is, for Rival, “by definition de-contextualized” knowledge (Rival 1997:142), much more important in her analysis are the structural requirements imposed by schooling. These include the “creation of village communities whose main characteristics are: sedentarisation and higher population concentration; the development of agriculture; the division between mental and manual work; the introduction of new social categories and family patterns; decreasing contact with the natural environment; and increased communication with the nation’s commercial and administrative centres” (Rival 1997:142). Further, Rival claims that these requirements are curriculum-independent, that is, that they are logical entailments inherent in the assumptions of state-sponsored schooling worldwide. They cannot be significantly altered by teachers or by particular curricular content (above and beyond the requirement that the knowledge taught in schools be “de-contextualized”). For indigenous groups and communities, the new community of practice built through the introduction of schooling comes to be associated by local people as the very embodiment of modernity and, for those groups in the Amazon, “civilization.”

All of the contextual structuring aspects of schooling that Rival points to are present in Sacha Loma. Schooling has reshaped the contexts through which patterns of practice are affected in fundamental ways. While the Waorani have historically been a nomadic, hunter-gatherer group, the Kichwa have long been tied to farming. However, over the last several decades the history of the Ecuadorean state has been to render the Amazonian Kichwa visible to state interests through the codification of space through land measurement, tenure requirements, and attempts at intentional settlement nucleation (Macdonald 1999; Wilson 2008) (see Chapter

4). Given the history of the community, however, the introduction of state schooling has had a very similar effect to that of the Waorani example: that of bringing people into a dense, nucleated settlement context. Where up until the mid-1990s families lived dispersed on their farms, families now live so densely concentrated that one can hear one's neighbors whenever they talk above a normal conversational volume. These changes to settlement patterns have also fundamentally changed agricultural patterns: where before families lived literally surrounded by their agricultural products (both cash-cropped products and subsistence crops), now they live at least an hour's walk from their farms, most of which are located inland from the banks of the Napo. This has had the effect of forcing subsistence to small rented or borrowed plots up and downriver or on the small, shifting islands that form in the river itself. The effects of these changes will be extensively analyzed in Chapter 4.

The usefulness of Rival's work lies in her recognition of the causal function that structural reorientations of habitual practice have on the production of certain kinds of bodily experience. Certainly, both practice and experience are implicated in cultural change. However, where Zarger (Zarger 2010, above) focuses on the consequences of structural change to knowledge per se and misses the mediating terms of inference and valuation in the process of cultural change, Rival focuses on structural change and its effects on habitual practice to the detriment of its effects on knowledge, which are directly implicated in the process of epistemological change. It is certainly true, however, that in Sacha Loma the expectations created by school-related practice have been a necessary condition in the formation of new forms of knowing. The question, however, is whether these new forms of practice have been *sufficient* for such change to have taken place. I claim that they have not. Instead, I claim that such new practices are importantly, and necessarily, related to new forms of epistemological inference.

Thus, a full picture of how the “de-contextualizing” function of school plays out in local, indigenous contexts necessitates a detailed study of the valued knowledge that feeds inference. I contend that changes in the expectations for community-wide habitual practice from the school feed actual changes in patterns of local practice, which in turn create new conditions for the formation and maintenance of knowledge. New knowledge baselines, in turn, are the basis for further inference and valuation (that is, they are epistemological). Inferences are structuring in the sense that they are codifications of a knowledge base – they serve as conclusions to a premise. In this sense, inferences are inherently the basis for valuations. If inferences are value-laden, they are more than models “of” how one understands some aspect of the world; they are models “for” how one should act within it. In this sense, then, knowledge structures practice in the same way that practice structures knowledge. That is, changes in ontology beget changes in epistemology, and vice versa. If this is true, then the study of the structure and content of knowledge bases is a necessary corollary to the insights of practice theory, and is also a necessary prerequisite for understanding how and why structural change begets changes in practice, identity, values, motivations, and aspiration.

Recent research has shown that for young indigenous people, the navigation of multiple epistemologies is inherent to the project of effective science education (Bang and Medin 2010). This is because indigenous communities almost inevitably possess modes of knowing nature which are incompatible with fact-based, textual presentations in a classroom environment. Bang and colleagues (Bang and Medin 2010; Bang, et al. 2007) have shown that for such populations it is essential to appreciate that students have to navigate multiple epistemologies in order to make sense of curricular material in science. While their project is focused on developing curricula for more effective science education in US-based indigenous populations, this

dissertation focuses on the evolution in epistemology that occurs as a result of participation in formal education. Importantly however, this dissertation does not make the uncausal claim that education inevitably runs roughshod over prior epistemological orientations in a wholesale manner; instead the combination of the valuation of new forms knowing, which are reinforced through new patterns of practice imposed by the school calendar encourage the formation and reinterpretation of the epistemology of nature in novel ways.

In Sacha Loma, young people are also facing the challenge of negotiating and making sense of multiple epistemologies, and these implicate the local forest directly (see Chapters 2, 6, and 7). My contention in the dissertation is that how these get interpreted, valued, and acted upon is largely a function of the sustaining practices underlying their maintenance, the valuation of certain knowledge, and forms of knowing, that are implied within the school context. In the next chapter I discuss the formation of this context from a historical and ethnographic perspective, and make the case that structural change to the Upper Napo over at least the past half century have created specific conditions for the indigenous understanding of land, and land use.

Chapter 4: Land, Work, and Inheritance

The Productive Forest and the Forest as a Productive Ideal

In the works that have traced the complicated structural, political, and economic regional history of the Upper Napo River (Macdonald 1999; Muratorio 1991), a large part of their goal has been to demonstrate resilience of a cultural “core” that unites these groups in terms of symbolic practice. Macdonald (1999) argues, for example, that a cohesive notion of Napo Runa “ethnicity” was *only* possible in light of contact with large-scale colonization and capitalistic development of the Upper Amazon, having begun in the first half of the twentieth century and built rapidly since the early 1960s. While he claims that a very notion of “ethnicity” should be thought of as dependent on majority-culture encroachment, the basis for this cohesive group identification is founded, he argues, on a core of epistemological, symbolic, and practice-based commonality that unifies the family-based groups living along the Napo. As he says about recent cultural responses to colonization and development in the region: “[f]rom the standpoint of both structure and function, the epistemology that ordered imagery, and the existential situations that produced the need for order, have continued. In brief, there has been continuity in the way Runa use symbols to create a personal culture amidst radical shifts in political and economic life” (1999:145). For Muratorio (1991) too, the post-colonial history of the Napo Runa is one of “everyday resistance, not as a harmonious integrated whole but as a structure of meanings that allowed the Napo Runa to maintain cultural integrity and prevented their easy cooptation into the dominant economic and cultural order of the time” (1991:5). She goes on, stating that “[t]hese memories and practices are part of an alternative discourse to that of the dominant ethnic group and dominating class, manifested in the various forms of resistance and

affirmation of the Napo Runa identity” (1991:5). Put like this, Napo Runa history is essentially the history of unbroken continuity in the face of existential threat.

I do not mean here to take issue with the contention that shared symbolic expression provides a basis upon which to build group identity, or that group identity can be grounds for subaltern cultural resilience (Uzendoski 2005b, Chapter 6; Whitten, et al. 1997). However, I will claim that a research focus on ethnogenetic group-identification and cultural resilience obviates the detailed study of change. I approach this project from the opposite point of view: rather than asking “what cultural-symbolic ‘core’ has persisted in the face of change?” I ask “what kinds of measurable effects on thinking and acting have precipitated from broad-based structural change?” What I mean to do in what follows is to provide an overview of the structural changes that groups in the Upper Napo have undergone since colonial contact. The purpose of this exercise is to contextualize the kinds of change I see as currently ongoing in the community of Sacha Loma in terms of the aspirations of young people there, and how this reflects upon their understanding of the local forest. The balance of this project closely examines change in reasoning about, and valuation of, the local forest as a sort of intergenerational “snapshot” in time in the current, regionally unprecedented context of access to formal high school education, which has reoriented the locus of attention away from the local forest in terms of motivated behavior. Coupled with an attendant assumption that people are educated in order to gain access to the local governmental bureaucracy or burgeoning regional service sector, this shift in mundane practice has linked young people to ongoing processes of regional urbanization and an increase in the relative ease of mobility to regional urban centers and beyond.

The major claim in this section is that while these changes may be unprecedented in scope and structure, they are definitely *not* simply a move away from a static “traditional” Napo

Runa identity to a modern (perhaps impoverished) “assimilated” and “generic” one (Taylor 1999). Rather, the structural realities in the region have changed drastically over the past several centuries and have necessitated continual inter-generational creativity and adaptation in local understandings, which have no doubt been incorporated into Napo Runa thought and action. As such, my intergenerational comparison is actually a measurement of the shift in local reactions to one set of structural realities from the middle of the 20th century onward to those occurring today. The history of Sacha Loma is, above all, the history of a group of families engaged in a continuous give-and-take with the evolving structural conditions around them, in order to incorporate what they see as the best aspects and opportunities afforded by these conditions. This process of generative response and reformulation importantly involves the interests of individual landowners, their immediate families, and the community collective. The region has evolved to its current structural and ideological state over centuries, and I hope to show that below. With this in mind, my interest both here and in the next several chapters is less focused on the perduring and distinctive aspects of Amazonian Kichwa culture, which are of course operational today and do provide an ethnic cohesiveness to the region from the point of view of people there. Rather, my task here is to focus more narrowly on how new sorts of structural constraints have had concrete effects on how young people conceive broadly of the natural world and apply this understanding to their thinking about the local forest and their role within it.

My ethnographic contention, and one that placing the contemporary ethnography into historical context brings into relief, is that the presence of non-indigenous peoples in the Upper Napo over the last several centuries has clearly precipitated a persistent evolution in the local conception of what constitutes “productive work.” These notions have been shifting at least since colonial contact with the Spanish, in that “work,” in the precapitalist and capitalist sense,

has continually shifted in terms of its mode of production and its productive demands on Napo Runa. However, this evolution has only accelerated since the middle of the 20th century, and, as I intend to document, has resulted recently in a fundamental epistemological reorientation for young people. Further, while the concept of “productive work” has always included concrete knowledge of the local forest and the various manners in which it could be put to use for monetary gain, I argue that the invitation to participate in post-industrial modernity through secondary education implies a radical reconceptualization of the forest on abstract, deductive terms, in lieu of concrete, inductive ones. In this way there is an ongoing shift in understanding that is coequal to a radical break with the extractivist vision for the Amazon implied in use schemes under colonial rule and the early Ecuadorian Republic. In this way, while the notion of “productive work” and the local forest remain intimately linked, the reconceptualization of the forest on deductive terms implies a wholly new manner of relating to, and producing from, the local forest. For older residents of Sacha Loma, those about age 30 and over, who are also overwhelmingly the community landowners, grew up as the first generation in a structural context that demanded the notion of “private property” as foundational to their relationship to the forest. The notion of private property, however, does not preclude an intensive, ground-level, interactional, and inductive understanding of the forest; to the contrary members of this generation grew up intensively involved in productive agricultural work in the forest, as well as hunting. What was unprecedented, however, was the notion that forest productivity was coequal with cash cropping – originally in the form of cattle and coffee, and more recently with cacao. In this way paradigmatically “male” work shifted somewhat, toward cash cropping, while female work remained relegated to the realm of subsistence farming, and housework (Irvine 1987; Irvine 1989; Swanson 2009). While this might not have shifted concrete knowledge of the forest much,

it did result in fairly explicit utilitarian views of forest productivity. For younger residents, however, the structural context shifted more fundamentally, from an intensively utilitarian, but also intensively interactional, relationship to the forest, to one which reflects ideas about work not in terms of the machete, but rather in terms of *mental* productivity. The forest is implicated in this scheme not as a habitual, relational engagement, but rather as a fungible, deductive mental construct that not only can be bought and sold (as is certainly true for their parents), but also “conserved” or “destroyed.” In short, young people have come to think about the forest in different sort of utilitarian light. Older Sacha Lomans see their forest as a fundamentally local and empirical set of relational engagements of productivity through the medium of cash cropping. Younger residents, however, also see, above and beyond this relational- utilitarian view, that a framework that sees the “forest” as a conceptual entity unto itself represents a potential engagement with the world, and is consistent with certain kinds of environmentalist discourse that are propounded in the region by recent waves of external actors, both governmental and non-governmental (see Chapter 6). A reconceptualization of the forest is thus implicated in the aspiration to being a new kind of cosmopolitan person.

Such thinking, and the aspirations to a new kind of productivity that come with it, do not necessitate either direct engagement with the local biotic environment or a rich knowledge of it. The construction of knowledge through the everyday practices associated with schooling have begun to change the epistemological frame toward one in which deductive understandings applied to a preexisting “forest” have begun to compete with inductively-derived understandings of local biota, conceived as a set of relations. This, I contend, is coequal to a change in epistemology, that is, how understandings of the forest are both structured and brought about. Neither of these viewpoints, however, is incompatible with enthusiastic participation in the cash

economy. Rather, the environmentalist rationale replaces the utilitarian-centric view of the older generation with one that sees the forest as a new kind of resource, one that enables new kinds of aspirations for “work” that do not include direct forest engagement as a prerequisite to forest knowledge. In fact, I contend that an environmentalist frame, as it exists coterminously with material advancement actively resists and devalues concrete, situated knowledge, while simultaneously enabling new kinds of relationships to the state economy.

In the regional history that follows I use Muratorio (1991) and Macdonald (1999), two ethnographers who have focused on the region’s historical structural context, as my touchstones. I then go on to try to understand how the community of Sacha Loma exists today as a particular kind of outgrowth of this regional history. As I say elsewhere I am less concerned with how “representative” Sacha Loma is of the region, and more interested in how the community can be seen as one localized outcome of particular set of structural changes in a particular place, and how these affect currently-evolving thought and action toward the natural world. Many of these historical changes do reflect an incipient capitalistic modernity of a sort that is readily recognizable, and my contention is that young people have accepted many of these changes and have begun to think and act in accordance with them. However, as noted above this fact should not be thought of, necessarily, as “impoverishing,” or “devolved” from a previously “rich,” or “traditional” ideal. Rather, indigenous people in this region are responding in appropriate ways to new kinds of unprecedented structural opportunities: their universe of experience, thought, and aspiration is evolving and expanding. This is not a novel observation, even for the region. Macdonald, for one, focuses on change in the Upper Napo as a function of collective political mobilization. In this capacity, he notes that “[n]ewer images reflect the nature of relations and the individual’s ability and means available to influence outcomes. Like the new political

structures, they too work to order the Runa's world. In brief, a wider range of images and institutions now serve their similarly expanded range of experience" (1999:150). For Macdonald, the "newer images" at work here are of the Runa as a cohesive "ethnic" identity that has generated a corresponding well of political capital for them. I seek a more ground-level analysis of change, asking if it is possible to put a finger on the pulse of that evolving, expanding range of experience when it comes to understanding and reasoning about the local forest.

Ethnicity and Upward Mobility in the Upper Napo

The regional capital of Tena, along with its adjacent companion towns, Archidona and Puerto Napo (and a bit further downriver, Misahuallí), were early sites of Catholic missionization and continue to be the regional center of gravity. All three of these urban centers have expanded drastically over the past few decades both in terms of population and readily available services. Tena, for example, received its first modern supermarket only in 2008-9. High-speed internet has only been available to the public through internet cafes since the latter half of the 2000s; up until then only dial-up internet was available.

The Kichwa language has a long history in the Amazon, distinct from that spoken in the Ecuadorian Highlands (Muratorio 1991:37, citing Stark 1985:181). Very likely Kichwa was undergoing its own linguistic evolution there even before Spanish contact, and may have been used as a sort of "trade pidgin" for the region (Muratorio 1991:37, citing Oberem 1980:314). This makes the ethnic origin of the region hard to pinpoint historically. Today, however, the vast majority of indigenous peoples of Napo, Pastaza, and Orellana provinces see themselves as united under a single "Quichua" or "Runa" group identity. The route to this modern identification, though, is one of "ethnocidal simplification" as well as "Christianization" and "complete Quichuanization" (Muratorio 1991:42). This is in contradistinction to the plurality of

ethnic groups and languages spoken in the region at the time of Spanish contact (Muratorio 1991:38).

Today, the single major inter-indigenous ethnic distinction residents of Sacha Loma make is between themselves and the Waorani, a group with whom the Runa have had long contact, including as a “go-betweens” for the Waorani and whites (see below). Historically, this distinction has been based on stark notions of “civilization”: where the Runa are “civilized” because they farm, have more permanent villages, wear western clothing, and have converted to Christianity, the Waorani are “uncivilized” because they are not perceived to farm systematically, are perceived as nomadic, do not wear clothing, and have historically been belligerent toward Runa encroachment on their lands, white missionaries, and capitalistic development (for example attacking oil wells during the first wave of drilling in the mid-20th century). While this distinction persists in local discourse as a source of ethnic distinction, the Waorani, people today admit, are almost completely “pacified” and wear western clothing. In some ways the discursive theme of being “uncivilized” places local people in line with majority-culture Ecuadorians, many of whom wear this line of thinking on their sleeves. On the other hand, the fluid nature of Kichwa identity makes these groups a lot closer to Wao in terms of both ideation and practice, and in terms of incorporation into extended kinship networks through marriage. This leads to potentially dissonant situations of a sort I was exposed to during a lunch I had with a family in the community. Maria, an older sister in the family, about to give birth to her second child, had come downriver from Misahuallí to visit her family, and, along with Yolanda, a younger sister, was preparing lunch. They had invited a few other non-indigenous people around the community as well, a young teacher from the public school, as well as a representative of Procapcon, an environmental assessment company hired by the Amazonian arm

of the state oil company Petroecuador, called Petroamazonas. The man had been assigned to the community for twelve days to meet with individuals and explain, as per federal law, the results of an “environmental impact study” that the company had conducted in the area surrounding Sacha Loma. This representative had just found out that he was being assigned to a Wao community on the Lower Napo as his next location. It turned out that Maria was related, by marriage, to a Wao man in this community. However, during lunch the oil representative spoke freely of how Waorani were known for being “savage,” for being only “recently civilized,” for “stealing,” and for being resistant to the oil company (in contradistinction to places like Sacha Loma, where people were mostly concerned with the size of the government payouts they would receive for having the oil company conduct exploration on their property). While for Kichwa the act of talking about the Wao is an act of discursive distinction within fluid ethnic categories that involve correlating “ethnicity” (Wao, Runa, and White) with increasing levels of “civilization,” for majority culture Ecuadorians this is still an act of placing indigenous “others” on a scale of acceptability, correlated with their perceived levels of passivity.

Recently, Reeve and High (2012) have discussed the porous and incorporative nature of ethnicity for the groups of both Kichwa and Waorani they study along the Curaray River, to the south of Sacha Loma in Pastaza Province. They make the claim that for these groups the ethnographic emphasis should be put on the extended “family” networks rather than necessarily onto the “society” or even “community.” While I argue later that I believe that “community” and “family” are becoming more and more coterminous in places like Sacha Loma, due to current marriage patterns and land privatization, it remains the case that ethnicity, marriage, and incorporation remain importantly interrelated in the community. As Reeve and High say for the

Curaray Kichwa-Waorani complex: “At the same time as both Waorani and Kichwa people continue to define one another in terms of ethnic identity as moral “others,” specific extended family ties provide the basis for intergroup sociality through various forms of friendship, exchange, and ultimately marriage alliance. In this sense, Waorani-Kichwa relations can be seen as an enduring part of a regional cultural system rather than as merely the social transformation or “acculturation” of previously isolated or contrasting cultural groups (2012:156). As such, “changing relations of alterity are an intrinsic aspect of indigenous social worlds (2012:156).

In Sacha Loma, the porous and incorporative nature of sociality and marriage includes not only extended family ties to Waorani groups, but also, today, to mestizo colonist families, with whom families in Sacha Loma have also had long and contentious relationships of “alterity.” These relationships crosscut and extend local discourses regarding degrees of perceived “civilization.” For example, yet another older sister in the family mentioned above, Nicola, is married to, and has two children by, a mestizo man who is the manager of the eco-lodge adjacent to the community. She lives in Sacha Loma now, but spent several years living with her husband in Quito (her husband, however, was originally from a colonist family in a community just upriver from Sacha Loma). Her first daughter was born there, and has a German woman as a godparent. This sister is perhaps the person striving most visibly in the community to embody a “modern” material existence. For example, she is a franchisee of the South American cosmetics company *Yanbal*, and goes around proffering the catalogues to other residents, who regularly buy these products from her. She and her husband subscribe to satellite television, and she had the family TV built into the wall facing out onto her front porch, where it is displayed publicly and is a point of congregation for both children watching cartoons and adult women watching telenovelas in the afternoons. This family also set up a rival dry goods store to

the community store next to the school which had been in existence for several years. My point here is that through these siblings we might read the entire gamut of ethnic identity in the region: by marriage these women are connected directly both to Wao communities on the one hand (associated most directly with “uncivilization”) and national, majority culture on the other (associated with its opposite). The community of Sacha Loma, as it considers its identity to be firmly Kichwa (as evidenced by the resistance to Raul building his house in the community evidences), actively mediates the spectrum of “civilization” in the region. Further, to build on the insights of Reeve and High, for people like Nicola and her family the ethnic inclusivity of Kichwa families, while resisting (as Reeve and High say) “social transformation or ‘acculturation’ of previously isolated or contrasting cultural groups,” goes beyond building a “regional cultural system” that is exclusive from majority culture Ecuadorians. In their scheme, this contact takes the disembodied form of “external forces” such as “colonial epidemics or contemporary logging and petroleum exploitation” (2012:156). Rather, in Sacha Loma the Kichwa attempt to build a “regional cultural system” directly engages majority culture colonist families as possible conduits to aspirational attainment.

That ethnic identity for the Amazonian Kichwa is wrapped up in ideas regarding “civilization” and “progress” is nothing new, however, and the fact that colonists are now implicated in a process of incorporation and ethnic “becoming” (emphatically different from “acculturation,” however) is only the latest outgrowth of this fact. Kichwa have actively mediated this territory for generations. For example, though she is a daughter of a union between parents who are each from a founding family of Sacha Loma, Nicola insists that her children are “not indigenous,” and laments that living in Sacha Loma her children’s skin gets “too dark”; when they lived in Quito their skin was “beautiful and white.” That this affirmation

is an extension of existing tendencies was brought home to me during an interview I had regarding the initial years of community formation with Medicio. Medicio's father Alanzo, introduced in Chapter 1, was one of the principal founders of the community. Alanzo was now close to 80 years old, and had come down the Arajuno River to the Napo looking for land in the 1960s. According to Medicio, Alanzo was a "civilizer of Waoranis" when he lived in Arajuno. In fact, he uses this as an explanation as to why his father was "not afraid" of settling in the area that now comprises Sacha Loma, as at the time the area south of the Napo River was considered Waorani territory and those who attempted to set up farms there regularly came under attack. When asked what it meant to "civilize" Waorani, Medicio offered this explanation:

"To civilize is... an example... the person is... doesn't *know*," as we say, that's how I'd put it. A man lives isolated [*en la montaña*"], doesn't know [people like the anthropologist], he knows nothing, nothing, nothing. And then he meets someone who introduces him to all kinds of foods, makes him wear clothing, makes him speak his language. That's what it means to civilize. To make friends. To change what they are."

Reflected in these sentiments is the clear notion that "knowledge," "progress," "moral righteousness," and "civilization" remain bound together closely for Sacha Lomans. Further, though Medicio was talking about acts his father committed, he was clearly offering a currently-held editorial reading of these acts. The sentiment that "knowledge" involves fundamental "change" is foundational to those in the community. This is echoed in the oft-repeated conviction that the point of having a school in the community was to "keep going forward" [Spanish: *seguir adelante*]. When paired with the boilerplate answer to the question I put to many in the community "why do you send your children to school?," that is, "in order to know more" [Spanish: *para conocer más*], it becomes clear that concerns about increasing the perception of the community in terms of its perceived level of "civilization" is alive and well. Further, "progress" is thoroughly bound up in the idea of gaining school-based knowledge.

These concerns about community and individual perception have taken on an aspirational bent, as well, and involved both the social incorporation of high status individuals and the drive for modernizing material development in the community. The paradigmatic example here is the head tourist guide Julio, who is an ethnic Shiwiar from an isolated village near the Peruvian border. He was befriended decades earlier by the local NGO founder Mr. E. Julio had been elected to the NGO's board of directors was the only person aside from the NGO director to have a house built on NGO land. This man was seen as a major actor in the community, a man of influence who was godfather to several children. I asked an older woman resident, Micaela, who was close to the man and had *compadre* ties to him through her young son Pedro, about Julio's ethnicity. Without even hesitating and with a confirmatory nod she assured me that "he is Kichwa." This was even though everyone in town knew the man's personal biography. This case shows that the concern over upward mobility, perceived degrees of "civilization," and ethnicity also can extend to ethnic incorporation in Sacha Loma, in terms that link social closeness to material worth.

The link between "progress" and "civilization" also extends directly to the material development of the forest for residents of Sacha Loma. Residents were part of a region-wide push to agitate for local material development during my period of field work. The two biggest political projects during this year, and the impetus for many meetings held within the community as well as delegations sent to meetings in surrounding communities, were electrification and road access for community farms, which were located about one hour's walk *adentro* from the riverbank. The idea of plugging the community into the expanding state power grid was something of a continual source of rumor. Every few months word would go around the community that Sacha Loma was next on the list for electrification. Communities on the north

bank of the Napo, where there were already roads punched through that connected communities to the paved highway connecting the downriver city of Coca to the highway leading south to Tena and north toward Quito, were already electrified. The stumbling block was that electrification on the south bank required workers to physically run a power line across the river. Though this had already happened in Agua Santa, it did not come to pass during my time in Sacha Loma; all lighting and refrigeration was produced via gas-powered generator. The largest of these was owned by the local eco-lodge and ran the power for the entire hotel, including a workshop that ran several large saws to plane and cut logs for construction. Another generator was owned by the local school, which ran it at night for the use of its staff; this generator also supplied power to the school's computer lab, and the halogen lights in the *cancha cubierta*. Two other, smaller generators were owned by the families in the community and ran lights for each of the households and refrigerators for the dry goods stores.

Perhaps the largest political push during this period was to get a road cleared that would connect community members' farms with the closest road on the south bank of the Napo, which was located upriver about half an hour by canoe and connected La Comuna to the city of Tena. Sacha Loma residents spent time petitioning the regional government, located upriver in the Parochial seat of Chonta Punta, to construct the road. Many residents indicated to me that they had been waiting "years" for this road, and many of them thought of a road as fundamental to a secure existence. In the main, they thought that a road would help them to exploit more resources and engage more directly with the market economy by giving them an easy way to get their cash crops to market. Currently, though most families cultivated cacao and coffee on their farms, the only way to get these products to market was to haul them out one sack at a time, and then take them on Saturday to the market in Agua Santa, where middlemen would bring in trucks

and purchase the goods. This process of extraction was labor intensive and intrinsically small-scale, which families grumbled about. Further, because families had moved to the banks of the river to send their children to school, it made them unable to exploit their farms to the extent they wished. The one family in Sacha Loma that had raised cattle had abandoned the endeavor years before because it was just too difficult to get the cattle out of the forest and across the river to a place where they could be sold. Because there were no boats large enough to support the weight of a cow, the method employed was to harness the animal and have it swim alongside a canoe staffed by several men who hold the animal's head above the water level. It was the expressly stated desire of several people in the community that having a road that connected their farms would allow them to move there again and start a new community where they could have unfettered access to cash cropping and, therefore, to be more intimately connected to national commodity markets.

The Evolving Forest of the Upper Napo in Historical Perspective

The Tena area is the original locus of origin for all of the families that make up the community: two family groups trace their origins to Puerto Napo (though Anselmo said that his family traces their ultimate origins to Archidona, the companion town just north of Tena; see Figure 2). Medicio traces its origins to Arajuno, a community located to the south of the Napo in Pastaza Province, but close to the current border between Pastaza and Napo Provinces. Macdonald (1999), however, traces the origins of Arajuno to the 1930s, when a shaman from the Tena area started a community there (see Figure 3). The ultimate origin of all these family groups (at least as measured by the oldest male heads of household in the community), therefore, is the Tena-Archidona area. Sacha Loma is located on the banks of the Napo River approximately three hours downriver from Tena by bus and canoe. Coca, the other city of any

size in the region, is located three hours further downriver by canoe, a region referred to as the “Middle” Napo. The closest urban center is Loreto, on the North side of the Napo and approximately an hour away by bus on the only road that currently connects these urban centers, which also runs along the north bank of the Napo.

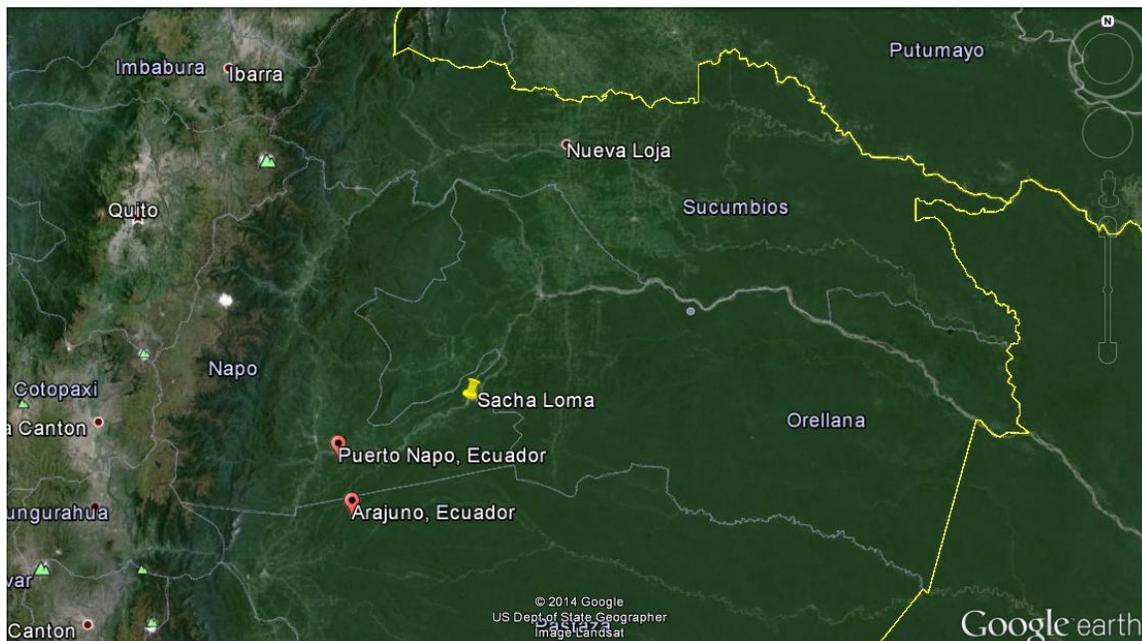


Figure 3: Eastern Ecuador, Sacha Loma Family Provenance

As Muratorio documents, until well into the 20th century the Upper Napo was essentially a frontier area with weak government oversight. This means that two things were simultaneously true for the Napo Kichwa. First, there were many hands in their “pot,” as it were, all seeking to gain control over native labor and tribute in the Upper Napo. This began as early as the 16th century and persisted at the hands of many external actors, though the major (at times competing) forms of exploitation that were engaged in permuted multiple times over the centuries. At the same time, however, because these efforts at control were fundamentally local and took place far away from governmental hubs in the Sierra, the Napo Kichwa were able to

assert significant agency over these attempts to usurp their productive capacity for others' ends. This agency capitalized significantly on both the Kichwa ability for movement within the forest, as well as knowledge of forest species, terrain, and both its physical and social geography. Even during the successive attempts to capitalize on their labor in various forms, the Runa remained, chiefly, hunter-gatherers and swidden horticulturalists: as Muratorio says, until 1950 "Napó Runa society remained internally egalitarian, although their members as a whole constituted a class subordinate to the whites" (1991:10). *Muntun* (extended family groups living close to one another and organized around a principal shaman), known as *parcialidades* to the colonial administration, served both as groupings under which authorities could render Kichwa groups legible in order to marshal their labor, but also as loci of resistance, wherein these groups could rally support for antagonistic actions such as flight into the forest. However, Muratorio also reports that centuries of colonial and Republican contact meant that the indigenous people of the region became fully aware of the local effects of global markets, and of the role of self-interest within these: "possibly in the nineteenth century, but certainly by the early twentieth century, the Napó Runa had a clear awareness of the prices and shifts in exchange values, and demanded that these be strictly met" (1991:33).

Spanish colonial influence in the Upper Napó region began in the late 16th century (Taylor 1999), and for centuries the Napó Kichwa were the objects of attempted exploitation and cultural indoctrination at the hands of a "venal civil administration that coveted the natives' tribute," and "a few ignorant priests who visited the area from time to time" (Muratorio 1991:72). The 19th century saw the instantiation of a debt-peonage system called *repartos*, wherein the indigenous groups were required to accept goods (cloth, thread, needles, etc.) from the authorities and merchants, which they were expected to pay off at exorbitant markups with

extractive goods from the forest such as *pita* (agave), tobacco, gold dust panned from the rivers, or other labor. To all of these various attempts at subjugation, Muratorio reports, Napo Runa voted with their feet, strategically maintaining independence by fleeing to the forest to get away from disease, corporal punishment, or debt, while simultaneously taking advantage of the trade goods to which they had become accustomed. Throughout all of the post-contact upheaval, however, it is clear: that the Napo Kichwa were repeatedly and early on exposed to new, and evolving, productive efforts in the forest, and through these efforts directly to rapidly globalizing capitalist markets. Second, both the colonial and post-colonial experience of the Napo Kichwa was to control their labor through sedentarization and “commodity peonage” (Muratorio 1991, citing Wolf 1982:86-87). Muratorio reports a French traveler, Charles Wiener, who visited Tena-Archidona in 1880, as noting that the “civilizing” mission of the Europeans had already caused Indians to replace handicrafts with manufactured goods, that panning for gold to pay for trifles had become the most important Indian occupation (1991:92). Gold-panning continued to be the dominant extractive commodity in the region throughout the late 19th and early 20th centuries, and is still practiced by Kichwa families today (see chapter 5).

While regions of the Middle and Lower Napo were significantly affected by the rubber boom of the late 19th century, the Upper Napo was only tangentially affected. However, the first half of the 20th century bore witness to a new wave of social and economic upheaval in the region. Catholic Josephine missionaries were allowed into the region in 1912. These schools, Muratorio says, were “an essential factor in the indoctrination of the Napo Runa into white values and beliefs” (1991:164). The Josephines, according to Muratorio, espoused a vision of progressive integration with the national economy for local indigenous people, based on productive labor and technological progress. Importantly, the Josephines were also early carriers

of an explicitly nationalistic message on behalf of the Ecuadorian state, which was couched in environmental rhetoric focused on the “productive capacity” of the region on behalf of the entire national economy:

Their evangelization philosophy espoused a conception of progress based on technological development, and they were always keen to point out to the government the "immense riches" in timber, minerals, and petroleum existing in the Oriente, as well as the need for a communications infrastructure to expedite exploitation (see Spiller 1974:96). In short, the Josephines' systematic promotion of colonization and economic development based on white initiative and direction and their ideology of Indian integration coincided fully with the government's plans for the Oriente from the early beginnings of [the 20th] century.... (1991:163)

In Sacha Loma the Josephine mission boarding school upriver in Ahuano still looms large in the memories of people now in their 40s and 50s, and was their only experience of formal schooling. The Josephines clearly aimed at renegotiating Kichwa understandings of their forest along the lines of “goods,” “commodities,” and social “progress.” The threads of these understandings of the forest are still present in Sacha Loma today, evident in the way people of this age group talk about their community’s founding and land itself (see below).

The first stirrings of petroleum exploration, the most recent boom to hit the Napo, also further inculcated liberal and progressive values of wage work for the Napo Kichwa. Muratorio reports that during the middle part of the 20th century, the oil industry and the missions operating in the Napo region worked together to promote oil industry work to indigenous men, and that almost all indigenous men of working age did work for the industry during this period. While Muratorio argues that in and of itself the work did not cause sustained social differentiation between Kichwa individuals or a reorientation of their relationship to the forest; however “unlike previous economic booms, education and wage labor opened up possibilities for the Indians to participate in a sustained process of change” (1991:173). The effect was to more completely monetize the indigenous population and align them with modern, progressive wage work, as oil

companies paid hourly cash wages for contracts of a specified term, and had a regimented and, for the area, rather lenient eight-hour work day.

Though Muratorio consistently claims that the structural changes to the Upper Napo over centuries did not fundamentally shift Kichwa identity or practice vis-à-vis the forest, her reconstruction of the past clearly shows that there was an early and persistent push towards imposing capitalistic integration onto the region, and that with it came an understanding of globally connected markets. It is my feeling that this data can just as easily be used as evidence that there *was* fundamental change over the centuries in the way Kichwa understood their forest. While these changes and impositions may not have affected what people knew about the forest or the kinds of engagement they had with it in an absolute sense, it is likely that, given the long history that Kichwa groups have had with trade goods and commodity markets, that the idea of forest as productive of commodities became second nature to Kichwa groups. This sensibility is reflected in the understandings that older Sacha Lomans have of their community's founding, as we will see below.

The work of Macdonald (1999) picks up in the 20th century where Muratorio's work leaves off. The history of the 20th century in the Upper Napo is a history of a steady increase in control and scrutiny over the region by successive Ecuadorian state regimes. This scrutiny went hand-in-hand with successive attempts at comprehensive land reform, which ended up having fundamental consequences for the region in terms of how forest land was both perceived and put to use. As Macdonald relates, though a persistent push toward establishing effective land reform did not initially target the Oriente because it was still largely remote and inaccessible, the region was swept up in this push as material modernization and political oversight arrived. Initially, land reform in Ecuador was focused on the redistribution of land to laborers by breaking up large

highland and coastal estates held by oligarchs. The *Instituto Nacional de Colonización* (National Institute of Colonization) was established in 1957, but the infrastructural support it was able to provide to the few *colonias* (settlements) that sprang up in the Oriente was almost nonexistent. The military junta that took over Ecuador in 1963 specifically cited the amelioration of inadequate land reform as its mandate, and by 1964 had drafted the *Ley de Reforma Agraria y Colonización* (Law of Agrarian Reform and Colonization), which established the *Instituto Ecuatoriano de Reforma Agraria y Colonización* (Ecuadorian Institute for Agrarian Reform and Colonization, IERAC). These actions sought to obliterate the *hacienda* system, promote colonization, and added the original 1936 *Ley de Tierras Baldias y Colonización* (Law of Open Lands and Colonization) to the agrarian reform.

With the passage of the *Ley de Reforma Agraria* (Law of Agrarian Reform) in 1973 the situation regarding colonization changed dramatically, for both the Upper Napo and the rest of Ecuador. This law specifically targeted increased land productivity over redistribution, and contained mechanisms for enforcement through land expropriation for “inefficient use” of land, demographic pressure, or nepotistic monopolization. In essence, the new military junta told all landholders, including the Amazonian Kichwa, that the “only way they would lose their land was to let it sit idle” (1999:73). For example, Macdonald reports that in the Napo community of Arajuno, landholders were told that they had to improve 50% of their individual holdings. Because the Kichwa did not need that much land for family subsistence, Arajuno residents chose to clear forest for animal husbandry. This had drastic effects on land use practice for Kichwa landholder. In all, Macdonald says, “cattle management and other attendant chores substantially increased the time dedicated to daily economic activities. They also required a rescheduling of the annual subsistence round. Thus the average workday was longer, and extended hunting,

fishing, and turtle egg-gathering trips no longer occurred as frequently” (1999:72). Residents were also required to negotiate the vagaries of the modern market economy for the first time, and value was assigned for the first time to actions like getting loans and dealing with White middlemen. The structural conceptualization of land also changed during this time. While under the previous usufruct regime farm borders had been communal and consensual, the sharply-delineated borders between farms were now more highly visible, which provoked disputes.

Another effect of the new land reform was that colonists were a large, persistent, and disruptive presence in the rural parts of the Napo for the first time. Colonization in the Upper Napo was not planned but rather spontaneous, spurred by both land reform and the rapidly developing infrastructure in the region. In the 1960s the first road to connect Puyo to Puerto Napo was completed. A traffic bridge was then built to connect this road to Tena in the early 1970s, and Tena was finally connected to Quito in the late 1970s. This rapidly expanding mobility quickly led the patron-Indian relationship to become a dying lifestyle, because these were more exploitable avenues for consumer goods. Macdonald makes the interesting claim that this changed the very nature of how Runa conceived of white influence. For all of the subjugation perpetrated under the patron regime, for the Runa it was still a reciprocal, interactional, and face to face relationship. Many times Runa entered into patron-client relationships willingly, as they had need and desire for the products the patrons provided. Further, these were exceedingly personal relationships, as individual *muntun* fomented relationships with particular patrons over the course of years, exchanging labor in a kind of “moral economy.” With large-scale colonization, on the other hand, indigenous communities were simply obstacles to be overcome, or were completely irrelevant to majority-culture concern. In Macdonald’s words, it “displaced the norms and patterns of reciprocity that previously linked

patrons to clients in a web of thin dyadic lines connecting individuals to individuals or to single families” (1999:84). For Macdonald, this depersonalization inherent in the colonist land grab became the eventual basis for the ethnic and political awakening of Ecuador’s indigenous Amazonian groups over the course of the 1970s and 1980s.

Muratorio (1991) notes, importantly for the current project, that the earliest direct effect of large scale colonization was that it drove indigenous families out of the rapidly urbanizing centers of Tena-Archidona. She relates that in the 1970s as many as 4,500 Kichwa left the Tena-Archidona area for Lago Agrio to the northeast, and around 5,000 left to settle along the banks of the Upper Napo between Misahuallí, the mouth of the Suno River, and on down to Coca. This history collides directly with Sacha Loma, as these preceding historical events directly precipitated the community’s founding. In Sacha Loma the experience of infrastructural development, land reform, and colonization in Tena-Archidona was intrinsic to the formation of the community, and, further, indigenous-colonist strife led directly to the upheavals that eventually led to the form the community took in the 1990s (see below).

In all, the centuries of machinations in the political economy of the Upper Napo that led to the founding of Sacha Loma directly implicate an evolution of understandings of the forest vis-à-vis global capitalism in the various guises it has taken from the 16th to the 21st centuries. This is no different today, and the indigenous residents of Sacha Loma continue to reinterpret new ideas about, and values of, their environment in creative and strategic ways. It has always been the case that the forest is definitional to a Kichwa sense of ethnic exceptionalism vis-à-vis the Ecuadorian majority culture. At the same time, external actors have, for centuries, seen that same forest as a locus of aspiration to monetary gain and global engagement with commodity markets, be it through forest extraction, capitalistic agricultural production, or non-renewable

resource exploitation. This capitalistic and aspirational aspect of the forest has also been foundational to Kichwa being for centuries. This framework for understanding the forest persists today in continually evolving form. Below, and in the chapters that follow, I characterize this evolution over generational time for the residents of Sacha Loma.

Into, and Out Of, The Forest: Sacha Loma's Founding

My hypothesis regarding the history of Sacha Loma is that the manner in which the community was founded, based on regional structural realities of the early 1960s, shapes the evolving understandings that successive generations of Kichwa people have about their forest. In what follows what I provide is something of a retrospective interpretation of the community's founding and of the consequences these interpretations have had for understandings of land and the purposes to which the forest should be put. To hear older members of the community tell it, Sacha Loma was not founded consistent with historical norms, wherein access to communal land is an outgrowth of affinal kinship (meaning that land access is the predicate to the work of incorporative kinship). Rather, it is clear in the stories of the community's founding that Sacha Loma was founded on fundamentally productive terms, primarily as a pioneering search for land for cash cropping. This means that rather than beginning with the premise that incorporation into an extended family gives eventual access to land, land and family (in the extended sense) have to a large extent become decoupled for Sacha Lomans. This was the case even though Sacha Loma was founded before the most sweeping Law of Agrarian Reform was passed by the government in 1973, opening the way for codified private ownership of land plots, and large-scale colonization. My contention here is that while land reform was certainly "imposed" onto the region and came with structural and constraining consequences, it was not conceptually illegible even to the oldest of community founders. Keep in mind that in what follows in terms of the

history of Sacha Loma as told by community members I am both aware of, and specifically interested in, the fact that these stories might be biased reflections of individual desire, or even *post hoc* reinterpretations of the past. I do not attempt to hide this because I am just as interested in reconstructing the manner in which local people *interpret* their past vis-à-vis the forest as I am interested in creating a factual regurgitation of what happened and when. Such an analysis clearly shows that Sacha Lomans have clear views on both Kichwa cultural exceptionalism and proper, productive use of the forest.

As has been documented amply by ethnographers of the region, “incorporation,” as an continual process of affirming a constructed consanguinity (e.g., Uzendoski 2005b) has always been integral to the process of community formation. The paradigmatic act in this regard is marriage, wherein the transfer of physical substance (food and drink during the wedding process, and labor and the production of children in the first several years of marriage) literally create family bonds between non-related people (cf. especially Uzendoski 2005b). Macdonald (1999) links this process of family creation explicitly to the pre-colonization process of community formation, place formation, and pragmatically, access to land. In this scheme, marriage ties create bonds of the incoming resident to a community *muntun*, or extended kin network. A *muntun*, organized around a powerful shaman, shares access to communal land, claimed by *muntun* members through usufruct. This process relies on what is essentially a system of open land access and non-privatized tenure, where community fissioning and reincorporation is frequent. Historically, Kichwa communities were organized around a tenure system in which members of a *muntun* lived in two places: closer together in a *quiquin llacta* (“proper” or “true” settlement) and spread out in *purina llacta* (“walking” settlement), located a day or more walk away, and isolated. The borders of these communal, *muntun*-based lands were vague, but

policed conceptually as the wandering range of the spirit helpers of the focal shaman, and practically by reference to geographic features in the landscape. *Purina llacta* were places where families would go to hunt and do some subsistence farming. Further, if tensions developed in the community these were frequent sites of new community formation.

As an example of the exception that proves the rule, only once did I hear of a farm *adentro* referred to as a “*purina llacta*,” and it was by Valerie, the oldest living woman in the community. Further, she told me this in a didactic manner, as if she were revealing to me a particular conceptualization of land that she knew no one else in the community would relate to me. In order to concretize the contrast between historical modes of community founding and the history of Sacha Loma, consider the way in which Macdonald describes the founding of Arajuno, the town from which Alanzo and Medicio’s family originally came in the 1960s:

Arajuno, now a town of about 1,500 people [in 1999], became a *quiquin llacta* of the Napo Runa during the 1930s when a shaman, Quillumá, and his *muntun* gradually converted their *purina llacta* to a more permanent residence on the left bank of the Arajuno River. At the foot of a hill called Pasu Urcu they built shelters on uplands that stood above a large sector of more recent alluvium, known as the Isla, which they used for intensive garden plots. Arajuno had been Quillumá’s *purina llacta* for several years, as it was for the entire *muntun*. There they had panned that section of the Arajuno River and hunted the forest on the left bank only. They considered the opposite bank of the river to be the western frontier of the hostile [W]aorani (Auca) and were therefore hesitant to set up permanent residence there. (1999:57)

This would have occurred about a decade before the founding male heads of household in Sacha Loma were born. Consider how different the circumstances were a few decades later, when Sacha Loma was founded. This narrative is recounted by Medicio, who here gives his account of his father’s reactions to the structural changes with regard to employment and land that were ongoing at the time:

At that time there were no people here on the Napo River; there had been a community [just downriver] in Agua Santa, but that community had been abandoned, it was like a ruin, the houses without owners, without any people. ... On this side of the [Napo] river

there were no Kichwa, the residents were Waoranis. So, at that time there were no people there. My father [] came from working on the coast, where he had signed a contract with an engineer who also might have been from the coast. This gentleman brought him here to help out with a cash cropping project, which extended from Agua Santa all the way upriver to where we are now. So, Dad came in order to plant all sorts of crops like cacao, rice, coffee, all of that my Dad planted during that time. ... I was about eight then, but at the time no one had accompanied my dad here, it was just him, and he started working with people from the coast and from Colombia. He worked with these people, and did all sorts of hard work. Then about a year later he called the family, so that they could come here and become landowners here. And from there my uncles, my family members came downriver after two, three, or five years. From there my dad helped to found a school in [the current site of] Agua Santa, and called the place “Puerto Rico” [currently the name Puerto Rico is ascribed to a community further downriver from what is now Agua Santa (see below); what was known as “Puerto Rico” at the time was later changed to “Lower Sacha Loma”].

So my dad lived downriver from here, and at that time there was no doctor, and at one point he needed to get medical attention for my sister, who was sick with malaria. He took her to get seen in a canoe, there were no cars then, just canoes, and he was taking her to a shaman so my sister could be cured. But right when they arrived at the shaman’s house the canoe ran into a big branch in the river and the canoe flipped over, and my sister ended up drowning. So right there my dad said “I’ll never leave this place, I’ll stay here in [Sacha Loma], I’ll stay here in the forest, I’ll never leave here, I’ll stay here until I die, until God takes me.” And so he never left, he just stayed, because my sister drowned in the river, and never appeared again, she was lost; we never found the body or anything. Then from that time in Lower [Sacha Loma] the colonists refused to collaborate, especially with the *minka* [collective work party]. So, my dad decided to bring us here and start another community. He took the name [Sacha Loma] from downriver and called this place Upper [Sacha Loma]. And so there were two [Sacha Lomas] – Upper and Lower. But later, at least two years later the priests [Josephines] arrived, and changed the name of Lower [Sacha Loma] to Agua Santa. They came from outside the region, and the priests named the community after Baños [a city in Tungurahua Province], because in Baños there’s the virgin of Agua Santa.

Several themes run through this origin story, especially when read against Macdonald’s recounting of the founding of Arajuno. First, though the principle of open access to land is essentially the same as has historically been the case for the Napo Kichwa, the relationship of that land access to kinship was completely different. Macdonald describes a scheme in which incorporation into an extended family group (*muntun*) provides access to communally-held land. In the founding of Sacha Loma, however, while there is recourse to an almost mythical origin story in the drowning of the young daughter, this serves as a justificatory tale for what was

essentially an entrepreneurial land pioneering operation, with its genesis in a capitalistic cash-cropping project. In this way the founding was not about the symbolic incorporation of affines, but rather about gaining access to increasingly scarce land for blood relatives. While the initial phases of Sacha Loma's complicated founding took place before the consequences of land reform were felt there, this new context in which Kichwa families were scrambling for access to land that was, for the first time, thought of as a scarce, set up a new premise on which to found a community. Medicio goes on to explain:

So, my dad [once he moved to Upper Sacha Loma] began the process of founding a school here. And to me he said, "son, I'm going to give you this farm [on the south bank of the Napo]." And, he gave me the farm. To my brother he gave the farm on the second line [further into the forest], and to my uncles he gave... he gave all my uncles land here. All of them are my family. That's how we founded the place and began living here for many years.

Rather than affinal incorporation leading to access to communal land, in the retelling of Sacha Loma's history we see emerging the notion of "inheritance," explicitly for consanguineal relatives.

The other large block of families that make up Sacha Loma are from the small town of Puerto Napo, just 10 minutes by bus from the regional capital of Tena. One of the current male community leaders born there, Anselmo, was a small boy when his family came to Sacha Loma. It was this man's grandfather who originally decided that the family would move there. His story is similar to that above, but also makes very clear the fact that in his interpretation the men and women who moved there were not "running to the forest" as they were historically supposed to have done, to hide from debts to patrons or the abuses of priests. Rather, they had carefully observed the workings of capitalistic agricultural endeavor and were attempting to reproduce this, entrepreneurially. For Anselmo, the move to Sacha Loma was as much about grasping at

opportunity within the cash economy as it was about seeking to return to an ethnically “authentic” forest-based, hunter-gatherer and subsistence agricultural ideal:

My family first came to what is now Agua Santa. My grandfather had a farm right here, in front of where the eco-lodge is [today]. He’s deceased now, but at that time he was young. I’m talking about the years around 1972, 1973. That’s where we stayed, with my mother and father, living here on the farm. The people [in Puerto Napo] were saying that there were no opportunities to fish or to hunt anymore, that the place had become overpopulated. Because at that time that’s how people fed themselves, the indigenous people. They didn’t like things like onions, all the food you can buy, like vegetables; they barely knew what they were. It was just hunting and fishing. But there was nowhere to go to hunt anymore because there were some Spanish people, who were actually from Spain, and these guys started to grab up tons of land, taking four, five-hundred hectares of land [around Puerto Napo]. And they had the residents there working for them, but then later the locals stopped wanting to work there. Instead they wanted to reclaim their particular way of living, by which a person can more effectively survive. So, they all left – in other words they didn’t want to be beholden to *patrones* anymore. They wanted to make a go of it themselves. And, they had learned a lot – how to plant cacao, coffee, and they just said “No.” You see, there was no more land because these guys had grabbed it all up. It was all controlled by these foreigners.

Before this basically [the indigenous people] didn’t know [how to cash crop effectively]. For them it wasn’t something to grow on a large scale. But they also saw that these people were making lots of money from it. I mean, they [Kichwa] had been panning for gold and selling it to these people, but they didn’t pay a good price. With all of these crises, the people preferred just to leave. So a lot of the families that lived in the neighborhood around Puerto Napo left. So, we all came here and my elders were thinking about making a life here, far from where we had been. They felt that they didn’t want to be there anymore with all the noise, the cars, the heavy machinery [for building roads].

There is certainly a strong thread of escapism and cultural exceptionalism running through Anselmo’s recounting. In his view, this exceptionalism was, for his grandparents, based on particular preferences for forest-based foods, which were becoming scarcer, and in the desire to avoid being caught up in incipient urbanization and large-scale capitalist exploitation. However, what is most interesting about Anselmo’s version of events is that there is a clear theme that points to an evolution in aspirational goals vis-à-vis the forest on exactly the same terms as he recounts his grandparents as fleeing. This is also present in Medicio’s version of his family’s

arrival. For centuries the Kichwa perceived the forest surrounding the Upper Napo in two distinct ways: on the one hand the relationship between white landowners and Kichwa people was mediated by a global desire for particular forest-based commodities, such as rubber and gold, through extractivist labor. On the other hand, the forest was also a refuge for Kichwa family groups from the control of missionaries and white patrons. Here, however, we see the beginnings of a very different kind of understanding of what sort of “refuge” the forest can offer. To hear these men tell it, while not wanting to leave behind their ethnic distinctiveness or in any way “assimilate,” they simultaneously sought to capitalize on cash cropping as a means to material advancement.

The Consequences of Land Reform in Sacha Loma: Colonization, Privatization, and the invention of Inheritance

The Law of Agrarian Reform passed in 1973 restructured the community physically by codifying the privatization of farms. It also mandated that land given to small farmers be used productively. This structural pressure did change the formation of the community physically, because it drove families to move to the forest interior in order to more extensively utilize their holdings. My contention is that, regardless of how the original founders thought about their land use, the reform served to solidify a utilitarian view of the forest for the children of these founders (now the oldest members of the community), based on monetary gain through productive cash cropping. What locals lament about land privatization is that that by carving up and codifying space it compromised some of the character of the how people thought about mobility in the forest, something which had been fundamental to building a certain kind of relationship with the forest. Medicio put this most directly: “At that time [before land reform and colonization] the people here were nomads... all of Amazonia was free and open, it was for the native people, all

of it was ours. But now we live divided and each one to his own territory, that's just how it is." For Medicio, the fact of land reform is conflated with a diminished sense of communal territoriality. He sees clearly that there is an ironical consequence to private land ownership: this is that the notion of "place," that is, what is thought of as one's own, is reduced down from an entire region to the borders that demarcate one's farm. Successful land reform thus had the paradoxical effect of reducing land access, and freedom of movement, for the Napo Kichwa, rather than extending it.

Beyond the fact that land reform literally carved up space and thus changed the nature of land tenure in Sacha Loma from one that was, if not truly "communal" in the historical sense of being accessed through affinal kinship, then certainly "borderless," to one that reduced the borders of the family to the physical borders of the farm. However, with this carving up of land also came colonists. At first, Medicio reports that this influx was disruptive, to the point that it threatened what people then thought of as their own cultural distinctiveness:

We had founded [this community] and lived here for many years. After all my family had come here, then there were changes. Then came the colonists from outside [the region]. They came in and just destroyed the countryside. What a thing, huh? Because the people at that time only ate hunted food, only natural things. They had plants as medicine. The colonists came to destroy. They cut trees, the rivers dried up. Then they started to sell products from outside, too. Those were changes. Also, bad people came, criminals, thieves. Many of them wanted to kill us. With machetes, revolvers, pistols. ... [The colonists came] because at the time the president told them there was all this unoccupied free land, and sent them here. [He] said that the countryside hadn't been destroyed. But the president sent them to destroy the countryside. They came to get farms for themselves. That's when they [e.g., surveyors] came to measure [farm plots]. To divide up the land. And they told us "two hundred meters across, one thousand deep, two hundred fifty across," just like that. And from there the people started to fight [between Kichwa and colonist].

Medicio narrates this account with nostalgia for an "uncorrupted" and what he thinks of as a decidedly "Kichwa" set of beliefs, knowledge, and practices, and lays the blame for their "corruption" at the feet of governmental policy and consequent colonist expansion. While he

recounts this era as fundamentally belligerent and disruptive, the situation is decidedly different now. Today, one of Medicio's oldest daughters is married to a Mestizo from the north bank of Sacha Loma, and they have their household just downriver from Medicio's in the *Nuevo Renacer* section of Sacha Loma. With colonist families physically interspersed with community members and living on demarcated land, it changed the physical and conceptual layout of the community. Asked "what the community is like today," Medicio said: "today the community is for everybody – we can't say there are 'guilds' or 'races' [e.g. insular, independent groups], or like that. There are colonists, and there are Kichwa here. ... The community is for everyone, colonists and Kichwa." Belligerence and exclusivity came to be replaced with aspirational intent through the medium of ethnic inclusivity. Of course, as with everything in Sacha Loma, this more "inclusive" mediation of ethnic ties is balanced on something of a knife's edge and subject to different interpretations at different times and contexts (see, for example, the discussion in Chapter 1 of the Raul's difficulty in getting his house built in the community).

An evolution in aspirational intent that includes cultural integration into majority-culture families is an expression of aspiration that is inclusive, in the sense that its notion of "progress" is outwardly focused beyond its own ethnic borders. However, simultaneously there has arisen a new sort of insular individualism, with its paradigmatic expression being that of the *herencia* (land inheritance). The idea of the *herencia* has its foundations in land privatization and newfound land scarcity. My claim in this regard is that it has pushed Kichwa families in the community to place much more emphasis on the nuclear family as one's "core group." This new manner of associating relatedness and land follows a clearly linear intergenerational logic wherein land is expected to pass from parents to children. The fact that land has become a scarce resource is linked to the idea that one needs to "provide for" one's blood relatives in the form of

providing land to them. Medicio, for one, has acted formally on this new type of family-based (rather than ethnically-based) exclusivity. In the quote that follows, Medicio refers to both an “association” and a “district” in the community. By “association,” he means a communal political entity that he founded to lobby for community needs, across families. By “district,” he refers to the fact that he occupies a downriver section of the community that is physically and politically divided, and is only occupied by his blood relatives. Medicio sees this separation as a literal border, even going to far as to keep a German shepherd guard dog on his property. This was seen by people in the community and by the NGO administration something of a belligerent act, because Medicio’s house was right next to the only path that led to the NGO-run boarding school further downriver; thus the dog would constantly intimidate passers-by. As Medicio explains:

There’s an organization that I myself founded. This is the association called “*Yawar Wawki*” [Kichwa: ‘Blood Brother’]. But that’s a different thing [e.g. he’s not associated with it any more]. That’s just upriver [e.g., belongs to those living upriver in the community from him and his family]. I’m independent. That’s why I started my own district [of the community], which is “*Nuevo Renacer*” [Spanish: “New Rebirth”]. And that’s just for me and my children, no one else.

There is also tension here, however, in the changing imperatives between the individual family and the collective community whole. Medicio, while fiercely maintaining his family’s independence from the community, once again became the elected community leader of all Sacha Loma during my field work, thereby solidifying his dedication to the whole community. Because Medicio’s children’s generation is the first to run up against privatization in the face of land scarcity local families are currently mediating multiple understandings of the relationship between land and family, and the way these will play out in practice is not entirely clear. The land tenure situation as currently construed in the community sets up an unprecedented kind of conundrum for older landowners in the region. Older people with adult children, though they

identify closely with valuing manual forest work, are caught between the prospect of giving their land to their children and thus becoming landless, or to retain their land and jeopardize their children's futures as landowners. This is because younger people are unable to purchase scarce land for themselves, and are thus dependent on their parents divesting themselves of land.

Historically, community expansion through fissioning, where one family or a group of families moves together to a new part of the forest and begins a new community, has been foundational to Amazonian Kichwa relationships to both family and land. Wilson (2008) even claims that this historical pattern is still a viable strategy for achieving land access in some parts of the region today. In his paper he discusses the tensions that have arisen in the Upper Napo between Ecuadorian state neoliberal visions of "proper" community organization based on a "grid of intelligibility" on the one hand (in which communities should be nucleated and oriented according to a grid pattern), and historical patterns of organic, kin-based community fissioning on the other. As he says:

Community fission, common throughout the Amazon, is regulated by a range of social and economic forces, from political or social differences between community members to land shortages. These breaks in kinship, as Michael Uzendoski (2004) and others have suggested, lead to re-creating kin-based communities elsewhere. In the area surrounding Tena, land shortages are a key motivating factor for community fission and help explain the formation of numerous, small communities. In fact, [my informant]'s natal community is one of those facing land shortages, and this has prompted community fissioning in the past, where a set of closely related, typically male relatives, will form a smaller, kin-based satellite community in a new location where land is more abundant. (2008:136)

Land shortages, in the wake of colonization, are also the fundamental motivating factor changing land tenure in Sacha Loma. However, even the evolution of community fissioning that Wilson describes, where small groups of close kin seek out land together and form small satellite communities, is now essentially impossible in the area around Sacha Loma. This is because all land is considered to be owned, either by individual farmers or entities like the NGO adjacent to

the community. As a result, examples of community “fissioning” are decidedly different in Sacha Loma, and do not involve a wholesale movement of close kin to an area of “open” land. There are two concrete examples of this. The first is Medicio’s declaration that his family lives “independent” from the rest of the community, in their own *barrio* (neighborhood). In this way community “fissioning” takes on the character of a purely political act that attempts to compensate for inter-family strife not by moving to a new location but rather by insulating the family *in situ*. The second example is the stated desire of several people in the community to set up a new settlement near their farms *adentro* once an access road is put in that connects it directly with Tena (recounted at the beginning of this chapter). In this case the “fissioning” takes the form not of expanding into previously “open” land, but of efficient access to services and markets on previously-claimed land. People want to move to this location permanently only once the area is “plugged in” to modern markets and transportation. This case is interesting in that it does mimic historical patterns of community fissioning, at least superficially. However, the push in this case is to make the new community *more* subject to material modernization and international markets, and not less-so.

Because land privatization and scarcity have changed historical patterns of land procurement, families enter into a scramble for access to land that is something of a hodge-podge and, at least currently, only tangentially involved the farms they actually own. There are a few channels families use to procure land access. The first is to exploit land that one owns (regardless of whether one has official title to the land or not), having procured this land either through inheritance or purchase (though it is rare that this is possible). These farms, however, are located at least an hour’s walk into the forest, and locals consider this too far to travel to on a regular basis, given the demands of the school schedule. These farms are not extensively

exploited and usually only a fraction of the land area is cultivated (perhaps 3 of 50 hectares), and dedicated to cash crops like coffee and cacao.

All of the staples consumed in the community are locally grown by community members, however. This means that subsistence garden are planted either in small plots on the fringes of the permanent community, which they do not officially own, or to ask extended family members with land nearby to let them exploit unused portions of their land. Generally these are informal agreements and there is no rent paid. Much of this subsistence agriculture takes place on the fertile riverine islands in the Napo that occasionally flood and thus provide rich soil.

Agricultural access to these islands is normally reserved for those who own the riverfront land in front of which the island is formed. However, the person claiming this access will also normally grant family members the right to plant there, as well. The practical effect of all of these disparate channels of land access is that each family maintains a patchwork of small plots, both owned and unowned, across the river and in communities a short trip up and downriver from Sacha Loma, where extended family members may live. Sweet manioc and plantain dominate the crops grown on these subsistence plots, but beans, corn, and peanuts are grown, as well. Balsa trees are not cut but are allowed to grow and are later cut to sell for cash.

Dorotea, a woman in her 50s, embodies the reality of land tenure for older adults. She describes her complicated, tenuous, and tension-producing land access situation in a way that makes clear that privatized ownership of land has not simplified the land access situation for Kichwa families in the region. Rather, the land access demands of families simultaneously subsistence farming and cash cropping are complicated in new ways by new structural realities. In the quote below the “*herencia*” Dorotea refers to is a large piece of land, and she claims that she has only laid claim to a small portion of it, around three hectares. Even in the face of this,

her older sister, Valerie, is critical of her and wants to claim access to the whole parcel. In what follows I keep the original Spanish term for *herencia* instead of translating it. I do so to drive home the point that material “inheritance” is really *only* thought about in terms of land access. The evolution from open land access to privatization has taken the specific form of constructing an unprecedented discourse regarding land, and when people in Sacha Loma refer to “inheritance” the term only implies the restricted sense of “access to land my parents/grandparents owned” and does not include the broader implication the English term has to material and monetary inheritance. Land, in reality, is the one durable possession of value that people have, and other items are not considered “heritable” in this same way. When Dorotea refers to the “second line” she is referring to the grid pattern that was imposed onto the region during land reform, which is numbered sequentially moving south from the Napo River in 1-kilometer increments; thus the “second line” is located 1 kilometer south of the river. Waorani territory begins at the 6th line, but there are communities located all throughout the interior with access to farmland around them:

I have a *herencia* on the other side [of the Napo River, e.g., the north side], but I only have three hectares. I planted one hectare; I worked it and planted coffee. And now they’re saying they’ll no longer permit it, that I shouldn’t work it, my older sister said to me. And I said to her, “but why?” Our parents gave the *herencia* to the both of us. I also buy, sell, I’ve made this farm too [e.g., I’ve had a hand in creating it, as well]. And she just makes herself out to be the landlord [Spanish: *dueña*], she doesn’t want to give it to me. And so since I’ve been left without *herencia* I have to go all the way to my own farm, on the second line.

In this case the issue is that internal family politics seem to be getting in the way of communal production on a private plot. Another issue has been gaining access to land at all, even for those families who had settled the community before land reform. This was the case for Anselmo, a head of household introduced in chapter 1. Anselmo, the grandson of a community founder, founder, found himself approaching majority age with no prospect of a *herencia*. While his

maternal grandfather had cultivated a prime farm plot on the south bank of the Napo when the grandson was little (and this was initially where the man's family lived when they moved downriver from Puerto Napo), the family lost this farm in the wake of land reform. Pepe (also introduced in Chapter 1) and his brother, however, had procured adjacent plots of land on the second line just inland of the community. Pepe's brother, however, ended up taking a job as a schoolteacher, and after a few years decided to leave the community. Upon leaving he decided to sell his farm, which he sold to Anselmo, giving him a good price on the land because Anselmo was married to his sister. This was the only way in which Anselmo was able to procure land near the community. While seemingly mundane, this scenario represents a radical break with the manner in which land access functioned historically, as discussed above.

This narrowing of the horizons for land access and its monetization, while still implicating local extended families (as in the two cases discussed above), implies a new manner of understanding what land is: fungible and only secondarily tied to place. The paradox here is that, as mentioned above, privatized ownership ties people physically to place in a much more concrete way, similar to the manner that school does, as will be discussed below. But the fact of being tied physically to place (in that land is understood as expensive and scarce and thus one is tied to the land one owns) is underpinned by the fact that land, in being carved up into an intelligible grid and traded freely among independent actors, land has become a commodity.

The practical result of new constraints on land tenure is that they tie families to a location in a way that is fundamentally new for the region. However, this does not change the fact that Sacha Lomans see themselves as people "of" the region; having access to land is fundamental to this identification. Thus questions of future land access for currently landless youths nearing adulthood are at the forefront of both community attention and internal community tension. This

reflects the same revolution in the understanding of land access that exists for older members of the community. Dorotea, for example, reported that for several years she and her husband Nemar had been “fighting” for the idea that community parents should collectively buy a piece of land that would be “for the children,” arguing that if they did not do something like this then the young people in the community “would have nothing” in the future. After a long period of talk and no action on the part of the community, however, Dorotea and Nemar decided to procure a lot of about 40 hectares that came available on the 5th line, and sandwiched between two established communities on each side and Waorani territory on its southern border. However, even after they procured the land the community continued to refuse to put up money for it, prompting the couple to “retire” from the community organization, though they still attend community meetings. This example shows that land monetization, coupled with concerns over older people becoming landless on behalf of their children, have not been completely ironed out by older members of the community. While people understand the importance of maintaining land access for coming adult generations, the manner in which this should happen under new structural constraints, which will rapidly come to preclude large land plots for every family, is far from clear.

For young people themselves, however, the land tenure situation is vastly different and evolving rapidly in new ways. The founding families of Sacha Loma have, so far, found ways to acquire or pass on large parcels of land which do, in fact, approximate the historical pattern of widely-dispersed and open land holdings. This is because while there has been a transition from open access to private ownership, the number of people with a “right” to family *herencia* has so far been small, and the plots individual families hold are large. However, as the dispute between the two sisters above shows, tensions are already mounting, and are felt within the community

between family members. For the next generation, however, the choice over land is starker, and the question of land inheritance impinges directly onto their thoughts of their own futures, what kind of work they envision themselves doing as older adults, and what kinds of work will be available to them.

All of the current landowners in the community have multiple children, and all of these people state their intention of giving portions of their current land holdings to their children: when questioned directly, older people say that their children have a “right” to the land they currently hold. To date, however, no landowner has transferred either use rights or outright ownership to any of their children, though several people in this younger generation are in their 20s, and a few are over 30. I got a sense when talking to older landowners in the community that they were talking out of both sides of their mouths on this issue: they certainly really did think that their children should have access to farmland, but at the same time there was not really any community precedent for breaking farms up into small pieces with multiple owners. I think the idea of doing so was both emotionally and conceptually difficult for older people, because in giving *herencia* to each of their children they would simultaneously be breaking up the farm and divesting themselves of their own claim to land. Several young people in the community told me, however, that their parents were “in the process” of arranging the transfer of family land to their children in preparation for the new road the community was lobbying to get cleared, but no landowner had yet done so. There is thus a surface-level problem in the current *herencia* scheme that, if followed to its logical end, would mean a truly vast shift in forest practice. If all of these children do end up taking over a small slice of the family farm, the previous standard, in which one occupies a large area of land, cultivates a few hectares in cash crops and one or so more in subsistence, would reach its vanishing point of possibility.

The effects of decreasing farm size on colonist agriculture have been studied from a population-level geographical standpoint in the region. Using a multivariate regression procedure with data from a survey of over 400 colonist households in Napo and Sucumbios Provinces, Pichon (1997) finds that, among other factors, smaller farm size, proximal road access, and higher levels of household-head education are all positively associated with increased forest conversion to agriculture. Subsequent longitudinal restudies of the area (Barbieri, et al. 2005; Bilsborrow, et al. 2004; Murphy 2001) have established that in order to accommodate an increasing endogenous population, that is, the offspring of the original colonists in the 1970s and 1980s, original fifty hectare farms have in some cases been split into more than thirty smaller individual farms. The general trend in land use over this period for these fractionated plots has shifted from “extensive” to “intensive uses” uses: pasture to perennials, perennials to annuals, high-maintenance annuals to low-maintenance annuals, longer to shorter fallow periods, and heightened “modern” inputs such as fertilizer, herbicides, and pesticides (Bilsborrow, et al. 2004). Whether Kichwa communities now faced with this same conundrum will react similarly to colonist communities remains to be seen, as land tenure is only now entering its second generation of privatization, full ownership, and increasing population density. As I argue below, however, evolving discourses and understandings of the local forest complicate the potential routes land use might take considerably.

A few young men in the community did explicitly talk to me about limiting their family size, and they did so using terms that related family size to education, land use, land pressure, and overpopulation, and with a direct comparison to their parents’ and grandparents’ generation, when families were large, infant mortality high, and land was more abundant. The notion of limiting family size was only beginning to be discussed in the community, and historically

family size has been very large, both in the community and in the region. However, on a generational scale there has been something of a revolution in the way family size is looked at both nationally and regionally. The overall rural birthrate in Ecuador has dropped from 5.5 children per woman in 1990, to 4.0 in 2001, to 2.7 in 2010 (INEC 2012). In Napo Province, which is majority indigenous (INEC n.d.-b), the birth rate has also dropped precipitously, from around seven children per woman in 1990 (hoy.com 1994) to 3.9 in 2010, and projections see the rate dropping to 3.3 by 2020 (INEC n.d.-a). Chuy, a young man who I profiled extensively in Chapter 2, had one daughter, who was less than one year old, in 2011. He told me that he and his partner only wanted the one child, or maybe two so that she “has someone to confide in.” He said that his dad told him that “if you want to have a happy life, don’t have too many children” because if you have too many you can’t educate them all. He said his dad spoke from “his own experience” – they were only five brothers and sisters (few for this area), but his parents’ families were much larger, and it made it very difficult for them. This was put to me most clearly and forcefully by Sancho, a 23 year-old man in the community with no children, who was also a graduate of the NGO-run boarding school and was currently working in a temporary position in a tourist lodge in Manta, on the Pacific Coast. Asked what “the best possible use of his family’s farm was, he said: “That farm that we have *adentro*, I want to see it left as a ‘reserve’ [Spanish: *reserva*], and I’ve told the family my opinion, which is just to leave it and to have a ‘reserve.’ And, just to cultivate in the places where we’ve already cut the trees.” I then asked him “so if you have this reserve, what will all your children do then?” He said:

Well, I’ve thought about that, too. I would need to give them the same message [not to cut trees]. But it’s also necessary not to have too many children, because as time goes along they’ll just suffer more and more, they’ll be left without any forest at all. So for the future we need to be careful not to have too many children, just one or two at the most. Before, families here were enormous, and basically the best thing is to be careful not to have too many children, and that way they can go forward little by little and take care of

nature [Spanish: *cuidar la naturaleza*] and to use just as small a piece of land as possible for their crops. Because if there are a lot of children around they're going to be clearing land and cutting trees.

Sancho brings several threads of continuity and change together with this statement, and thereby previews some main themes of the coming chapters. This, however, was the clearest link that I heard anyone in the community make between region-wide structural problems and overpopulation. The interesting thing in this quote is that fact that it seems that for all of Sancho's insistence on new conceptualizations of ownership in the form of converting the land into a "reserve," and the insistence on his generation's responsibility for "saving" the forest by not having too many children, he is not advocating a radical reappraisal of land and its link to Kichwa identity; in fact it seems quite the opposite. Understanding the paternalistic role toward "nature" that people now need to have is, actually, embedded in the imperative of preserving the role of productive land in the lives of Sacha Lomans: by not clearing land and not having too many children, it becomes possible to still farm (just enough) land, and to perpetuate people who are "of" the place in the same way that he himself considers himself and his siblings to be. Note, however, that central to this conceptualization is the fact that by "clearing" land even local people are having harmful "effects" on it. Local people, in this conceptualization, are using up a fundamentally *limited* resource in the pursuit of preserving a close, "traditional" relationship to the forest. This slight shift in conceptualization, from one in which the forest is conceived of as fundamentally limitless to one in which it is conceived as fundamentally limited, is basic to the ongoing reappraisal of the human-land relationship in Sacha Loma, as will become clear in subsequent chapters.

Young Adults in the Wake of the Reforms: Hard Choices, Work, and New Conceptualizations

The structural conditions regarding land access that young people in Sacha Loma face complicate their ideas regarding the nature of local land, how land should be used, and their role in this use to an extent that their parents and grandparents could not have imagined. For the people of both genders under age 30 there is a palpable tension between the need for land access for agriculture and the identity of “cultivator” that this activity entails on the one hand, and the explicit sense that the forest needs to be preserved, both for future generations and for tourism. This tension, between the perceived “traditionalism” of the cultivator and the “progressivist” notion of conservation, reflects an intergenerational evolution in the understanding of the forest. While older people have been able to preserve, more or less, something that looks and feels like a historical pattern of land tenure even within the entrepreneurial frame of cash cropping, for younger people who do not yet have land access and the prospect of only a small *herencia*, there is a simultaneous draw to both types of instrumental use. On the one hand, even if they do not report going to the farm much anymore, the idea of farming (that is, using the land for subsistence and as a cash-generating mechanism through cash cropping) as central to an identity consonant with their upbringing is strong. On the other hand, there is the pull of using land itself (that is, its perceived inherent worth as “forest land” and not its productive capacity or extractive potential) as a commodity with intrinsic value that can be sold to people such as tourists over and over again. In addition, there is a different kind of engagement with the land implied in these two use schemes, which speaks to competing ideas about productive use and “proper” forest behavior: instrumental use through cash cropping implies by necessity a close, productive, manual relationship to one’s land, while understanding land as having intrinsic worth does not necessarily imply this close sort of relationship. This shift in young people’s conceptual

assessment of the forest toward one in which land is seen as possessing inherent worth that can be capitalized upon opens up the possibility that productive practice in relation to the forest can also change. In short, these new understandings tolerate a disengagement from the forest in a way that is unprecedented for Kichwa groups.

This kind of physical and conceptual distance from the forest is ironic in the sense that young people in Sacha Loma still live in, or immediately next to, the forest physically. However, people in the community make a stark conceptual distinction between living in the forest interior and living on the riverbanks (see Chapter 1 for a discussion of the discursive distinction between living *adentro* and *afuera*). Conceptually linked to the physical implications of the term *adentro* (that is, physically living in the forest) is the notion of living a clandestine, even backward life, in which the sort of knowledge afforded through school is impossible. On the other hand, the idea of living *afuera* is linked conceptually to idea of progress, the medium of which is “knowledge,” conceived paradigmatically as school knowledge (see below and Chapter 6). The idea of the forest as a fungible commodity with inherent monetary value is built on the back of the understanding that the previous generation had of land, where one’s plot of forest was a space dedicated to productive, commoditative use by the individual family. For young people, however, this earlier idea has evolved to something more abstract: the forest’s identity as “natural” is itself thought of as productive. This “naturalization” implies a benevolent, hands-off sort of stewardship of the land which is in fundamental tension with historical modes of being. Further, the “naturalization” of the forest is in concert with modern ideas of environmental stewardship, in which the land is not only a “natural” space, which implies a space separate from the human, but also a fragile space onto which humans deploy themselves only destructively. In what follows I provide several excerpts from interviews I conducted with young Sacha Lomans

who expressed these tensions to me verbally. I conclude that both modes of forest productivity are operational for these young people based on the fact that they express simultaneous desire for multiple kinds of forest use. Also, note the manner in which these young people describe their practice (or lack thereof) in relation to the forest, but also the obvious import that the notion of holding a piece of local forest has for them:

From Maximiliana, a 20-year old woman resident, married with one child, who claims that she and her husband, Martin, will inherit two small farms between them. She reports that she goes about once a month to the farm, and intends to plant only 1 to 2 hectares in total, with coffee and cacao to sell, as well as the subsistence crops sweet manioc and plantain: “you shouldn’t clear too much of your farm, so that the animals there don’t go too far away. With one, two, or three cleared hectares the animals do leave, but not too much.” When asked why it’s important to have animals on the farm, she responded “for food and for tourists.” Asked what sorts of things are important to know about the forest, she says: “Which trees to cut, but not to cut them too much. The animals are disappearing.” Asked what the most important thing to learn about the forest, she says: “to ‘work’ [e.g., to engage in cash cropping], but not too much. Not to cut down too much of the forest, both for tourism and to take care of the forest.” She also states that “tourism is the best type of work” than one can engage in. Asked if she would choose this career path for her young daughter, she said yes, that “since she [her daughter] won’t be working hard on the farm, she has to learn to take care of the forest, not to kill animals.” Finally, asked if local people can damage the forest, she says “no, because now the animals are coming back, they even come to the community [on the riverbanks].” The logic here is that because the families used to live *adentro* on their farms and cultivate more intensively, they drove the animals living there away. Now that people live *afuera* in the community, the animals are returning.

From Jerardo, an 18-year old unmarried young man with no children, who lives in Sacha Loma but goes to the forest only where his mother has land, in Guacamayos, the adjacent community upriver on the south side. He says that to clear farmland is “good, in order to grow food, in order to survive. To sell crops is also good – everyone here sells something, like coffee or cacao.” Asked whether it’s important to learn about the forest, he says “yes, in order to take care of it – to make a forest reserve. [Learning] helps not to cut down trees, to damage the forest. To make a protected area without gunshots [e.g., hunting], or oil contamination.” Asked what the best use of the forest is, he says “to leave it alone – to clear off a little to plant [crops] but not do too much damage.”

From Sancho, a 23-year old unmarried man with no children, who was in town only briefly at the end of 2011 because he had taken a job with an eco-tourism outfit in the town of Manta, on Ecuador’s Pacific Coast. He claims he’ll be inheriting around six hectares from his parents: Asked what he’d like to do with the *herencia*, he says “make a reserve out of it. I don’t like to damage the natural world.” Asked whether clearing land

for crops is a good or bad thing, he says: “good, because in planting cacao you are actually reforesting, and you don’t have to cut much [forest].” Asked how one clears land for planting, he says: “first we clean with a machete, then we fumigate with chemicals [e.g., herbicide]. Then we cut it with a machete again.” Asked if working in agriculture in the forest is good or bad,” he says: “good, because that’s the way one supports oneself here, to keep up your crops [Spanish: *mantener productos*].” Asked what the most important thing is to learn about the forest, he says “about plants and animals, in order to rescue them. They are disappearing.” Asked if the forest is important to him personally and to the future of his family, he says: “It’s disappearing – saving it is best,” and states that he started thinking this way about the forest from “scientists and biologists.” Asked what the best use of the local forest is, he says: “to leave it there, as ‘virgin’ forest.” Asked what the best kind of work is, he says: “tourism, because it helps us to take care of the natural world, and to keep a brake on forest destruction.”

From Sirena, a 25-year old woman, married with three children. Currently she says that she goes into the forest “only about twice a year, to help her father [Pepe].” She states that she will be inheriting “about three hectares” from Pepe, plus another three from her husband’s mother Valerie, giving the family “six separated hectares” in total. Asked what her plans are for the land, she says that “two or three hectares” should be reserved for planting, and the others should be left. “If I cut trees where will the animals live?” she asked rhetorically. Asked whether clearing land is good or bad, she says “good – if we don’t, we have no way to get money, or a way to eat.” She goes on to say “if I don’t go to the farm, how will I live? The money I get paid now isn’t enough,” but also says the following: “I want the natural world to be better off – taking care of nature is important in order to avoid contamination. Rescuing nature means living in a traditional manner.” Asked if it is important for children to learn about the forest, she says that “yes, they should find a spot where they can learn about tourism.” Asked what kinds of things a person should not do to the forest, she says “not cut too much [e.g., trees]. Not to contaminate the rivers – it’s important to take care [of the forest].” She goes on to say that the most “correct” use of the forest is “to take care of it – we should cut [trees], but not too much.”

It is manifest in the above quotes that younger people are struggling with reconciling multiple understandings of the local environment. On the one hand, it is clear that young people in the community have not jettisoned what they see as the necessity of both subsistence and cash cropping as foundational to a “proper” life in the region. The idea of cash cropping has even been conflated with the local notion of a “traditional” life, in that engaging with the land viscerally is still highly valued. It is this version of “tradition” that community members, both young and old, see as being turned away from by those who have only known life *afuera* in the

riverbank community. This was reflected in an almost reflexive trope that I heard from people in interviews regarding living in the forest, the use of the Kichwa language, and work: “*se va cambiando la generación*” (“the new generation is changing”). In terms of practice, this “turning away” takes literal form in “not going into the forest anymore.” This line of thought was clearly brought out in another of Maximiliana’s quotes:

We plant [crops] in order to feed ourselves, and to sell – to get money. We live from these crops [Spanish: *productos*]. ... [Several generations ago] we had *minkas* [e.g., collective work parties] between neighbors. We would blow a horn [to call to each other for help], we would kill animals from the forest, we’d plant rice, cacao, coffee, but moreso plantains and sweet manioc, and *chonta* [a palm planted for its edible interior, the large grubs that grow inside its core after it is cut down, and for and traditional craft products and weapons]. Also pastureland for cows, but only for ourselves [the Kichwa families], not to sell the milk or meat. But not anymore – now we’ve stopped working, we’re more used to village life, the farms are all abandoned [Spanish: *botados*], now we’ve sold all our cows. Now we just have coffee and cacao because of the kids [e.g., moving to the riverbank to send the children to school]. They’re easier to grow if you don’t go to the farm much.

Interesting here is the understanding of “traditional” existence as part and parcel with for-profit cash cropping agricultural practice that grew out of the structural conditions of the 1960s and 70s. Certainly there is a through-line in the above quote that harkens back to a vision of a collaborative, collectivist existence based on productive, habitual engagement with the forest; however the idea of “productivity” is thoroughly conflated with more recent ideas about productive agricultural work. In fact, nostalgia for a past even more focused on intensive land use is common among people in the region. In this narrative people, mostly those of the generation now in their 40s and 50s, remember a time when they lived further upriver and many people had cattle. This time is remembered as a time of plenty for families in the region.

However, alongside this cultural devolutionary narrative of “turning away” from the forest is, for young people, a corollary narrative of virtuousness in *not* working the land. The idea here is one in which either for its intrinsic “health,” or in order to preserve “virgin” forest

for the contemplation of foreign tourists, it is better not to cultivate or otherwise touch the land. In this narrative there is a clear assumption that the presence of humans in the forest should be considered to be a disturbing, and even destructive influence. Several people in the above quotations mentioned, for example, the idea that cutting trees has direct effects on animal populations. Though no one perceived these effects as permanent, rather preferring the explanation that cutting trees makes animals “move elsewhere” until the forest regrows, it is clear here that young people conceive of the actions of local people in terms of destruction and harm. While these actions are seen as destructive, though, they are simultaneously seen as necessary for monetary gain. Young people are wrestling with what it means to be ethnically Kichwa in a context in which the necessity of an engaged relationship to the forest has been loosened. My contention is that in loosening the tie between “being Kichwa” and “engaging with the forest,” the scope of young people’s self-identification has also expanded considerably, from identifying with the ethnic exclusivity of being “forest” people to a globally-scaled notion of the “human being.” This latter actor, it is postulated, exists in contradistinction to nature, rather than as a necessary corollary to the local forest (see Chapter 6).

Young people in Sacha Loma find themselves in something of a double bind in terms of their understanding of the land: it is ideal both to work the land intensively and to preserve the land, to aspire to a perceived “traditional” existence of farming and hunting, and also to live on the riverbank, attend school, and virtuously defend every tree on the property they believe they will one day inherit. These ideas function in parallel for young people, and they are in some sense mutually exclusive: the most explicit resolution to the paradox outlined in the young people quoted above is the idea that “it’s ok to clear land and cut trees, just not too much.” But there is little consensus here: some people are much more militant about conservation, and others

about intensive production. Pragmatically, however, as discussed earlier the limiting factor to what is possible either in terms of conservation or production is simply access to land. Given the conceptual tensions argued for here, many younger people in the community have simply decided that going elsewhere to work a job is the best option. These outmigrations from the community extend not just to surrounding urban areas, but into the Sierra and the Pacific coast as well. This is aided by the relatively recent increase in physical mobility within the region and between the region and the Sierra. As recently as 2006, the single road that connects the regional capital of Tena to the spa town of Papallacta and on to Quito was not paved. In 2011 a dirt connector road, running perpendicular to and connecting with the road running along the north side of the Napo to the town of Loreto was finally punched through. This ongoing infrastructural development in the region has physically opened the way for the conceptual decoupling of young people's personal aspirations from the land. While farming the local land, either for subsistence or cash, is still cited as an ideal index of one's identity as a hard-working Kichwa person (cf. Perreault 2005), it is also true that the conceptual decoupling of Kichwa people from Kichwa land has freed young people to think differently about their own futures.

Most dramatically in this capacity was an older son of one of Pepe and Micaela who had moved to a home outside of Baños, a town located in the shadow of the Tungurahua volcano in the mountains to the southwest of the Napo. He had married there and was involved in large-scale tomato farming. Many of his immediate family members in Sacha Loma traveled there over the course of 2011-2012, including extended stays of about a month for Maximiliana and her three-year-old daughter, who moved there to help her brother with his farm work. A younger son in the family, Romeo, now 13, had lived there for the better part of a year when he was smaller, before deciding to rejoin his parents in Sacha Loma. Beyond this example, several other

men in their 20s and 30s worked outside of local, forest-based agriculture during my time there. Three men worked full time as canoe drivers for eco-lodges in the region, two for the lodge adjacent to the community and one, Felipe, the oldest brother of the tomato farmer in Baños, piloted a canoe for a lodge downriver near the city of Coca. As mentioned above, one man in his 20s, Sancho, spent the year working at a lodge in the resort town of Manta, Ecuador, on the Pacific coast. Another young man, Jonathan, went to live with extended family in Quito, where he found work in a bookstore.

Reactions to outside work varied based on the perceived control that the man had over the job he held. Canoe driving, for example, was a high prestige job, in that it paid well and did not remove the man full time from the community. For Sancho, his work in the lodge on the coast he saw as “exploratory,” in the sense that the goal was less to find a permanent job and more to gain experiential perspective through independent travel. Sancho’s plan was to return to the community eventually and live there, applying his knowledge of eco-tourism in the community. For Jonathan, however, the situation was starkly different. Jonathan saw the land access situation in Sacha Loma as essentially hopeless, and felt as though he has been forced into an environment in which he was caught in a cycle of unfulfilling and unstable work. He was currently living with an aunt in north Quito, and had to ride the bus and trolley for almost two hours each way to get back and forth to work in the bookstore. There are six people in the house altogether, a number that he thought made the house “too crowded,” and he was forced to live under the thumb of his aunt and uncle. He described his living situation as “uncomfortable,” and his wish in life was for “stable employment” and “to live by himself.” In general he was dejected about his future prospects, and even about the prospect of inheriting land: “maybe someday” he’d inherit land, he said. But his parents’ farm was in a “bad location, very far inside

[the forest]” anyway. When asked directly about working around the community, he looked pointedly around and said rhetorically, “Where am I going to get a job around here?”

My claim here is that the evolving conceptual relationship that young people have to the local forest is highly contingent on the structural forces reshaping the community on a generational scale. The changes in the reality of land access and land tenure in the region have pushed people to think in new ways about how the forest is properly out to use. These “valid” uses are conceptually in tension with one another, and lead to different logical outcomes in terms of forest practice. Importantly, the choices people make in terms of practice also have implications in terms of the manner in which people “get to know the forest” in a relational capacity. Not going to the forest makes it much easier to think of the forest as a fungible entity, as claimed above. In this sense then, the framework in which the forest is conceived is bound fundamentally to the manner in which young people interface with the forest habitually. As can be seen in the quotes from young people above, the manner of interfacing with the forest has changed. The forest is as much an idea, a receptacle of aspirations, a possibility for material gain, and personal dejection, as it is a physical place whose physical contours and diversity are known.

The Coming of the NGO: Schooling and Aspirational Citizenship

The conceptual tensions implicit in the evolving relationship young people have to the forest are not simply the outcome of structural changes to the region, though I do claim that these changes are a necessary, but not sufficient, condition for such conceptual change to have taken place. Rather, the specific form that new understanding of the forest has taken in Sacha Loma are foundationally linked to the manner in which high school education has become central to the community over the past twenty years. The history of the community since 1992 is essentially

the history of Sacha Loma becoming the hub of a region-wide push to instantiate state-sanctioned education for the first time. For older community members, those old enough to have attended school during the 1970s, the only chance for education came in the form of boarding schools run by Josephine missionaries. Carlos, a man in his 40s introduced in chapter 2, characterized the push toward attending school during this time explicitly within an economic frame, which reflected the move toward increased agricultural productive capacity in the wake of land reform. Specifically, he noted that Kichwa parents began sending their children to school as a means of family advancement within the new agricultural cash economy. Carlos attended a boarding school upriver from Sacha Loma, in the community of Ahuano. He said that after the land reform his parents put in “75 to 80 head” of cattle on their land. However, they quickly realized that they were ill-prepared to meet with new challenges afforded by engaging in small-scale animal husbandry, and this had direct implications for their son: “my parents couldn’t speak Spanish, and couldn’t deal with the economic exchanges they needed with their cows. They sent me to school to develop the family economically.” Clearly then, the push toward increased education has been an intergenerational project in the region, and not one that local families have needed much persuasion to consider vital to their notions of fostering success both for themselves and their children.

What is different about the history of infrastructural development and, especially, formal schooling in Sacha Loma since the early 1990s, however, is how unequivocal the association has been between such development and “need” in the community. In this narrative, as we’ll see, Sacha Loma is explicitly pitched by outside actors as an “underdeveloped” region that “needs” concrete steps toward “modernization.” The strong undercurrent here is the overt sense that “plugging in” to the Ecuadorian state infrastructurally, conceptually, and in terms of knowledge

regimes, is unambiguously positive. In September of 1991, an American veteran of the oil industry in the Ecuadorian Amazon decided to quit his current line of work and form a non-governmental foundation through the Ecuadorian Ministry of Education that would seek to augment educational progress in the Amazon region. The man, Mr. E, had worked for a succession of eight different oil companies during his time in Ecuador, providing “environmental and cultural consulting.” This entailed significant time spent in indigenous communities of several ethnic groups. Mr. E had become “frustrated” with his work, however, and was actively seeking projects for his new foundation. In 1992 he received a call from a friend of his at the ministry who wanted to know if he might be interested in implementing an educational program, known as a “CEM” (*Centro Educativo Matriz*; Spanish, “Educational Center Matrix”), in the Upper Napo. Such school networks had been implemented elsewhere in Ecuador, in the highlands and on the Pacific coast, but none had yet been attempted in the Amazon. Presumably this was because of the infrastructural difficulty of setting up such a project in the region. As Mr. E puts it, though: “[my friend at the ministry] knew that I had a reputation of getting things done out in the Amazon, which is not easy now but was very different then, in 1992.” The money for the project had already been allocated, to be administered through the ministry but funded by the United Nations Children’s Fund (UNICEF). At the beginning the project was close to being underspecified in its goals. As Mr. E says, “their instructions, I’ll always remember, were ‘go to the Upper Napo region and pick a group of homogeneous communities, and start this project.’ It was not ‘you’ll go to community A, B, and C. You just go, and pick out whatever you want.’” To get the project off the ground, the man ended up in Misahuallí, a small port town on the north side of the Napo a few hours upriver by boat from Sacha Loma. There he purchased a dugout canoe and spent ten days visiting downriver communities. From this pilot

trip Mr. E selected 27 communities to be part of the CEM project, which included building or updating one-room schoolhouses in each of the communities.

Sacha Loma was selected to be the administrative hub of the school network. This decision was not made, however, because of any previous special link to education, or even because there was a current population living there on the river. At the time, families were spread piecemeal over the landscape, living each on their own farms. In addition, most of the families concentrated near the riverbanks at that time were not Kichwa but were ethnic majority colonists, since these families had grabbed up the choicest land parcels in the wake of land reform. In a region with no roads, the river served as the regional highway, and thus direct access to the river was at a premium. Sacha Loma was chosen, rather, for pure accidents of its geography:

I ended up choosing [Sacha Loma] for two primary reasons: of the 27 communities only four didn't flood, and... that's a big feature. The river just eats away huge quantities of land. And I'd been working in the jungle long enough that I knew this, so I wanted a community that wouldn't flood. And, it had a good port. Chonta Punta is the government center [upriver by bus from the nearest current bus stop by about 40 minutes], but it doesn't have a good port. ... So that's the reason I chose [Sacha Loma] for the program, because I had to build a center that would administer the program for the 27 schools. And another factor – we needed to have a community that had *escritura*, or title, to the school property. In many of the communities a farmer just said 'I'll just give you the land to build a school.' Which is fine, but from the point of view of the ministry they said 'we cannot invest in this program and build infrastructure if we do not have title to the school.' [Sacha Loma] did have title to the school. They had a little tiny one room school that literally was being supported by bamboo to keep it from falling over when I showed up.

Thus based in Sacha Loma, Mr. E administered the school building project. Very soon, however, he began expanding the ambitions of the foundation. At first these ambitions were focused on land acquisition, in order to control the farms contiguous to the land on which the school and administrative center were built. The first farm the foundation purchased was owned by Pepe's father, the one indigenous farm at that time to have riverfront access. This was the

farm from which the school property had originally been separated. In rapid succession the foundation bought three farms, including the port site, and then over the course of several years filled in the gaps, such that after a few years they owned an unbroken swath of river frontage on the south bank of the Napo, including the school, the site of the school administration, and the land on which the current, aggregated indigenous community now lives.

After a few years Mr. E was approached by a biology professor friend of his from Centre College in Danville, Kentucky. This woman wondered if the foundation would be willing to build infrastructure in order that she could bring students to the site for short study abroad projects. This was the moment when the idea that eventually became the eco-lodge was hatched. While there are many lodges up and down the Napo now, extending from Tena to Yasuní National Park and the Peruvian border, at the time there was almost no tourism infrastructure in the region. Mr. E's quote on this gives a flavor of land use change in the region over the last twenty years, away from intensive production and toward uses dependent on standing forest:

So that's when I conceived the idea of the lodge. So I went to the land where the lodge is now, which was a cow pasture. And from where the big green house is [up the hill from the riverbank], you could look right down into the river, there were no trees, it was boom right down to the river. You could see all the canoes going by. Now it's all grown up. And where the lodge is, it was cow pasture.

This process of land acquisition set in motion a series of events that led to the re-aggregation of Sacha Loma after a generation of dispersed living on individual farms. The foundation's land acquisition and commitment to building infrastructure were the lynchpins of this change. According to the foundation leader, most of the colonists who had grasped up land during land reform were looking to get out by the early to mid-1990s, and as soon as they sold out to the foundation they left the community. This paved the way for indigenous families to reclaim areas their parents and grandparents had held on the riverbank prior to land reform and colonization.

They did so, however, under the auspices of the foundation, making this process of reclamation structurally very different than it had been before, when the previous generation had pioneered land there, on what was then Waorani territory. First, however, came the community infrastructure at the hands of the foundation:

I ran that [education] project from '92 until '95. It was a three year contract. ... I knew the contract was ending – it was a fixed time. And so having bought this land, I started building the lodge, before the end of the three years was up. ... By this time of course I knew everybody in the community. And talking to them, trying to find out what their needs were, the number one need at that time was health. It was not education, it was not income, it was health. Because if you were hurt, you were just shit out of luck. I mean, at that time not many people had canoes with motors, now a lot of people do, but at that time very few people did. No roads. For you to get to Ahuano [a large community upriver], it was three hours in a motorized canoe – poling it would take two days. And so the health issue was – if you were snake bitten, or seriously hurt, you were out of luck. So that's when we came up with the idea of the clinic. We had to bring the communities together for the education program, that's where we formed the association of communities.

According to the foundation leader, the process of getting the clinic built in a timely and cooperative manner was difficult and lengthy. Internal tension and distrust ran high until Anselmo, a head of one of the community founding families, stepped up and led the cooperative building project:

So we had the lodge – it opened in January of '95, and in working with the communities they said they wanted to build a clinic, so we said “ok, we'll build it but you've got to put in your share.” And so they said they'd put in the wood, and it was really an interesting process, I remember sitting in the meeting and someone would say “well I have X tree. And I'm willing to cut that and cut it up into boards for the floor.” And then they'd say “well that's not very good wood for a floor.” So there was this negotiation on the trees that you would use. We provided chainsaws and fuel for the people to use to cut the trees, and it's always interesting to me – we were there then as we are today trying to help the communities in different ways. But... we had to write [the name of the foundation] on the sparkplugs, on the chainsaw chain, on everything that you could take apart, because [the community members] would take the good parts off, put the lousy parts for their own chainsaw back on, and [then] it doesn't work [anymore]. It was a frustrating time. And that's when [Anselmo] began to work with us, with this whole process of administering, when we were getting the lumber, and having *minkas* [work parties], building.

In addition, after several false starts the foundation got a large influx of cash that helped to push the project over the edge toward completion:

You're familiar with [a restaurant catering mainly to tourists in the New Town section of Quito]? Well, [the owner]'s father is a medical doctor, he's retired now, but he was here... [and we were together] for Christmas. And, Christmas morning, [the owner's father] gave me a check for \$10,000. Which was the capital I needed to buy the rest of the building material, to go ahead and finish the construction of the clinic, to buy the roofing material. So we built the clinic, with the housing unit in the back – just the same as it is today. But it took two years, the clinic didn't open until '97, but we started in roughly '95.

It was the successful completion of this infrastructure that drew indigenous families back to the riverbank, along specifically with the promise of a locally-available education:

[The indigenous families] were still living on their farms [at the beginning of the clinic project]. But we were working with them, and working with the community, and somewhere in there, I don't remember exactly when, but in the '96 period probably, was when we gave two hectares to the community, to divide it up and to have their lots to build their houses. ... I don't remember all the details, it was sort of a mutual thing [that they decided to move to the riverbank], working with them. Here was this little school, we had built more than one room, and had more teachers there, but a lot of kids just couldn't get there, especially on a rainy day when the *Rio [Sacha Loma]*, which is back there [between the riverbank and the family farms] would rise and they couldn't get across it.

This justification for the families' move to the riverbank is consistent with what I heard from every head of household with school-age children at the time: that the proximal reason for moving was the undue hardship the community children faced getting back and forth to school, from the rain and heat, the danger of being bitten by snakes and insects, simple fatigue and hunger from walking so far each way, and the fact that children had to leave so early and return so late, sometimes after dark. In a larger sense, however, it is clear that the structural conditions precipitating the indigenous mover back to the riverbank set up a very different set of aspirational priorities for the families making the move. The move was explicitly cast in terms of educational attainment, and families sacrificed a significant fraction of their prior mode of

being in order to bring it about. Two things are simultaneously clear from older people in the community: that they came actively to want this shift and strove to bring it about, and also that they were and are currently aware of the extent to which their lives, and the lives of their children have been reoriented by this move. The quote from Maximiliana above, for example, makes this clear. Dorotea, a woman in her 50s with several children and grandchildren in the local school, describes the process of moving to the river this way:

[It was] five families. First, we solicited [Mr. E]. It was just five families... who said that [Mr. E] wanted to donate [land] to them. So that they could build houses here [on the riverbank] so that our children would no longer suffer, so that they might be educated. So we built the houses. That's why we live here now.

Sirena, a 25-year old mother who is currently studying part time in Tena to become an intake nurse at the local clinic, also put this sentiment succinctly. Here she emphasized the paradoxical nature of reorienting community aspiration in terms of education, and the structural upheaval this has caused:

I lived *adentro* until I was ten. For me, I prefer to live *adentro*. Here [on the riverbank] we have no place to plant crops – like plantain, manioc, to feed ourselves. Here we just live [divided up] on small lots, and all in order to send the children to school.” But, she concluded: “Before it was much more difficult [for the children]. They had to walk 45 minutes to and from school, and then do chores, then do homework. It was dangerous because of the snakes. I for one prefer that our children get an education, that they finish their requirements, and [only] then go live on the other side [of the river] or *adentro*.

It is clear that parents in the community are aware of the betwixt-and-between nature in which their decisions regarding their living situation places them. The valuation of “turning away from” the forest is here couched in a discourse that pitches the forest as a “difficult” and “dangerous” place for children who should aspire to a more cosmopolitan future. Thus, the logic goes, everyone had to move to the riverbank. Since that first wave of re-migration to the riverbank, though, the trend toward community aggregation has only increased. First, several younger siblings and extended family members built houses on land next to the school that had

been part of the original land donation from the foundation, complementing the houses those original five heads of household had built. During the years 2011-2012, the oldest children of the first generation had begun building houses on similarly pre-donated lots from the foundation.

This decision to move the families to the riverbank had fundamentally reorienting consequences for community members, but especially for the formation of young people in the community. At the same time, infrastructural development in the community has continued. As outlined in Chapter 1, the foundation has instituted a private boarding high school downriver from the main community and public school, which draws students from all over the region and trains them in sustainable development. The eco-lodge has expanded significantly, and now has the capacity to house more than forty tourists at once. The other large successful infrastructural project was a church that was built at the request of the new community in 2001. It was built with funds from parishioners of a Catholic church in Danville, KY, which Mr. E challenged them to raise during a fundraising trip to the US. These donors raised and committed \$8,000 to the project and then the foundation worked with the mission in Tena to secure the construction crew. These large-scale projects are in addition to the ancillary infrastructural improvements that have lent a sense of permanence to the community, including the *cancha cubierta*, build by the provincial government, and three dry goods stores run by community families.

Work Inside and Outside the Forest: Making Aspirations and Mismatching Expectations

As has been claimed above, the infrastructural development at the hands of the foundation provided a unique center of gravity to which families spread apart geographically by land reform were brought together under new auspices. The promise of moving to the riverbank under the auspices of the foundation was self-consciously aspirational for community members, and was double-pronged: they saw their move to the riverbank as both an opportunity for wage-

earning jobs for themselves, and for education for their children. In this way they signaled a strong valuation of the kind of people they perceived education as producing. This valuation of wage-earning jobs and cosmopolitan ideals is mostly visible, however, not in their actual manifestation in the community, but rather in the frustrations that residents voice over the lack of local opportunities for work consonant with what they see as their reoriented ideals.

In 2011-2012, only seven residents, five of them indigenous, held full-time positions at the eco-lodge. Two men worked as canoe drivers for the lodge, two other brothers worked as cooks in the eco-lodge dining hall, and two women, one indigenous and one a member of the only current mestizo family in the upriver section of the community, worked as housekeepers and gardeners for the lodge. Finally, one of this woman's daughters worked as the secretary for the downriver boarding school run by the foundation. Other than that, however, no one in the community was directly employed by the foundation. The foundation has even brought in employees from as far away as the indigenous communities in the highlands to the north of Quito, which has created some tension among those community members who hold these jobs and those who do not, and between the community families and the foundation leader. While residents see the foundation's provision of jobs as part of the initial pact they made in allowing the foundation to be headquartered in Sacha Loma, for Mr. E the community members have been given many chances to prove themselves capable of holding jobs within the foundation but have come up short. This impasse boils down to a gulf between community members and the foundation in terms of how they envision "proper" work performance in the postindustrial service sector. This mismatch in expectations is a reflection of a long history of mistrust between the community and the foundation. To hear older residents tell it, this is a story of a

skeptical community wary of being hoodwinked, and not so sure, to this day, that they have not been. Medicio expressed these sentiments in his recounting of community history with MR. E:

[Mr. E] lived with me for fifteen days [when he first arrived]. He said “I’m here to help, and I want you to help me, with [the foundation].” So, ok, I opened my mind and I accepted. ... But at the beginning there were a lot of problems, between [Mr. E] and the people here. There were a lot of problems because there were lots of projects that just stopped in the middle. ... First he came to build school classrooms. But he made them with really soft wood, wood that rots really quickly. It was wood from outside [the region], and the school couldn’t support it. But to the people in the community, they were saying: “why would [Mr. E] buy bad wood? It’s so he has money left over and he can just leave with it.” And from that point on the people really thought poorly of [Mr. E]. Then he started another [project] that had to do with store ownership. He wanted to give a store to everyone, but that didn’t work out. There was a project involving honeybees, but that failed, as well. There were projects involving mothers in the community growing crops, but that didn’t work either. I have no idea what happened, where all the money went. So I told him, and the community told him that he had to leave the community, since he hadn’t helped at all, he’d just come to lie, to trick us. So I organized the people and we had a meeting where I said all of that. And we gathered up his things, put them in his room, and said “get out of here!” And he was about to leave! But then some of the people said “no, how can we do this, let’s give him one last chance.” And I thought about it, and I said “why not? If he’s come here of his own free will?” So at the end I went back and talked to everyone, and I left him alone. I said “alright, then, help us. Keep on working with us.” And from then on, I haven’t bothered [him]. I haven’t said a word. ... So, there have been problems like that. But he is helping now, and the community leaves him be. ... But, we do have some doubts, because we don’t want him bringing in people from elsewhere to work in the hotel. It needs to be people from here, in order to be able to help, that people from the community get a benefit.

Maximiliana also saw these problems between the community and the foundation as ongoing. She accused the foundation leader of having abandoned the community during the construction of the boarding school downriver from the community. She claimed that while he used to be involved in the community he now just uses it to make money, while claiming in his promotional brochures and on his website that he supports them. She feels that the foundation plays “favorites” with certain families, offering them permanent positions but not others. Members of these other families may have been hired for work in the lodge, but were soon fired “just because they came to work drunk a couple of times.” More than anything, the foundation should be

offering the community families jobs and money. The case-in-point moment for the community, she said, came when the lodge sent packages of cookies to them as a Christmas present, and another young woman looked at the packages and realized they were past their date of expiration.

What is for community members a case of unfulfilled promises for the provision of wage work on the part of the foundation is, for the foundation leader, a simple case of a shoddy work ethic. From his perspective the stated ambition of residents is fundamentally disjunctive with what how they are willing to perform. This disjuncture, in turn, stems from a lack of understanding over how one navigates the transition from a life in the forest to a modern, fundamentally capitalist reality:

What's frustrating to me is you take kids in the community, like [a now 25-year old man], good kid, he's got a high school degree, he could have gone on, maybe not to the university, but he could have gone on and done something. We offered him work in the lodge and such. But the cultural work ethic has been eroded, as a part of all this transition that the people are going through. ... But if the parents have improved their level by working, or whatever, they're now giving their kids an opportunity to get educated, and not demanding of them to go work on the farm – I mean, they don't work on the farm. They hang out, they get drunk, and it's unfortunate. Wonderful kids – I've always liked [a now 18-year old man in the community], he's a sweet kid. But no ambition. No motivation. He dropped out of school, he wanted to work at the Lodge, we gave him a job, and the first two weeks he didn't show up three times, you know? So one of the things we need to put a lot of emphasis on is work ethic and responsibility.

This lack of successful “transition” is, for the foundation leader, linked to a fundamental misunderstanding about what education entails:

The parents [of the students in Sacha Loma] don't have an education. So they saw the school, and they really thought that the kids would walk through the door into the school, and through osmosis they would learn, I mean they would walk in and they'd be educated. Just the fact that they were *in that building*. And I remember arguing extensively in the communities, you know, “put a thatch roof on your school.” It's cooler, when it rains you can talk. But, “no, a ‘school’ has to have a metal roof.” That's the sign of “progress.” And, if you have a “progressive” school and you walk through the door, you will be *infused* with education – is the concept. Because the parents have never been in a school, many of them, so they didn't know what a school was. And this is why

they have put up with the incredibly poor quality of education. Because they didn't know what to ask for.

My reading of Mr. E's take on the relationship between community families and schooling is that he is correct in his assessment that that young people have undergone a "transition" that has taken them out of the forest fundamentally. Further, he is correct insofar as there has been very little work done to acclimatize young people to the notion of "productivity" entailed in "being" a student. However, I cannot chalk this up to an entitled notion of "laziness" or "lack of work ethic." Rather, what is at stake for young people in Sacha Loma is a reevaluation of what constitutes "productive work," at all: from tangible, manual work on the farm to intangible, mental work in the classroom. What such a thing "looks like" is fundamentally at issue in the community, between younger and older people, certainly, but also between families and those providing "access" to Western-style education. Older residents of the community do not have a manner in which to model what a productive student and denizen of the information economy looks like, however, and the school itself invests very little in establishing the sort of meta-awareness it takes to become a productive, working student.

In Mr. E's defense, the conundrum regarding the mismatch in what local people "needed" from education and what they were getting when they were finally given access to it was the driving force behind his decision to found the regional boarding school, located on the downriver edge of the community. Though he had spearheaded the education ministry's program that brought the school network to the region, he quickly saw that, once the state assumed control of the network, a gap appeared between what was being provided in terms of education and what would be useful for the rural young people attending it. This mismatch precipitated from the fact that state education in Ecuador is doggedly top-down in terms of curriculum. At the same time, as Mr. E notes, parents in the region considered it progress simply to have local access to school

infrastructure, at all. Beyond this, however, these parents have no insight into the relative quality of the education with which their children were being provided: they “didn’t know what to ask for.” State-provided education, in short, simply has been deaf to the needs, abilities, and history of local people with little experience with school settings. Because of this lack of experience, local families have been under the impression that whatever “schooling” was immanent in exactly the way the state provided it. In opening the boarding school, Mr. E’s aim was to provide a different sort of education to indigenous students, one that took into account the structural realities students in the region were subjected to:

There are jobs, and the kids are capable. It’s the education *system* – this is why my whole thing... is practical education. The educational system is not providing the young people with an education that they want. People say “well, we need to do education,” but you ask the people, what do the people want? They want the training to be able to improve their lives. And that is technical training. Not to be an engineer, they’re not gonna be an engineer. ... The vast majority, the education they’ve gotten through the first X number of years is so poor there’s no way they could talk about passing an SAT test.

This line of thinking is a reaction to the state school’s emphasis on formality and routine at the expense of thinking critically about curricular content. Classes in the Sacha Loma school follow a strict format whereby the teacher teaches from a government-issued textbook. All of the homework assignments come from this textbook, and the emphasis in terms of educational “goals” is strictly on the amount of the textbook covered in a given amount of time, rather than on measuring or gauging the learning process of an individual student or class. During the 2011-2012 academic year I was able to sit in on and observe English classes in the Sacha Loma public high school about three times a week for the entire year. All of these classes followed the strict teach-from-the-book format. All tests were developed directly from the book, as well, and many in the moments just before the test was administered. Most glaringly, however, was the fact that it was clear that it was much more important to teach what was “supposed” to be taught at a

particular “grade level” than it was to take into account the level of student capability. This had the effect in the English classes in which I participated I was consistently asked to teach lessons that were well beyond the capabilities of the students. In some sense the advanced nature of the lessons was paradoxical, in that the community English teacher, Yoana, was an 18 year-old community resident who had graduated from the Sacha Loma school during the previous year. She did not speak English fluently. This created a dynamic in which it was essentially impossible for a productive intellectual relationship between teacher and student to exist: students did not understand the work of being a student because teachers could not model what learning looked like, any more than students’ parents could. This created a strange cyclical dynamic in the classroom, wherein students were asked to do things they did not understand, and then were chastised for doing them poorly. Ironically, this made school content “easy” for students, because “doing school” became mostly about perfecting the practice of performing studenthood in terms of its scheduled, daily cyclicity.

Thus what *was* productive in terms of schooling were its formal, disciplinary aspects, and these were played out in excruciating detail: the routine of wearing one’s uniform, attending the morning assembly in which students stood in pseudo-military formation until they are dismissed, of sitting calmly in one’s classroom. That schools might function in a disciplinary fashion on the body, reorienting habitual practice in accordance with the ideals of the modern nation state is a well-trodden idea (e.g., Foucault 1977), and students in Sacha Loma are certainly experiencing modern, formal schooling primarily as a project of spatio-temporal and bodily discipline. The gravitational pull of the school’s “promise” has fundamentally restructured habitual practice for all members of the community, taking notable form in the relationship of local people to their forest. While the recent move to the riverbank was certainly a “return” of sorts for local

families, it was also a move to a fundamentally different, newly instantiated universe of practice in a place they already knew well: these families came “home” to find that the ground rules for shaping productive people there had changed in ways they never imagined. In short, the type of “locality” (sensu Appadurai 1995) produced in that spot on the south bank of the Napo has shifted profoundly since 1992. This means that the kind of people produced there has, as well.

The rhetoric in the classroom functioned alongside the production of structured time to also make clear the aspirational nature of schooling. The young English teacher, for example, would specifically admonish the students not directly in terms of their (usually low) grades, but rather in terms of their future job prospects: “How will you ever get a job if you aren’t professional?” she’d yell, when they did not turn in an assignment on time. This kind of taken-for-granted rhetorical question seemed especially striking coming as it was from a local woman of barely majority age, talking in a community with no road access in the middle of the Ecuadorian rain forest, to a group of young people whose parents were, to a person, cash croppers and subsistence farmers. The performance of school carried with it the baggage of “modern” and “progressive” expectations. These expectations were to *be* something diametrically opposed to what all of their parents were. Followed not very far to its extreme, this rhetoric specifically devalued the forest as a relational locus of engagement, in favor of some kind of job that would keep those white shirts just as white as they were in the classroom.

Out of the Forest and Into the Tweens: Schooling, Structured Time, and Adolescence

The expectations implicit in the spatio-temporal demands of school literally created the conditions in Sacha Loma for a revolution in how young people in the community experience being young. Indeed, as argued above, this was a contract into which local families entered willingly. This contract, though, was reorienting enough that it allowed for the emergence of an

entirely new category of being: that of the “adolescent.” Shenton (n.d.) has explored the emergence of “adolescence” in Sacha Loma as a constructed phenomenon, showing how older and younger people in the community struggle to negotiate how local instantiations of this global category might look now and in the future. For Shenton, adolescence in Sacha Loma as it is currently experienced consists of five interrelated components: a time to be carefree (i.e., a time for tolerated laziness), a time to delay childbirth and marriage, a time to get an education, a time to watch television and develop skills and appearance to succeed in the social world beyond the community, and a time to be mobile. Embodying these components and thus living “adolescence” is, for local people, literally transformative in that it makes a new sort of person, one supposedly equipped to function in the postindustrial Ecuadorian economy. Key to the conception here is the notion of “time,” as is clear from the list of components above. This “time,” though, takes multiple forms, both as the literal, daily, habitual time provided by the school day for the enactment of the practices associated with the “components” of adolescence listed above, and in the *longue durée* sense of school’s enablement of, as Shenton puts it, a “prolonged experience of youth” (n.d.:Chapter 2).

School’s provision of structured time literally upends practices older people in Sacha Loma associate with becoming a socially productive person: to work hard with a machete, to have an arranged marriage at a young age, to have many children, and to be tied to land via one’s extended family. In its place, structured time implies new practices: “idle” physical activity (especially sports), having a boyfriend/girlfriend in a low-consequence “serial monogamous” fashion, studying both in class and with after-school homework, watching TV and using computers, and travel to regional urban centers and other surrounding communities. As Shenton notes, however, this “ideal type” of adolescent, who is “fun-focused,” “free,” “single,” and

“childless,” runs quickly up onto the rocky shoals of clashing expectations and structural realities (n.d.:chapter 2). While young people may not be able to live these realities, though, I do contend that the production of structured time has allowed the aspirational frame of young people to change in concert with local expectations of “modernity”: as Shenton puts it, this consists of “being educated, having fewer children, marrying later, having enough money to be comfortable beyond everyday survival (e.g., owning a house, having televisions, computers, cameras, clothing, accessories), and being able to provide one’s children with money and education” (n.d.:Chapter 2).

Parents are manifestly changing what they do, and what they expect of their children, in relationship to school and the forest. Even older people put this relationship in idealistic terms that posit education as something of a “salvation” from a cultural backwardness associated with reliance on reduced access to a dwindling productive forest. Shenton quotes a 44-year old mother as saying:

Education serves so that one can survive within one’s family, one’s home, one’s community. If we don’t know, if we don’t study, if we don’t overcome...then what we are left with is nothing—of living for the sake of living, that’s all, only grabbing animals, taking this and that. With education comes more thinking, more ideas: how to take care of one’s health, how not to have too many kids [and so on]. In a short time, there will be no farms. There won’t even be any animals. It will all come to an end, and we won’t have any place to be. (n.d.:Chapter 2)

The idea of “education as resource,” however, exists in tension with competing ideals. As I have claimed earlier, “tradition” as locally conceived is tightly bound to an identity that includes habitual, close contact with the forest. Both younger and older people espouse this link: to be “from Sacha Loma” is literally to be “of” the place – to have a relational tie to the place itself. As Shenton puts it, “the community’s young people may aspire to live, study, and work elsewhere, but inevitably many are tethered to Sacha Loma with a cord only so long as their

destination” (n.d.:Chapter 2). Because “tradition” is linked to “place,” the conceptual tension between land and education as productive resources takes shape in terms related to the forest. Specifically, people in Sacha Loma idealize a life that includes education and wage work on the one hand, as well as the farm and agricultural work on the other. In none of the interviews I conducted did people see a life including both the farm and a wage job to be in tension. Rather, they saw both as necessary and mutually affirming to the goal of obtaining the money and food one needs for one’s self and one’s family. For example, Victor, a 14 year-old son of Anselmo, told me that if a person from Sacha Loma didn’t have “family land” and never went to the forest, that person was “not Kichwa.” At the same time, however, he saw one’s exploitation of the forest in largely instrumental terms. Asked what he would do with land from his family, he said he would “leave it as forest until he got a job,” and then buy cash crops to plant, like coffee, cacao, rice, and corn. He would plant only two or three hectares, though: the rest he would save so that he could fell trees, both to sell and to build houses for himself on the riverbank and on the farm. However, because working on the farm is both “hot and dangerous,” he envisioned himself setting up the farm in this way and then taking advantage of his education and becoming a “chemist or a surgeon,” in this way also carrying on his father’s legacy (Anselmo works as the intake nurse at the local clinic). To clear land is a “good thing,” he says, because “when you don’t have money, [agricultural] products save you.” Selling large trees to middlemen is also “good,” because “when you don’t have work it makes it possible to buy food.” Finally, the young man reports that he goes to the family farm only “once every six months,” mostly during school vacations, and that he doesn’t go more often because there’s “no time – and lots of homework.” He also says that he “is not used to [Spanish: *acostumbrado*] working” in the forest, because of the lack of time he spends there. What is interesting about this as a case-in-

point is that while the mode of relationality to the forest has manifestly changed, the aspirational frame of this young man non-ironically includes what he sees as the best of both worlds: working for money *and* being tied to place in terms of “traditional” practice and ethnic identity, which importantly still involves the forest conceptually as a location for the productive manufacture of “proper” Sacha Lomans.

Parents, too, are struggling with these multiple imperatives, wherein both life in the village and the forest are seen as in tension. For example, Shenton quotes a 29-year old mother in Sacha Loma as stating:

Studying is important for [our children], so that they learn more....Teachers say that we parents take them to work on the farm, and so they don't do their homework. That's what some of them say. Yes we take them to the farm, but only for a short time. Then they come back. They do their homework. That's the way it is. (n.d.:Chapter 2)

It is clear here that while there is implicit tension between two modes of being, and even some confusion on the part of parents that these two cannot be reconciled, the imperatives of the school calendar clearly have taken precedence over the farm. What constitutes productivity in Sacha Loma is undergoing a radical shift, structured by the perceived route toward “progress” allowed by the evolving structural realities of the community. This is a movement from engaged productivity in the forest to fungible school knowledge. Though the categories associated with the emergence of “adolescence” in Sacha Loma closely resemble ideas and practices that would not seem out of place in an American high school, Shenton is absolutely correct to assert that “adolescence in Sacha Loma is “a home-grown category, a product of both the actions of the younger generation and the investments of the older generation, who recognize young people in a formative state that they are supposed to nourish, feed, and grow” (n.d.:Chapter 2). This observation stresses the fact that the embrace of a new sort of valued, valuable, productive person in Sacha Loma is a reaction to a specific set of structural realities that continue the

historical evolution of Amazonian Kichwa people in their relationship to, and understanding of, their position vis-à-vis majority culture values and ideals.

The fact that the aspirational frame for old as well as young people includes an aspiration to participate in an economy of knowledge does not mean that community members have equal access to this economy, or are equally fluent within its confines. In fact, the very awareness of an economy of knowledge and its aspirational “prestige” can itself be a stumbling block. As Shenton (n.d.) notes, she ran into resistance in interviews from older women in the community who were reluctant to participate, based on their contention that they were unqualified because “we are not well educated” [Spanish: *no somos bien educados*]. In like manner, my wife and I were seen in the community as exemplars of the information economy, and on several occasions community parents told my wife and me that they had told their children to “converse” with us to “gain knowledge.” We were repeatedly asked to help students with their homework. Perhaps most interestingly, on several occasions we witnessed young people lording their fluency with school materials over their parents, insisting that they (the young student) had a correct answer when the parent thought an answer was something different. In many cases it was clear that the young child thought that the parent didn’t understand what was being asked in the homework assignment. In all of these examples the community performed an expression of what it perceived as an asymmetry between community members in their possession of “valuable knowledge,” turning the notion of “expertise” on its head.

By the same token, older people often went out of their way to demonstrate to me when they were performing what they considered to be “traditional” activities, which almost always directly involved walking or working in the forest. For example, during a tour of Pepe’s farm early one morning, I pulled out my camera. Pepe immediately became excited. “Take a picture

of me working!” he said, hacking with his machete at the long grass between his coffee and cacao trees. “*This* is how we work,” he said. In this case Pepe was clearly indexing to me what he thought I should think about local people doing “proper” work. The irony here is that Pepe was one of the original three who came to the foundation leader to ask for land such that he could easily send his children to school by the river. He and his family are currently in charge of a small clapboard store located next to the state-run school, which sells basic staples, candy, drinks, and chips. In the face of his thorough and willing participation on behalf of his children in the information economy of the school, he still felt strongly that he perform for me what he considered an identity-edifying version of “work.”

In her analysis of the characteristics of emergent adolescence in Sacha Loma, Shenton (n.d.) rightly draws out an evolution in the way older people and younger people think about personal physical mobility in relationship to their aspirations within the information economy. The manner in which the practice and valuation of personal physical mobility has changed, however, not only reflects a new sort of “adolescent” thinking, but also has deep repercussions for the relationship of young people to the forest. This is key to understanding the evolving social relationship to the forest because mobility both within the forest and between the forest and urban areas has been crucial to Kichwa identity in the Upper Napo for centuries. Muratorio (1991) makes the claim that for centuries after Spanish contact Kichwa mobility, and specifically the ability to move freely between urban centers populated by whites and deep into the forest amounted to a tactic of cultural protest, and thereby became a source of cultural resilience. This resilience-through-mobility, moreover, was based on a deep relationality with the forest; the Kichwa *muntun* knew the forest so well that they could use it to escape the reach of missionaries, epidemic disease, government officials, and debts to patrons. Further, Kichwa were perceived

by whites as being the only ones who *could* know the forest, and were thus employed as guides and for extractive labor. By the same token, as I explored above, personal mobility in the form of amorphous, organic community fissioning over generational time was historically the sanctioned method of community, and by extension family, formation. Physical mobility was also the impetus behind the relatively recent founding of Sacha Loma: as I've argued, the "pioneer spirit" that drove a few families to the region in the 1960s was not a far cry conceptually from the sort of historical valuation of mobility that Muratorio (1991) and Macdonald (1999) focus on. This was chiefly because even though the "pioneer spirit" of those who founded the community is primarily remembered as a capitalistic endeavor, it still implied, and continues to imply, an intensive relational productivity with a forest these families consider to be their "homeland." Mobility, in its various guises, has thus been for centuries a conduit to protecting a "Kichwa" mode of being vis-à-vis the majority culture in a very literal way. Historically, physical mobility within the forest was linked indexically to a Kichwa sense of exceptionalism from majority culture, and thereby to one's social identity as Kichwa.

For her part, Shenton points out a recent trend in which the notion of mobility has become troubled for parents in Sacha Loma, as it has become linked to other features of being "adolescent." This linkage between "mobility" and "adolescence" has changed the very nature, and valuation, of mobility for community parents. Rather than couching the mobility of their children in relation to cultural affirmation, these parents relate it to a casting aside of previously valued modes of being in favor of activities specifically related to the production of "structured time" through school. Shenton quotes a 29-year old mother as saying:

They have boyfriends, friends, I don't know. We didn't used to behave this way. Things have changed so much...I don't know why they have changed. Moms don't watch them closely enough. And their daughters *walk* wherever they want. They don't watch their *wambras* [Kichwa: children]. Oh! My mother watched us like a hawk: [She would say,]

‘you have to *walk* calmly, you’d better not go about talking with boys.’ She didn’t know how to leave us alone. That’s how it was. Nowadays, moms don’t pay enough attention. They leave them alone. That’s why they have boyfriends, friends. (n.d.:Chapter 2, emphasis added)

In like manner, she quotes a 22-year old woman as saying:

Young women want to make sure they dress well, that they are in style. They want everything to match their specific tastes. They *walk* around, concerned with having fun. (n.d.:Chapter 2, emphasis added)

And, a 64-year old mother and grandmother: “Nice and neat they *walk* about. Calmly, carefree, they *walk* about....” She goes on a little later,

Now, these *wawitos* (little kids, Sp. diminutive added to Kichwa) that are growing up these days, all of them are changing. That’s why now I tell young kids like my grandchildren that now they dress a little too well; instead of clothes, we need better food. And what’s more they don’t want to study. ‘You guys only waste away the day playing,’ I often tell them. When I was little, I crawled around, I was raised. If my mom wasn’t looking, we’d eat shit off the ground. But nowadays, we coddle them, we work, and they *walk* about as they please.... (n.d.:Chapter 2, emphasis added)

Couched in all of these quotes is an unease with the type of mobility afforded by new “adolescent” activities. What I would do here is to extend the point and make the case that parents in Sacha Loma not only link this kind of mobility to “adolescent” practices and valuations, but also explicitly to diminished practice within, and by extension knowledge of, the local forest. In short, my claim is that the construction of “adolescence” in the community has reoriented the valued form of mobility from a practice linked profoundly to the forest to a practice profoundly devoid of the forest. Experiences with teenagers in the community and on family farms led me to conclude that young people were not keen on going into the forest, and that it was something that parents had to cajole their sons and daughters to do. Victor even scheduled an interview with me on a day off from school so as not to have to go to his family’s farm. I found this out because I showed up to do the interview and his mother Roberta told me with much bemusement that when his father Anselmo and brother Waldo came and told him to

go with them to cut trees, he reported that he could not because he was going to be busy interviewing with the resident anthropologist. She had to yell at him to make him go, she reported. The young man had not seemed very keen on sitting down with me for the interview several days before when I scheduled with him, but he had suddenly become very eager!

At another point I had the opportunity to join Micaela and two of her teenage children, her daughter Moreina and her son Romeo, for a day picking ripe coffee beans on their farm. I was struck by the Moreina's performance of disgust at becoming "dirty" from working on the farm, and from her avoidance of bugs, which to me seemed a rather unavoidable part of farming in the rain forest. For instance, the coffee bushes, grown up over decades, were also covered in ants which, if one stayed in contact with the coffee branch for too long, swarmed and bit one's exposed skin. Moreina was the only one to bring this up repeatedly, to complain that she was being bitten, and to use the ants as an excuse for not wanting to pick berries from certain trees. Later in the day on the way back to the community, Micaela made a point of showing me a path that was frequented by *watusa* (agouti). She knew of this trail, and had a more or less permanent trap set there. The trap was triggered but there was no animal caught in it, and she proceeded to reset the trap, a noose of rope with a bent-over branch for a trigger. Both Moreina and Romeo were uninterested in the task, though Micaela made Romeo come and help her with the work of making the trap. Moreina initially sat in the path apathetically, and declined even to offer her help. While the rest of us were several yards into the forest setting up the trap, Moreina decided to keep walking without us, back to the community. These episodes struck me for the fact that they clearly indexed "adolescence" in the way that we habitually think about it in the US: this is the portrait of the uninterested, apathetic teenager who is interested only in their own inflated sense of self and wellbeing, to the negligence of parent-mandated duty. My point here is that the

forest is implicated in this performance of adolescence, specifically in a conscious turning away from a relational acceptance of the realities and hardships of being in the forest and conceiving of it as a platform for productive work.

Young people have rejected the kind of local environmental engagement that their parents see as paradigmatic of “productivity” in favor of a type of “mobility” that has them moving in new spheres: around the community “nice and neat,” “having fun,” and “carefree.” This kind of mobility also takes them to urban centers, both with the school and alone. A further relevant point, also made by Shenton (n.d.:Chapter 2), is that much of this travel today occurs not on foot but by bus, thereby physically separating people from the forest and foreshortening the passage to a few hours filled by sitting and watching movies or listening to popular music. Several times while in the regional capital of Tena we ran into young people from Sacha Loma, acting in just the way their parents described above: wearing makeup and nice clean clothes, in groups of friends, walking about the center of town. For older people in the community, this new kind of mobility has obvious social consequences. Segundo, an elementary school teacher in Sacha Loma, who was also ethnically Kichwa and from the Tena area, and had married one of Medicio’s daughters. He lived in a small house adjacent to the community school with his wife and two small sons. For Segundo, changes to the nature of personal mobility had fundamentally altered the social construction of kinship in the region, which had consequently altered the nature of the relationship of people to the forest. This is because, he says, the nature of the circulation of people for marriage had changed. Asked if “older people knew the same amount about the forest as your generation,” he said:

Well, it depends. Because in the old days they made *pedidas* [Spanish: “betrothal,” in which the family of a young man would ask the family of a young woman for her hand], you know? From [Sacha Loma] they’d make a *pedida* from Cruzchikta [a community about twenty minutes downriver on the north side of the Napo]. It was a different kind of

family. They were unknown [to each other]. So, the woman would know her part [of the river], of her sector, right? And the man would know his sector. There's always going to be differences [between different places], right? So, in that sense, yes. From one place you can get certain types of [agricultural] products, but not from others. Because today, it's just whatever, you just get together with your neighbor and that's your family, just like that. In the old days it was different. They would make *pedidas* from different locations – from far away, from Coca, from Tena, from Archidona, like that. But with a woman you didn't know. These days a guy just sees a girl and says "I want her." But in the old days it was different – parents would travel, drink *chicha* [manioc beer], visit [with people], and they'd get to know a girl, and they'd say "I want [her] for my son." And then they'd make a *pedida*, just like that. They would go to make the *pedida*, and the betrothed [boy] wouldn't even know that his future wife was coming. But now, no way. Every boy has his own girlfriend, searches for a girlfriend on his own, and if he doesn't want her [any more] he tosses her to the side [Spanish: *le bota*] and looks for another, again and again.

Here, Segundo makes a conceptual link between the circulation of people, on the one hand, and the circulation of knowledge, on the other. The *pretext* for the circulation of people has changed: before, parents circulated with other relatively distant families in search of a good match for their son, in turn solidifying the permanent circulation of people through marriage. Once the match was made, people would circulate regionally to visit extended family. Now, however, young men and women circulate within the community with each other in a "serial monogamy" fashion. Later, these pairs demonstrate their mobility by circulating in urban centers together. This shift has ramifications for knowledge, Segundo claims, because these new forms of circulation, which are bound tightly to the ideas of "freedom" and "romance" inherent under the umbrella of "adolescence," are also socially isolating in the sense that they prevent the large-scale and long-distance circulation of people. And this, he says, is reflected in the breadth and depth of the forest knowledge that one might bestow on future children. The striving for a new kind of social freedom in one's personal relationships has had the effect of reinforcing an insular version of the community and decreasing cross-pollination of forest knowledge that undergirds the valuation for forest engagement.

There was definitely a stark difference in the type of mobility engaged in by those adults in the community who had experienced newer forms of family construction instead of the historical *pedida* system. Of course, the framework the man describes above is a certain type of ideal, and there have always been exceptions: for example, one of the families that is currently a central older household in the community, headed by Anselmo and Roberta, is actually a union of two of the original pioneer families (cf. Shenton n.d. for a first-hand recounting of their betrothal and marriage). However, the vast majority of people over the age of 25 are married to people who come originally from other communities in the region. Edgardo, the oldest of Medicio's sons, who worked as a cook in the downriver boarding school, even had an arranged marriage with a Kichwa woman from as far away as the Pastaza River region. In these families the "circulation" that Segundo describes in the previous paragraph was clearly on display: mothers and fathers would routinely take children by canoe to visit relatives in communities throughout the region. For these families, Sacha Loma could be thought of not as a bounded, insular "community" so much as a node in a regionally-interconnected network of extended Kichwa families (cf. Reeve 2013). However, a few families in Sacha Loma were made up of conjugal pairs just old enough to have gone to high school, paired up with someone in town, and had children. This was the case for essentially all those people that had moved to the riverbank when they were preteens (however, the bulk of the people in "serial romantic" relationships, those who have no memory of living *adentro*, were currently too young to have children (however, in communication with the community since my fieldwork I have learned that several young women in this age and experience category subsequently became pregnant with men in the community, without having been married). For these families, however, their regional circulation was constrained by the fact that the immediate families of both members of the pair

were already located in the community, just a few doors away. This had the effect of constraining the regional circulation of people and thereby curtailing travel. Consequently, over generational time Sacha Loma was becoming much more nucleated and insular – more of an isolated unit unto itself, and less of a “node” in an interconnected, regional rural network.

The kinds of mobility now engaged in by those younger people who had formed families as a result of romantic partnerships was exemplified by two sisters in the community, 25 year-old Sirena and 20 year-old Maximiliana. These new kinds of pairings are exemplified by their lack of regional mobility and their focus on larger-scale travel for exploration, study, and work. Both of these young women had had romances, or were accused of having romances, with men present in the community while in their teens. They were subsequently made to get married by their families. (This category, wherein young women engage in romances but do not yet have full freedom of choice in their partner represents something of an interim category of marriage relationship in Sacha Loma. These women certainly did not go through the *pedida* process, but their families were scandalized when rumors started going around the community that their daughters were engaged in budding romances, leading to their marriages. For their part, both of the women say that when their parents forced marriage upon them they had not allowed the relationship to progress very far physically. For even younger women, those in their teens, parents seem to have evolved a bit more of a modicum of permissiveness on the romance front, and allow these young women more openly to be close to boys. But, these two women in their 20s do still exemplify a new evolution of the local parameters of mobility (cf. Shenton n.d. for more on the practice and meaning of modern dating and marriage in Sacha Loma). Sirena now has three children by her husband Paco, and Maximiliana has one child by her husband Martin. Sirena began a program of study to be a nurse during my field work. For this program she was

required to work with a team of volunteer doctors from Cuba, which was located upriver in Tena. She was required to live there for two weeks at a time, leaving her children in the hands of a nanny who also cooked and cleaned for her husband. Maximiliana took two extended trips over the course of my field work: one trip was to her oldest brother's family, located outside of the town of Baños, where she helped to harvest tomatoes. The other trip was to accompany another older brother, Felipe, downriver from the city of Coca to the community in which the eco-lodge for which he worked was located. She reported that she did this "just to see what it was like." My point here is that the cluster of practices and values that local people have come to understand as "adolescence" have changed the manner and pretext for the circulation of people; at the same time this has shifted focus away from the situatedness of the knowledge people have access to. Personal mobility, rather than being a reflection of regional, affinal integration, is now closer to goal-oriented "travel," focused on immediate family and aspirational work-related goals. Importantly, included in this shift is a marked turn away from engaged relationship with the local forest, which is not a prerequisite for the goals inherent in this new breed of "travel."

The crucial point regarding the construction of a new aspirational frame for young people in terms of family and school is that it specifically downplays habitual, relational contact with the local forest. This takes discursive form in the fact that people of all ages in Sacha Loma talk about education as a medium to *seguir adelante* ("get ahead"). While the notion of the *herencia* discussed earlier is certainly understood as a mode of self-advancement, it is also conceived as a dwindling resource; for this reason land is not necessarily associated with the school-based notion of "getting ahead." To *seguir adelante* is to aspire to participate in an economy of knowledge; school knowledge *per se* is understood as productive of this aspirational future. The aspirational ideal of "getting ahead," then, shifts the very conceptual basis on which the forest

might be understood. In the same way that land privatization enabled productive land to be seen as a fungible (though still relational) entity, the provision of structured time through school enabled a shift in the way one should know the forest: from that empirical, relational entity that might be known through experience and an inductive mode of inference to an abstract, fungible entity that is pre-known through deductive, authoritative claims to “scientific” truth.

Chapter 5: The Formal Consequences of Practice

Forest Knowledge as a Proxy for Emergent Change

In the last chapter I went to some length to show how historical changes to the structural and political context of the Upper Napo have led to a situation in which patterns of habitual practice in Sacha Loma have evolved quickly over the past few decades. Recently, practice has shifted in a decisive manner away from the forest. While older people in Sacha Loma grew up in a context in which they were intimately tied to the forest as a site of habitual relational engagement within an evolving context of cash cropping and subsistence farming, younger people in the community have not. In this way, while young people still feel like they are legitimate denizens of the place, valuation of the forest as intrinsic to one's sense of this being-in-place has also shifted. No person in Sacha Loma, young or old, specifically rejects the forest, or work in the forest, as unimportant in the abstract (though the exigencies of "adolescence" do lead to tensions in terms of actually going to the forest and engaging with it, as I described in the previous chapter). However, these values are in tension with, and run parallel to, a sense of familial aspiration instantiated by parents in sending children to school and that constantly reinforces through performing the practice of schooling.

As I claimed in Chapter 3, the question of the relationship of forest practice to forest knowledge is intrinsic to the construction of forest-related values, that is, how the forest is thought about and what people think should be done to it. Issues related to these questions are latent in much of the cross-cultural and intergenerational folkbotanical research I have cited elsewhere (Atran, et al. 2002e.g., ; Atran, et al. 1999; Le Guen, et al. 2013; Medin, et al. 2006a; Ross 2002a; Ross 2002b; Ross, et al. 2007; Shenton, et al. 2011). These questions are important to the field, moreover, because they gesture at the "should" quality of environmental decision

making, that is, what is appropriate and inappropriate use for the biotic world? As research on folk biological cognition has shown, the knowledge base one has about the natural world is a crucial input for reasoning about it (López, et al. 1997; Ross and Medin 2011). Similarly, research has shown that cultural orientations, in the form of “framework theories” or “epistemological orientations” also affect reasoning about the natural world (Medin, et al. 2006a; Medin, et al. 2002; Ross 2002a; Ross, et al. 2007). However, the reciprocal links between practice, knowledge, and valuation remain hazy. What happens, for example, in a context in which both “expertise,” formations of which are always related to values and goals (e.g., Medin, et al. 1997) and cultural orientations themselves are shifting simultaneously? In what ways are these dependent on one-another? By the end of the dissertation I would like to demonstrate that changes in practice, devolution in the knowledge base relative to the forest, and the concomitant epistemological orientations are indeed importantly related to one another in the case of Sacha Loma. In the previous chapter I made the ethnographic case that cultural orientations in Sacha Loma were indeed changing, even in a context in which the community remains physically isolated. Importantly on this point, however, by using the term “changing” I do not mean to imply “replaced by”; the material history of the community belies an easy model of wholesale change due to hegemonic imposition. As I stated in chapter 2, the picture of modernity the community paints itself is much more multilayered, and convictions about “traditionalism” and “progressiveness” crosscut the entire community. However, this fact does not mean that there may not still be systematic patterns of knowledge, reasoning, and epistemological frameworks distributed within the population.

Over the course of the next chapters, I will build up to making the claim that for young Sacha Lomans, decreasing forest knowledge is bound to the construction, and acceptance of, a

new epistemological frame. For these young people, a reorientation of habitual practice through formal schooling has simultaneously reduced young people's knowledge base and reoriented their notions of "productive work" on terms consistent with "success" in the wage economy. In terms of the forest, this has taken particular form in a certain brand of global environmentalism that construes the forest as fundamentally separate from human beings, as a fragile entity that human beings have the ability to damage. Third, and perhaps ironically, this brand of environmentalism simultaneously sees the forest as a site of inevitable human exploitation. The first order of business, however, is to demonstrate that there is an evolving forest knowledge base among in Sacha Loma. Given the complexity of perspectives and practices in the community that I have documented, however, we should expect that differences in what people know about the forest, if there are any differences, should be fairly small overall. However, given the ongoing evolution in practice in relation to the forest I documented in the previous chapter, my hypothesis is that there should be a pattern of forest knowledge devolution ongoing in the community intergenerationally. This devolution, in turn, is due to the reorientation in forest practices concomitant with school attendance. For those people who came of age in this nucleated context, I would expect there to be a similar, measurable decrease in forest knowledge.

In what follows, and indeed in all of the analyses for which I examine the purported effects of schooling and related reorientation of forest practices, I use participant age as a catch-all proxy for these effects. I do so because school attendance in and of itself (or years of schooling, used as an independent variable), is not a perfect match for the changes in the learning environment that young people in the community have experienced since the advent of NGO influence in 1992. Thus, even though some (few) younger adults have not attended any high school, they have still grown up in the nucleated village context, and surrounded by school-

attending compatriots that their parents did not experience (only two female participants between the ages of 20 and 29 have not attended any high school). By the same token, age is also not a perfect catch-all for the effect of learning environment: 5/17 (29%) of participants 30 years and over have attended some high school. However, because I am looking for average effects that might underlie multiple causes in a context in which people have variable, and even contradictory experiences of modernity (see Chapter 2), I decided to choose age as the best approximation of a participant's contextual "learning environment." In order to do so I chose to compare those residents age 30 and over to those under 30. It should be added, however, that age and years of schooling are highly conflated for adults 20 years and older in the community ($t(27)=4.1$, $p=.0003$; ≥ 30 years old 7.2 ± 2.7 years of school vs. <30 years old 11.3 ± 2.4 years of schooling). Thus if we wish to look at average differences over groups it does not make much of a difference what our proxy variable is: it remains that the coming of the NGO was a precipitating event with multifarious effects on the community learning environment, and this is the phenomenon we wish to capture in the analysis.

In the following analysis we will look at age-based differences in plant name knowledge in Sacha Loma, which we have referred to in previous work as a "plant familiarity task" (cf. Shenton, et al. 2011). It can be tenuous, however, to make claims regarding "knowledge loss" selectively among young people, or regarding changes to young people's acquisition trajectory, of folk biological knowledge. This is especially true if one directly compares older and younger members of a given population, due to what have been called "age" and "cohort" effects (Godoy, et al. 2009). The issue of "age" effects simply refers to the conflation of knowledge acquisition with knowledge "loss," that is, that young people simply might know less about local biology because they are younger and less experienced. The issue of "cohort" effects addresses changing

contexts in which one learns about the biological world, that is, that the actual biotic context might be shifting across generational time. Thus while the uptake and social transmission of biological knowledge might not itself be affected in a given locale, the very basis for such input might be changing (this has also been referred to as the “shifting baseline syndrome” (e.g., Hanazaki, et al. 2013; Jackson and Alexander 2011)). Thus, using direct age-based comparisons one cannot say with confidence whether observed knowledge differences are due to age effects, cohort effects, or ruptures in the social transmission of knowledge. To correct for this Godoy and colleagues (2009) recommend the use of multiple regression models in the study of folk biological knowledge loss. In what follows, however, I have decided on a different procedure, namely use of the Cultural Consensus Model (CCM) paired with the analysis of residual agreement (e.g., Ross 2004). In previous work (Shenton, et al. 2011), we demonstrated the capacity of these methods to describe relatively subtle shifts in forest knowledge. We also demonstrated in this work that age-based post hoc analysis of model content, which is possible with CCM/residual analysis, can shed light on both knowledge acquisition trajectories, as well as possibly permanent shifts in forest knowledge. Perhaps most importantly, in the current study I am interested less in controlling for cohort effects than I am in appreciating the multiplicity of precipitating factors in Sacha Loma that have led to a shift in learning environment there, which controlling for “shifting baselines” tends to obscure. I am pursuing the hypothesis in Sacha Loma that there are indeed important cohort effects present, but that these cohort effects themselves are importantly related to changes in social transmission of biological knowledge.

The CCM (Nakao and Romney 1984; Romney 1999; Romney, et al. 1986; Weller 2007) is a factor-analytic technique that can be used to explore distributions of cultural knowledge. It consists of a principal-component analysis (PCA) conducted over an inter-informant agreement

matrix. Consensus can be assumed if: 1. the ratio of the 1st to the 2nd eigenvalue is high (3:1 or greater), 2. the first eigenvalue accounts for most of the variance, and 3. all individual first factor scores are positive and relatively high. Importantly, what is being measured in the manner in which the CCM is deployed here is not, strictly speaking, “knowledge” in the sense that we can define those who are “more” cultural from those who are “less” cultural. Rather, the method draws inferences from empirical patterns of both agreement and disagreement. Because of this, the agreement matrix is calculated such that agreement on responses indicating lack of knowledge (e.g., “no-no” responses) are counted equally as valid as agreement on responses indicating knowledge (e.g., “yes-yes” responses). In this way both agreement and disagreement can be evaluated for patterns of consensus. Further patterns of both agreement and disagreement can then be attributed to *a priori* subgroups using the method of residual analysis. This is calculated by subtracting each pair of individuals’ predicted agreement (the product of two participants’ individual agreement with the consensual model) from their observed agreement (e.g., that actually expressed in the agreement matrix). The resulting residual agreement matrix can then be explored with respect to group differences using inferential statistics (e.g., whether within-group residual agreement is higher than between-group residual agreement). If this is the case, the group is said to possess a “submodel” of shared knowledge, above and beyond that found in the CCM (cf. Shenton, et al. 2011; Ross 2004). As mentioned above, in the following analyses the *a priori* grouping “age” (≥ 30 years and < 30 years) was used.

The stimuli for this task consisted of 35 names of plants local to the Upper Napo region. These names came from two sources, in order to include plants which lay across the whole spectrum of local salience. This was done to try to ensure that there would be measurable variance in answers across participants. First, a free listing task was administered to 10 local

residents (range 13-55 years, 3 female). The question asked was “can you name some local plants with which you are familiar?” Each respondent was allowed to list plant names until he/she began actively to search his/her memory for plant names. This resulted in a list of 49 plants that were mentioned at least once. Since this was not an exhaustive listing it gave a list of relatively salient “top of the head” plant names. From this list, all of the plant names listed by at least 4 of the 10 informants were included on the plant familiarity task (11 plant names).

Second, I conducted an extensive plant walk with Medicio, the head of the *Nuevo Renacer* section of the community introduced in chapters 1 and 2. Medicio is a *curandero* and *partero*, and is deemed both by himself and other adults in Sacha Loma to be a plant “expert.” During this plant walk names and uses of 63 local plants were mentioned. In order to create a plant familiarity task that was of manageable length, 24 plant names were chosen at random from this list of 63 plants, for a total of 35 plants in the task. None of these 24 plants was mentioned in the free listing task by any of the 10 informants. It was thus assumed that these 24 names consisted of medium-to-low saliency plant names. In order to control for differences in name familiarity, Medicio was asked to give all of the names he knew for every one of the plants, including those chosen from the free listing task, in both Spanish and Kichwa. This resulted in a total of either 1 name (17 plants), 2 names (17 plants), or 3 names (1 plant).

Subjects were asked a series of five questions about each of the 35 plants. The questions were asked in the following order: 1. Do you know what X [plant] is? (Yes/No), 2. What do local people use it for?, 3. Have you used it? (Yes/No), 4. Can you recognize it? (Yes/No), and 5. What does it look like? The first two questions served as dependent variables in the following analysis; though the three last questions could certainly be thought of as forms of “knowledge,” their function here was to create accountability for their answers to the first two questions.

Further, distributions of plant based use knowledge will be explored in the following task. The logic behind this strategy was to cut down on people simply giving rote answers to the first two questions, as it was assumed that a person would be less likely to give a random or nonsensical use for a plant if they had to admit to not having used it. Similarly, it was assumed that a person would be less likely to claim that they were “familiar” with a plant if they had to admit to not being able to recognize it or give a basic description of the plant. Thus, for the last question the level of specificity varied widely, with some respondents giving detailed color, height, width, shape, and leaf-formation information regarding the plant, and others simply stating that the species was a “plant,” “bush,” “tree,” “vine,” etc. Any of these answers was considered adequate, and generally this strategy resulted in people feeling accountable for the answers they gave. This “accountability” was considered necessary because the gold standard for plant identification tasks remains the “plant trail” paradigm, in which the subject is asked to identify living plant specimens in their natural context (e.g., Collins 2001; Hunn 2002; Zarger 2002). However, this method proved impractical in the field site. In addition, as in the work reported in Shenton and colleagues (2011), the clear consensus pattern found in the task provides post hoc justification that this method is a good proxy for plant knowledge.

Godoy and colleagues suggest, based on a review of the extant literature, that knowledge of useful plants reaches its ceiling at about 20 years of age (2009:55). In order to address the issues of age versus acquisition, I will compare two analyses here: one analysis of those participants age 20 and over, and one analysis that includes all participants (the youngest of which was 12 years old). In the first analysis, consisting only of adults 20 and over, participants were still grouped by age, using age 30 as the cutoff point. The assumption here was that if differences in the structure and content of “stable” adult models of plant name knowledge could

be quantified, these would be more likely to reflect real, and perhaps permanent, differences in both the absolute amount and structure of local plant name knowledge.

Results: Plant Name Familiarity among Adults in Sacha Loma

The first analysis consisted of 30 residents of Sacha Loma, ranging in age from 20 to 64 years (mean age 34.8 ± 11.9 years). The CCM consisted of two steps. First, the raw data for each subject (the yes/no response for each subject regarding familiarity of each plant name) was converted into a respondent by respondent agreement matrix, based on the proportion of matches (either yes-yes or no-no) of each respondent to every other respondent. Second, this agreement matrix served as input for the principal-component analysis. This analysis indicated a good fit for the CCM (1st eigenvalue 24.77, 2nd eigenvalue 1.56, ratio 1st/2nd eigenvalue 15.89, variance explained by the first factor 82.6%, all first factor scores high and positive ($\geq .73$)). This result indicates that there is an overall high consensus for plant name knowledge among Sacha Loma residents in this task.

The overall agreement demonstrated in the CCM justifies the use of residual analysis. This technique evaluates whether any additional agreement not captured in the consensual model is systematically distributed among the sample. As discussed above, subjects were separated into two a priori groups: 20-29 years (N=12, mean 23.7 ± 3.1 years) and 30-64 years (N=18, mean 42.3 ± 9.5 years). I will henceforth refer to these groups with the shorthand terms “younger adults” and “older adults.” Results of this analysis indicate that both groups possess a submodel of plant knowledge that is not captured by the consensual model (respondents 20-29 years $t(22)=4.09$, $p=.0004$; respondents ≥ 30 years $t(34)=3.61$, $p=.0009$). Comparison of means revealed that the submodel for respondents from both groups is based on greater within-group agreement than between-group agreement (respondents 20-29 years 0.029 within vs. -0.017

between; respondents ≥ 30 years 0.012 within vs. -0.017 between). The pattern shows that above and beyond the consensual model, members of both age groups agree more with their age counterparts than they do with others.

These results suggest that within a largely shared model of plant name knowledge among adults in Sacha Loma, there is an ongoing shift in plant knowledge that is roughly approximated by those who came of age living *adentro* versus those who came of age living *afuera*. It further suggests, because these are adult members of the community and highly likely to possess a stable model of plant knowledge, that there may be a permanent shift in plant name knowledge in the community, on average, across the two adult generations there. However, this result does not indicate what the substance of this shift is; for that we need to turn to a description of the model content. First, younger adults in Sacha Loma indicate familiarity with significantly fewer plants than older adults (57.1% younger adults vs. 71% older adults; $t(28)=3.75$, $p=.0008$). Because there is strong consensus between the two groups, however, this is suggestive evidence that the model of plant name knowledge that younger adults hold is a subset of that held by older adults. To further investigate this, for each stimulus plant a difference score was calculated (proportion of older adults reporting familiarity with each plant minus the proportion of younger adults reporting familiarity with each plant). Each of the plants with a difference score of at least 15% between groups was then tested for significance with an independent samples t-test. All of the plants that reached a significance level of $p \leq .05$ were considered to constitute the “submodel” for the ≥ 30 years group. All of the plants that met the criterion of a 15% difference between groups were known by more older adults than younger adults. All of the plants that did not meet the 15% difference criterion were said to form part of the consensual model for the entire group. These plants need to be further subdivided, however, into two groups: those that form part of the

consensual model because respondents agree on knowing them (that is, “yes-yes” agreement), and those plants that form part of the model because respondents agree on not knowing them (that is, “no-no” agreement). All of the plants that form part of the consensual model were thus split into those with which more than 50% of all respondents reported familiarity (here called the “high consensus, high familiarity” plant group), and those with which 50% or less reported familiarity (here called the “high consensus, low familiarity” plant group). A full listing of the plants constituting the consensual model and older adult submodel, along with a listing of their reported uses, is available in Appendix A.

Sixteen plants formed the “high consensus, high familiarity” group, and 11 plants fall into the “high consensus, low familiarity” group. The consensual adult model of plants that constitute “high” knowledge consists of a set of plants with highly consensual uses (see Appendix A); in short, they are all plants that people all use for the same thing. In addition, many have direct economic applications, and as such are cultivated or intentionally sought, sold for cash, or consumed themselves. There is also a subset of medicinal plants that still seem to have currency in the community. The fact that almost a third of plants are not generally known by adults in the community is an interesting case, though it is not possible to say definitely whether this lack of knowledge represents ongoing devolution among adults, or esoteric or idiosyncratic knowledge on the part of the curandero. The important thing, however, is that the method of choosing plant name stimuli did result in variance across groups. To this end, eight plants reached significance ($p \leq .05$) based on their inter-group difference scores. All of these plants are known by older adults to a larger extent than younger adults. The submodel of the older group is thus based on agreement on more knowledge of plants above and beyond the consensual model, while the submodel of the younger group consists of agreement on not

knowing more plants, above and beyond the consensual model (that is, older adults agree on more “yes-yes” responses, while the younger adults agree on more “no-no” responses).

The plants that form this submodel for older respondents are not necessarily plants with low familiarity scores. In fact, only three of them (*kotu chupa*, *chali panká*, and *bol*) are known by 50% of respondents or less. The others are known by a significant proportion overall. Thus while these plants are still “known,” CCM paired with residual analyses is sensitive to small modulations in the overall pattern of responses, and picks up devolutionary tendencies even in plants that are known by a significant proportion of respondents overall. Looking at the pattern of results, however, it is clear that there is a devolutionary pattern to plant name knowledge among adults in Sacha Loma. The models of plant name knowledge held by younger adults in the community corresponds to their coming of age in a nucleated community context, with access to a local high school education.

Results: Plant Name Familiarity among All Ages in Sacha Loma

In order to get a more complete picture of the model of plant familiarity and plant knowledge acquisition in Sacha Loma, the analysis was repeated with participants of all ages. This analysis consisted of all of the 30 subjects in the previous analysis, plus 19 more subjects between the ages of 12 and 19, for a total of 49 subjects (mean 27.5 ± 13.3 years), all of whom were residents of Sacha Loma. The task parameters and method of the CCM analysis was exactly the same as described above. The results of this analysis indicated a good fit for the consensus model (1st eigenvalue 38.95, 2nd eigenvalue 3.31; ratio 1st/2nd eigenvalue 11.77; variance explained by the first factor 79.5%; all competency scores high and positive ($\geq .70$)). This result indicates that there is an overall high consensus for plant name knowledge among participants of all ages in this task. The high overall consensus justified further examination

with residual analysis. For this analysis subjects were split, as before, into groups of under 30 years (N=31, mean 18.9 ± 4.7 years) and 30 years and over (N=18, mean 42.2 ± 9.5 years). Results of the residual analysis indicate that both groups possess a submodel of plant knowledge that is not captured by the consensual model demonstrated above (for respondents under 30 years $t(60)=4.80$, $p<.000$; respondents ≥ 30 years $t(34)=8.11$, $p<.000$). Comparison of means revealed that the submodel for respondents from both groups is based on greater within-group agreement than between-group agreement (respondents < 30 years 0.018 within vs. -0.028 between; respondents ≥ 30 years 0.049 within vs. -0.028 between). This pattern mimics the results from above: above and beyond the consensual model, members of both age groups agree more with their age counterparts than they do with others.

By the same token, however, as in the analysis above, people ≥ 30 years report familiarity with significantly more plants than those < 30 years (71% ≥ 30 years vs. 52.6% < 30 years; $t(47)=5.41$, $p<.000$). The same process was used, as above, to examine the model content of the two groups. Fourteen plants reached significance. All of these plants are known by respondents in the older group to a larger extent than in the younger group. The submodel of the older group is thus based on agreement on more knowledge of plants, above and beyond the consensual model, while the submodel of the younger group consists of agreement on not knowing more plants. Twelve plants fell into the “high consensus, high familiarity” group, and all of these 12 were also in this category for the previous analysis of only adults. Nine plants fell into the “high consensus, low familiarity” group. All of these are the same as those that fell into this category for subjects ≥ 20 years. While two fewer plants fell into this group than in the previous analysis (*krus kaspi* and *uksha*), these plants became part of the ≥ 30 years submodel, meaning these plants are specifically impoverished for respondents < 20 years. The 14 plants which constituted

the submodel for respondents ≥ 30 years consisted of the same eight plants as in the previous analysis, plus: *chilka*, *krus kaspi*, *eguiron*, *chunchu*, *chambira*, and *uksha*. These six plants are thus specifically not known by the youngest respondents. In addition to the plants that constitute the submodel of respondents ≥ 30 years in the previous analysis, this adds three additional medicinal plants to the list (*chilka*, *krus kaspi*, and *eguiron*), one wood tree species (*chunchu*), and two species which have been used traditionally for their fibers to make roofs or jewelry (*chambira*, *uksha*). The adults-only submodel from the previous analysis included five medicinal plants (*kotu chupa*, *chali panká*, *sangre de gallina*, *bol*, *pati vaca*, *camacho*) and two trees used for their wood (*tukuta* and *wayakan*).

In all, then, the model for all respondents looks like an exaggerated version of the adult model, in which medicinal plants and some species of useful trees are not generally known. A confluence of factors may be at work here for this domain-specific devolutionary pattern. First, it could be a direct reflection of decreased habitual engagement in the forest, particularly in a family setting such as living on a farm *adentro*, where there would be many more opportunities for talking about certain less frequent species than there is in the nucleated community on the riverbank. Second, this pattern could reflect a changing baseline for the frequency of the plants in the region. This may be particularly true for the wood tree species, which tend to distributed much more dispersed manner on the landscape. Third, for the medicinal plants, the pattern could represent a shift in medical decision making, away from plant medicine and toward biomedicine, based on the presence of the clinic in the community, relatively easy access to hospitals in surrounding cities such as Tena, and progressivist valuation in the efficacy of biomedicine. The most surprising result here, however, might be the lack of consensual knowledge for people under the age of 20 for the plants *uksha* and *chambira*. *Uksha* was used historically to make

woven roofs, while *chambira* is a fibrous plant that was historically used to make woven bags, called *shikras*, and fish nets. Now it is occasionally used in making artisanal products such as bracelets and necklaces. This is surprising because these plants are very common and have definite practical uses; therefore lack of knowledge of these plants is likely to speak directly to new patterns of habitual practice vis-à-vis the forest. Specifically, while people still build their houses themselves out of local wood, normally this wood is purchased as pre-cut boards from upriver sawmills. In addition, people do not weave their roofs anymore, but use corrugated metal instead. *Shikras* and fishing nets are now made exclusively out of nylon. In all, the general alienation from the natural world seems reflected in the models of plant name knowledge that young people in Sacha Loma possess. Further, because the (presumably stable) adult model of people between the ages of 20 and 29 is a subset of the model people between the ages of 12 and 19 possess, it is likely that both the acquisition trajectory as well as the ceiling for plant knowledge over the lifespan has also shifted in a devolutionary manner, relative to older adults.

At the same time, however, many of the plants that make up this submodel are still fairly widely known in Sacha Loma, across age groups. Of the 14 plants that reach significance, only five are known by less than 50% of respondents: *kotu chupa* (37%), *chali panká* (31%), *krus kaspi* (24%), *bol* (22%), *uksha* (18%). This means that several of the medicinal plants are still widely known (*chilka* (87%), *sangre de gallina* (78%), *camacho* (73%), *eguiron* (65%), and *pati vaca* (57%)), as are the useful tree species *wayakan* (86%) and *chunchu* (82%), and *chambira* (86%). What this reflects, in all likelihood, is that these plants represent knowledge that is in the process of changing in a devolutionary manner, as a function of practice. Thus while these plants are still generally known, they are selectively unknown to enough younger people that the methods deployed here are sensitive to them.

Disengaging from the Forest: Doing, Knowing, and the Reorientation of Practice

What should we make of the relationship between shifting knowledge about local plants, discussed above, and a changing community context, described in the last few chapters? Thus far, it may seem that much of the hypothesized change ongoing in Sacha Loma is a reification of a fairly abstract process, wherein there is an invisible, mechanical connection between local history and patterns of local knowledge. In fact, a “model” of environmental knowledge should be appreciated as a complex and shifting amalgam of value-laden frames for understanding that knowledge, as well as one’s past history with objects and beings in that environment. If we are interested in a truly distributional understanding of motivated reasoning about the local environment, then, it is vital that we understand something of the mediating term between historical process and knowledge. This mediating term, of course, is practice: what is it that people actually do with the environment? The past decades have seen a growing appreciation in anthropology for the fact that *learning* is really a process of *learning-in-context*, and for the fact that if we want to understand *what* people learn we need to understand both *where* they are learning, and the kinds of things they are doing there (e.g., Ingold 2000c; Lave and Chaiklin 1993). Learning should be considered to be, moreover, fundamentally *social*, fundamentally *corporeal*, and fundamentally *relational* to the environment (e.g., Lave and Wenger 1991). This means that the study of knowledge is fundamentally incomplete without an understanding of practice.

In what follows I focus on evolving patterns of forest skills in Sacha Loma, in the form of useful objects made from plants. I do so in order to try to get some kind of handle on this relationship between *doing* and *knowing* in Sacha Loma vis-à-vis plant knowledge devolution and modernization. This, in turn, speaks to the fact that practice itself should be thought of as

foundational to the “epistemological” label of “epistemological frameworks.” The “models” about which we are making claims here should not be thought of as static representations “of” a domain of knowledge. If this were the case, the devolution of such knowledge might be thought of as perhaps sadly lamentable but of little consequence, either to those undergoing the devolutionary process, or to the rest of us watching rain forest dwellers from the outside in. Rather, these “models” should be thought of as representations, or maybe better, as proxies, for process, action, and intention. It is in this sense, then, that that practice might be thought of as both cause and consequence of knowledge. This task was meant to demonstrate the ways in which actual patterns of practice feed into knowledge differences. My claim is that these patterns of practice are literally “epistemological”: they create the conditions which enable certain knowledge forms, as well as perpetuating them into the future and entail further reasoning about the local forest.

The ethnographic portrait of indigenous Amazonian peoples is, generally, a portrait of groups of people whose corporeal lives are literally built out of plants: plants serve for housing materials, clothing, weapons, game and fish traps, cooking utensils, transportation, storage containers, bags, baskets, adornments (e.g., Hames and Vickers 1983; Posey and Balée 1989). As with the last task, there is bound to be a healthy dose of idiosyncratic variability in the kinds of practices people engage in, across generations. While in all likelihood this variability has increased recently in the wake of new kinds of opportunities for work, this has certainly always been the case throughout history. However, any stable, measurable effects over generational time speak directly to (perhaps permanent) contextual and ideological shifts to the local learning environment within which people come to know, and value, their forest. Shifts in such learning environments, then, should thus have longer-term consequences for biotic contexts like the

Upper Napo, in which individual actors, and not large-scale corporatization, function as its primary shapers.

At the same time, the Sacha Loma is an ideal place to try to understand something of the motivated relationship between forest knowledge and forest practice, because the community is, for all intents and purposes, still literally surrounded by all of the plants that would necessary to make the stimulus items in the task. The forest is not degraded to the point where any of these items could not be readily made; in fact, several of the items in the task are things that are made with plants that are abundantly plentiful and commonly known, like *paja tokilla* and *wadua* (bamboo). It is also not a rapidly urbanizing context in which disengagement from the forest is the only option for practice. Thus any kind of measurable, intergenerational shift in forest skills is due as much to value-laden frames about the kinds of practices that *should* be engaged in, as much as they are a reflection of structural constraints.

This task was inspired by a recent line of research (Reyes-Garcia 2007; Reyes-Garcia, et al. 2007) that has focused on indigenous folk botanical skills as relevant to various aspects of forest practice and modernization. For example, for the Tsimane' in the Bolivian Amazon, this group of colleagues (Reyes-Garcia, et al. 2007) found a negative correlation between knowledge for folk botanical skills and personal forest clearance, in which those with more skill knowledge cleared less land. In addition, this effect was selective to knowledge of ethnobotanical skills, and did not hold when ethnobotanical knowledge itself served as the explanatory variable. They interpreted this finding in accordance with both valuation and more efficient use of the forest, hypothesizing that those with more knowledge of practical skills in the forest placed a higher value on standing forest than those with less skill knowledge and were better prepared for agricultural decision making.

The task was constructed from items elicited during a free listing task with Medicio, the same plant expert and *curandero* as above. The following question was used to elicit items: “what sorts of items can one make out of plants in the forest?” This resulted in a list of 17 items. Next, for each item the question was asked: “what plants does one use to make each of these items?” These explanations usually included explanations of usages, as well. This list of items was later cross-checked with Pepe, another community resident of equal age, who also has extensive forest and plant experience. Items from the original list were removed if they were deemed not to have a specific set of plants which were used to fabricate them (*collares*, or “necklaces” as well as several types of trap used to catch animals which were said to be able to be made with “either rope or any kind of stick”). Also, *boya* (“buoy/raft”) was deleted because although it is a useful object made of plant material, it is not really significantly altered when it is made (a few residents said to make a raft one just cuts down a balsa tree and floats it in the river). “*Batan*” (wooden bowl/trough for mashing *yuca* for *chicha*) took the place of *boya*. *Batan* was also differentiated from *batea* (wooden bowl for gold panning) because though the distinction did not come up in the original preparatory interviews, it did come up in two early interviews with local participants. During the cross-checking of items the addition of *catapulta* was added to *arco*, as Pepe insisted that the main kind of “bow” (*arco*) was actually a slingshot (*catapulta*). Also, the items *pukuna* (“blowgun”) and *biruti* (blowgun dart) were added. This was done because even though I knew no one in town to own one (everybody hunts with shotguns), I wanted to test the local perception of the relationship to the blowgun, because I thought it might carry indexical baggage regarding modernization, integration, and “civilization.” and how it was perceived.

The task was constructed as a series of hierarchical questions. The first question “do you know what an X is?” served as a gateway. If the respondent replied “no,” then no further questions were asked about that item. If the respondent replied “yes” to an item, then a series of further questions was asked. The questions that will be analyzed below were the following: 1. “Have you ever used it?,” 2. “What is it used for?,” and 3. “What plants are used to make it?”

It should be noted that the items in the task were not controlled for saliency. Though Reyes-Garcia and colleagues (2007) controlled for skill difficulty by weighting each participant’s answer as a function of the overall rate of skill knowledge, this was not done in this case. Instead of controlling for such difficulty, difficulty itself was presumed to be an important factor in familiarity, use, and thus social transmission. In addition, I was surprised at the brevity of the list of plant-based items that even the “experts” I interviewed in the community came up with. I thus decided to keep a version of the exhaustive item list as the item list for the task, since I did not know to what extent people either generally knew or didn’t know what the items were, and deleting very common items would have made the list very short. I thus ended up including some objects with use overlap with one another (e.g., blowgun/blowgun dart), as well as objects that I knew everybody had knowledge of, used, and were commonly constructed (e.g., house). I thus ended up with a task that for many items looked like I was approaching ceiling effects. However, the measurable group differences detected here (see below) provide post hoc justification that there was sufficient variability in responses to reveal a devolutionary pattern.

As per Reyes-Garcia (2007) I attempted to control for effects of gender on forest-related practice (e.g. whether only men or only women have knowledge of, or use, or make, a given item). For each stimulus item the question “is it made by men or women?” was asked, and three possible responses were accepted: “men,” “women,” or “both.” Controlling for gender proved

unnecessary, however. Participants attributed women's exclusive manufacture of an item for only 6.5% (46/712) of total answers, versus 46.5% (331/712) attributed to men only, and 47.1% (335/712) attributed to both men and women. Further, there was no effect of the gender of participant on their reported item use rate for the question "have you used an X [item]?" (64.2% female vs. 72.6% male, $t(39)=1.48$, $p>.05$). Thus respondents of both genders were included in all analyses. 41 community members participated in the task (ages 12-64 years, mean age 27.6 \pm 14 years).

The final stimuli list consisted of the following 18 items:

1. *arco/catapulta* (bow/slingshot)
2. *casa/choza* (House/open-air gathering space & kitchen)
3. *chalos* (Woven basket for carrying food)
4. *techo* (roof)
5. *cerbatana/pukuna* (blowgun)
6. *falda de plantas* (plant-based skirt)
7. *lika* (fishing net)
8. *canelón* (sluice box for gold panning)
9. *shikra* (woven carrying bag)
10. *flecha de arco* (arrow for a bow)
11. *flecha de cerbatana/pukuna (biruti)* (blowgun dart)
12. *yaza* (small stream fish trap)
13. *lanza* (spear)
14. *canoa* (canoe)
15. *shushunka* (strainer/colander)
16. *batea* (wooden bowl for gold panning)
17. *wami* (small stream fish trap)
18. *batan* (trough for mashing chicha)

Results: "Have you ever used an X?"

The question "have you ever used an X [item]?" was designed to elicit patterns of reported practice with plant based items among residents of the community. In order to interrogate directly patterns of practice with plant based items among community members, I first performed a consensus analysis, paired with an analysis of residual agreement for the responses to this question. In order to mitigate the criticism that very young community

members would not be expected either to know about, or have engaged in, activities associated with these items, the analysis was first performed, as in the plant familiarity task, with only adult members of the community (≥ 20 years old). The choice of ≥ 20 years was intended to relegate the analysis to those members with a stable model of plant-based skills. The analysis was then repeated with all younger participants included, in order to attempt an understanding of how acquisition trajectories of plant-based knowledge may be changing in the community. Also, note that the barometer for “use” here is very low: the question asked was not based on use frequency (e.g., “how often do you use X [item]?”) but rather if the respondent has *ever* used the item. For the purposes of the analysis, it was assumed that if a respondent did not know what an object was, then they had not in fact used the item. This occurred for 10.9% (80/735) of responses overall.

For the analysis of participants ≥ 20 years old, the task included 25 community members aged 20 to 64 years (10 participants 20-29 years, mean 23.5 ± 3 years, and 15 participants 30-64 years, mean 43.3 ± 10 years). The CCM indicated that there was high overall consensus for the kinds of plant-based items people have used or not used (1st eigenvalue 17.63, 2nd eigenvalue 1.35; ratio 1st/2nd factor 13.07; variance accounted for by the first factor 70.5%; all competency scores high and positive ($\geq .40$)). Residual analyses indicated an asymmetrical pattern, wherein only the 20-29 year old group (“younger adults”) showed evidence of a submodel, though there was a trend for symmetrical submodels (younger adults $t(18)=2.02$, $p=.05$; older adults $t(28)=1.70$, $p=.1$). Means for both groups indicated that there was more within group agreement than between group agreement (younger adults .011 within vs. -.01 between; older adults .009 within vs. -.01 between). The pattern indicates that systematic within-group agreement exists for each age group above and beyond the agreement captured in the overall consensus.

The pattern of responses was then interrogated for between-age group differences in use rates, in order to get a sense of the model content and structure. Across all items, younger adults report having used significantly fewer plant-based items than older adults (younger adults 63.2% vs. older adults 76.7%; $t(24)=2.05$, $p=.05$). In addition, for two specific items the disparity in use rate between groups was significant: these were the *canelón* (sluice box for gold panning) (younger adults 40% vs. older adults 86.7%; $t(23)=2.70$, $p=.006$) and the *yaza* (small stream fish trap) (younger adults 20% vs. older adults 66.7%; $t(23)=2.47$, $p=.02$).

The analysis was repeated with all participants included ($N=41$; 26 participants 12-29 years, mean 18.5 ± 4.8 years, and 15 participants 30-64 years, mean 43.3 ± 10 years). The CCM indicated that there was high overall consensus for the kinds of plant-based items people have either used or not used (1st eigenvalue 27.46, 2nd eigenvalue 3.17; ratio 1st/2nd factor 8.76; variance accounted for by the first factor 67%; all competency scores high and positive ($\geq .45$)). Residual analyses indicated highly significant symmetrical submodels (younger adults $t(50)=4.61$, $p<.000$; older adults $t(28)=4.66$, $p<.000$). Means for both groups indicated that there was significantly more within group agreement than between-group agreement (younger adults .018 within vs. -.025 between; older adults .039 within vs. -.025 between).

Across all items, subjects 12-29 years report having used significantly fewer plant-based items than older adults (12-29 years 62.4% vs. older adults 76.7%; $t(39)=2.62$, $p=.01$). Six items showed significant between-group use differences: these were *canelón* (12-29 years 26.9% vs. older adults 86.7%; $t(39)=4.40$, $p<.000$), *yaza* (12-29 years 11.5% vs. older adults 66.7%; $t(39)=4.34$, $p<.000$), *shushunka* (12-29 years 50% vs. older adults 93.3%; $t(39)=3.061$, $p=.002$), *batea* (12-29 years 61.5% vs. older adults 86.7%; $t(39)=1.72$, $p=.05$), *wami* (12-29 years 65.4%

vs. older adults 93.3%; $t(39)=2.06$, $p=.02$), and *batan* (12-29 years 76% vs. older adults 100%; $t(24)=2.75$, $p=.01$).

The pattern of results across the two analyses reveals a complex pattern of intergenerational change for plant-based skills. For the adults-only analysis, the results speak to an overall decrease in forest-related practice, along with reorientation of certain specific domains of practice. Younger adults have used significantly fewer plant-based items than their older counterparts overall. Interestingly, however, the average use rate for younger adults was essentially the same as the average use rate for all subjects <30 years (63.2% 20-29 years vs. 62.4% 12-29 years). Participants 12-29 years also show high consensus for the kinds of plant-based items they have, or have not used (1st eigenvalue 17.1, 2nd eigenvalue 2.31; ratio 1st/2nd factor 7.40; variance accounted for by the first factor 65.8%; all competency scores high and positive ($\geq .45$, though all competency scores but one are $\geq .72$)). This suggests that there may be a permanent shift away from certain kinds of relational forest practices implicated in plant-based skills, and that the domains within which such knowledge is produced has changed. In addition, younger adults (20-29 years) seem selectively not to have used two items on the list: the *canelón* and the *yaza*. The *canelón* is an item that is used for filtering river silt during gold panning, which, until the advent of larger-scale cash cropping, was the major source of monetary income for the Napo Kichwa. According to Medicio, gold panning was the “only way for the forefathers to get money” (also cf. Muratorio 1991). Though temporary gold panning camps can still be seen up and down the shores of the Napo River, this practice is waning in the face of an economy that values wage work. The *yaza* is a type of large fish trap that is set in small rivers. The orientation away from procuring meat from the forest seems to be captured in this older adult/younger adult disparity. This is an important observation because the *yaza* is specifically a

trap that can only be set in small forest streams. River fishing with a large net (*lika*, as listed in the task), on the other hand, is still widely practiced, as I witnessed during my time in Sacha Loma. The caveat here is that the *lika*, though still known by this term in the community, is now exclusively made with man-made materials like nylon, and is almost always purchased ready-made (see below).

The plant-based skill difference between age groups when all participants are considered together seems, at first blush, to be an exaggerated version of the adults-only model. Certainly, participants 12-29 still report having used significantly fewer plant-based items overall, and both the *canelón* and *yaza* are still indicated as being selective to the practices of older adults. However, we need to look more closely at the plant-based items that differentiate these two groups. Specifically, it may be the case that gender of the practitioner has a role to play in the observed patterns. For the six plant-based items that differentiate the two age groups in the analysis, older adult males seem across the board to have experience with all domains of forest practice: this includes having used items related to gold panning (*canelón* 85.7%, *batea* 85.7%), forest stream fishing (*yaza* 71.4%, *wami* 85.7%), and preparing *chicha* (*batan* 100%, *shushunka* 100%). Males 12-29 years, however, show discrepancies by domain of practice and item type: for gold panning (*canelón* 33.3%, *batea* 75%); for forest stream fishing (*yaza* 8.3%, *wami* 8.3%); and for preparing *chicha* (*batan* 58.3%, *shushunka* 41.7%). Older adult females also show discrepancies by domain of practice and item type: for gold panning (*canelón* 87.5%, *batea* 87.5%); for forest stream fishing (*yaza* 62.5%, *wami* 100%); and for preparing *chicha* (*batan* 100%, *shushunka* 87.5%). Females 12-29 years also show discrepancies: for gold panning (*canelón* 21.4%, *batea* 50%); for forest stream fishing (*yaza* 14.3%, *wami* 50%); and for preparing *chicha* (*batan* 92.3%, *shushunka* 57.1%).

In terms of the domain of practice, the age/gender pattern for gold panning seems to have changed over time from a larger-scale, more “industrialized” practice involving both genders (and using both the larger *canelón* and the hand-held *batea*), to a smaller-scale practice (using primarily the *batea*), in which young men seem to be involved to a slightly greater degree. Forest stream fishing seems to have been a previously widespread practice among both men and women that is now no longer practiced very much at all. Though young women are more likely to have used the fairly simple *wami*, neither young women or young men are likely to have used the more complicated *yaza*. Finally, the preparation of *chicha* seems to be selectively preserved for younger women; though the process is closely associated with female productive capacity (e.g., Whitten 1976:82-88), it seems older men report that they have been associated with the items used in its production. While young women seem still to be involved in *chicha* production, young men are to a lesser degree.

Of course, it is possible, and even likely, that some of these age/gender interactions are the result of acquisition effects. Because of the phrasing of the question (e.g., “have you ever used an X [item]?”) it is possible, for example, that while women normally prepare *chicha*, a man may help only very occasionally. This would result in the pattern described above: almost all older men report ever having used the items associated with *chicha*, but only about half of younger males do. However, in the case of gold panning and forest fishing we are perhaps more likely to be looking at permanent shifts in forest-related practice. Here the rates of use for people 12-29 are severely diminished, and also hold when only adults ≥ 20 years are included in the analysis. Though there may be some effect of acquisition trajectory here, these are probably also cases in which the practices are participated in only occasionally, or for recreation instead of as an integral part of subsistence and productive activity.

Results: “What is X used for?”

In gross, the question “what is X [item] used for?” produced highly consensual practical uses for almost all of the items. This means that the items tended to have very specific uses, and if a participant knew what the item was he or she knew what the specific use was. However, in a few cases the responses to this question, though highly consensual, elicited answers that seemed reflective of new ways of thinking about the local relationship to the forest through practice, and even about the role of “being indigenous/Kichwa” in relationship to such practices. The two items that jump out here are “*falda de plantas*” (plant skirt) and “*lanza*” (*chonta* spear). The responses to these two items are interesting because they are still made by people in the community, and are, by definition, constructed of plants in order to qualify as an exemplar of the item (as opposed to items like the *lika*, *shikra*, or *shushunka*, which can be made of man-made materials and still deemed to be an exemplar). However, these are items that are not used out of necessity, but rather only for “Kichwa” dance presentations, most often during children’s school presentations. I have also seen them used by adult dance troupes from the Napo region in other parts of Ecuador during parades, regional beauty pageants, and “native” demonstrations for tourists at eco-lodges. In short, these items have become associated with being indexically indigenous in a way that, for local people, points to the Ecuadorean Amazon as a culturally unique and distinct region. Outside of such presentations, however, the *chonta* spear is associated with the Waorani, and thus generally with being “uncivilized.” The plant skirt is a bit more ambiguous in its association, but clearly this item has never recently been associated with utilitarian clothing; people certainly never wear anything but Western clothing in all day-to-day contexts.

For those under participants 12-29 years, 72.4% (21/29) say that the *only* use for a plant skirt is dances and presentations, and a total of 79.3% (23/29) include dances and presentations in their uses. Only 27.6% (8/29) mention that the plant skirt is “clothing” or “used to be clothing” (Spanish: “*antiguamente*”). For those ≥ 30 years, the disparity is even more stark: 87.5% (14/16) say the only use of the plant skirt is dances and presentations, while 12.5% (2/16) say the skirt “used to be clothing.” For the *chonta* spear, 44.8% (13/29) of those under 30 say the only use is dances and presentations. A total of 58.6% (17/29) include dances and presentations in their list of uses. 41.4% (12/29) say the only use is hunting, and 55.2% include hunting in their list of uses. 13.8% (4/29) explicitly mention Waorani in their answer, or mention that the lance “used to be used for killing.” For those ≥ 30 years, 37.5% (6/16) say that the only use of the lance is dances and presentations. 43.8% (7/16) say the only use is hunting/fishing and 56.3% (9/16) include hunting/fishing in their list of uses. A full 37.5% (6/16) mention the Waorani and/or Shuar in their answer. 31.3% (5/16) mention “combat, self-defense, and killing” as a potential use; however only one person mentions “killing” without mentioning the Shuar or Waorani.

The only *chonta* spear I was ever shown in the community was made by Pepe; the lance was only about two feet long, and he had made it for his youngest son to use during school performances. I was also invited to several indigenous dance presentations held for tourists at the eco-lodge adjacent to the community. At one of these presentations a Waorani group, which had been holding a tourist-guide training session at the lodge, decided to perform alongside the local Kichwa staff and students. The Kichwa students dressed in their indexically “indigenous” clothing; the men were shirtless with plant skirts and carrying *chonta* spears, and the women were dressed in seed bras and seed bikini bottoms. They performed a highly stylized dance

which incorporated elements of Spanish-influenced dancing while miming “indigenous” processes like producing and drinking chicha. However, the Waorani did none of this – they had no music and wore their Western street clothes, and mimicked what they said was a Waorani marriage ceremony. Here, the bride and groom were supposed to act reluctant to face each other and to try to escape from inside an unbroken circle of community members, while the circle of community members tried to force them together. Several members of the Waorani party also mimed drinking and drunkenness as part of the performance. This proved to be a real moment of ethnic disconnect for the Kichwa members of the audience. It seemed that their ideas about what represented the “authentically indigenous” had been thoroughly subverted in this performance. Several Kichwa members of the audience giggled and muttered throughout the performance, and there was something like stunned silence at the end of it.

The interesting thing about this encounter was that it codified the differences between the two groups’ forest related practices in a paradoxical way. While when asked to “perform being Kichwa,” the students and staff always shed their Western clothing and made use of indexical plant items in order to project “authentic indigenesness,” packaged in an easily digestible and clearly Western-influenced “orderliness” of choreographed mime and dance. This was the case even though none of these people ever made use of these items outside of this context. By contrast, the Waorani performance was chaotic and opaque, made no use of any plant items, and the performers remained in their Western clothing. The Kichwa performers clearly related to the forest items in a compartmentalized and abstract way, in a way that *gestured* at the *idea* of their indigeneity. While I do not know how the Waorani performance compared to actual Waorani weddings, it is certainly true that it was less beholden to majority-culture notions of “proper” public performativity. The high percentage of Sacha Loma residents who say the most salient

use of both the plant skirt and the *chonta* lance is “dances and presentations” seems to reflect a distancing of the idea of local indigeneity from an intimate relationship to the local environment. What I mean by this seems a bit paradoxical, because these are two items which are certainly still locally produced; in fact the plant skirt is probably the most visibly produced and utilized item in the community found on this list. 84.6% of people 12-29 and 92.9% of people ≥ 30 report having used the plant skirt; similarly 80.8% of people 12-29 and 71.4% of people 30 and over report having constructed one. For people 12-29 this is by far the highest rate of both plant item use and plant item fabrication; in fact it is anomalously high.

The ironic thing here is that because the skirt is associated with performance, and more specifically with performances mandated by formal schooling and eco-lodge work, the skirt has been extracted from an intimate relationship to the local forest and brought into the realm of commodified indigenous self-representation. Interestingly, in the several school dance presentations held each school year in the community, the tendency is to treat local indigeneity, or at least its local, indexical representation, not as necessarily “more authentic” or more “owned” than other indigenous traditions from around Ecuador. The push in the state school curriculum is to peddle the idea of Ecuador as a pluri-ethnic country in which all regions have equally valid music, dance, and culinary “traditions.” Thus for each of these dance recitals the spectator is subjected to the slightly de-centering spectacle of watching Napo Kichwa children perform dances from the Andes, the Pacific coast, urban dance music, and rap, alongside the plant skirt, *chonta* spear, and seed jewelry dances upheld to be reflections of “local” indigeneity. In short, the Sacha Loma school treats ethnicity as a fungible commodity, to be picked up and shed instrumentally. It is ironic that the single highest rate of practical plant use in the community is associated with this commoditized distancing of ethnicity from a relational

experience with the forest. It is also ironic that the items that get upheld as locally “authentic” during these moments are in themselves not even items that people in the community claim as part of their own ethnic identity. As we have seen, the closest people come to “claiming” these items is to say that they are used in dance presentations, while many people do not claim them at all, but rather foist claims to these items off onto supposedly more “authentic” (and thus, to local thinking, “uncivilized”) groups like the Shuar and the Waorani. In short, people claim locality, they claim the forest and being “of” the forest, but are at somewhat of a loss when it comes to indexically demonstrating that claim other than to gesture at it obliquely. The local relationship to plant based items like the plant skirt and the chonta spear is thus deeply ambivalent. That is, people see both their claim to being “forest people” as valuable in the sense that they have laid claim to the land, and see it, and more expansively the whole Napo region, as “theirs.” On the other hand they see the relationship to these items as at odds with the goals of formal schooling, and with the “modern” aspirations it engenders.

Results: “What plants do you use to make X?”

Just like the question “what is X used for?”, the large majority of plants elicited with the question “what plants do you use to make an X?” formed a small, highly consensual group for each item. All of the items were made with either a specific plant or a specific kind of plant. For some of the items, then, the variability came not in the kind of plant used, but in the species. For example, for the item “*casa/choza*,” people mentioned a large number of trees that could be used (e.g., *chunchu*, *laurel*, *cedro*, *wayakan*, *tukuta*, etc.), and often indicated that there were many more they did not list, for the sake of brevity. All of these tree species, however, can be grouped under the general umbrella “hardwood trees.” By contrast, an item like *pukuna* (blowgun) elicits

only two plants as source material that are similar in terms of their qualities: *chonta* and *pambil*, and different people mention one or the other, or both.

These results in and of themselves are not very revealing in terms of distributions of forest knowledge and practice. However, what did fall out from this question was an interesting distinction that gestured at the same ironic distancing from the local environment that was visible with the items *falda de plantas* and *lanza*, above. These answers were elicited from the items *lika* (fishing net), *shikra* (woven bag), and *shushunka* (strainer/colander). For these items there was a major qualitative distinction between those who said these items were properly made plant-based materials, on the one hand, and those who claimed that these items were only, or *could only* be made with artificial man-made materials such as like nylon cords. This distinction is especially interesting because this task, and especially this question, asked participants to think explicitly about which *plants* could be used to fabricate the object, even if they had never used, made, or seen someone else make a plant-based version of the item. These responses indicate that people see these objects, all three of which are highly indexical of being “indigenous,” and even “Kichwa,” as fundamentally not related physically to the local environment. That is, they are tied to abstract, cultural notions of being, but are not seen as relational engagements with the forest. To remove the possibility of those objects from having a relationship to the forest is to alienate their productive capacity as fundamentally and only instrumental.

The ultimate irony here is that these objects are those among the most commonly and publicly used: 72% of those 12-29 vs. 85.7% of those ≥ 30 report having used the *lika*, 92.3% of those 12-29 vs. 93.3% of those ≥ 30 report having used the *shikra*, and 50% of those 12-29 vs. 93.3% of those ≥ 30 report having used the *shushunka*. While fabrication rates for the *shushunka* (7.7% 12-29 and 25% ≥ 30) and the *lika* (4% 12-29 and 21.4% ≥ 30) are very low, suggesting

that these items are often, and increasingly, purchased rather than fabricated, 19.2% of those 12-29 and 42.9% of those ≥ 30 report having fabricated a *shikra* in their lifetimes. Braiding *shikras* is still a fairly common public activity among adults in the community. In like manner, producing *chicha* and net fishing in the river from a canoe are also common local subsistence activities. In this way it might be said that these objects are indexical to locality. However, for the *lika* 73.1% (19/26) of people 12-29 and 73.3% (11/15) people ≥ 30 responded that the object was made of “foreign materials,” “threads/ropes from the city,” “artificial materials,” or “nylon.” Only 7.7% (2/26) people 12-29 said the *lika* could be made of plant material, while 46.7% of people ≥ 30 (7/15) said the *lika* could be made of plants. In addition, 26.7% (4/15) people ≥ 30 only mentioned plants as the source of the item material in reference either to “old times” (Spanish: “*antiguamente*”), or in reference to the Waorani.

For the *shushunka*, 46.2% (6/13) of those 12-29 said the item was “purchased,” made of “ropes from the city,” or made of “nylon.” 61.5% overall mentioned that the item could be made of non-plant materials. 38.5% (5/13) said the *shushunka* was only made of plants, and 53.9% (7/13) mentioned plants in their answer. For those ≥ 30 , 38.5% (5/13) said the *shushunka* could only be made of artificial materials. 69.2% (9/13) mentioned artificial materials in their answer. 30.8% (4/13) only mentioned plants, and 61.5% (8/13) mentioned plants in their answer. These profiles point to the fact that a significant proportion of both younger and older Sacha Lomans see these items as intrinsically artificial, most probably artificial, or associate the use of plants in their manufacture as either “old fashioned” or only the provenance of more “uncivilized” indigenous groups such as the Shuar and Waorani.

The story for the *shikra* is slightly different. Here, with a highly indexical item that is still widely fashioned locally, we can see more of an ongoing, generational evolution of item

perception. For those 12-29, 42.3% (11/26) respond that the *shikra* can only be made of “exported materials,” “thread/ropes,” “artificial materials,” or “nylon.” Overall, 53.8% (14/26) mention these artificial materials in their answer. 46.2% (12/26) claim that the *shikra* can only be made of plants, and 57.7% (15/26) mention plants as a material in their answer. However, there is a stark contrast with this group: no one over the age of 19 mentions artificial materials as the source material for the *shikra*. The average age in this group for the response “only artificial materials” is 15 years, while the average age for the response “only plants” is 22 years. Only two respondents 30 and over, or 13.3%, say that artificial materials are the only way to make a *shikra*. However, 53.3% (8/15) of this group mention artificial materials in their answer. 46.7% (7/15) say that only plants can be used, and 86.7% (13/15) say that it is possible to make a *shikra* with plants. A t-test confirms that the 12-29 and ≥ 30 year-old groups mention “only artificial materials” at a significantly different rate, with those in the younger group answering this way more often ($t(39)=2.01, p=.05$). This age-based response profile fits very well with one of gradual, generation-based conceptual change of the very nature of the *shikra*. While the practical use of the *shikra* has not changed conceptually (every respondent in both groups indicated that the *shikra*’s purpose was to “carry things” like agricultural staples, wild fruit, hunted animals, and fish), there is a gradual, measurable shift in the *shikra*’s material identity, from an object made only of plants for the oldest people, to an object made either of natural or artificial materials for a large group in the middle, to an object that is purely artificial for the youngest respondents.

This shift illustrates, in a small way, the relationship between forest practice and forest knowledge change, in that while older people *know* that the object can be made of extracted plant fibers, practicality and durability issues of plant fibers (many adults mentioned that plant-based

shikras “do not last”), along with accessibility to new materials like nylon, have shifted practice away from making the *shikra* from plant fibers. In fact, all of the *shikras* I personally saw being made were made with artificial fibers. In this, way, slight changes in the practice of the actual making of *shikras* have caused large scale changes in inferential knowledge for young people in the community. These changes in the practice of *shikra* making, of course, also go hand in hand with the general orientation away from an intimate relationship to the forest. This is ironic in that adults in the community consider the construction of *shikras* to have a “culture-preservational” quality, in that it is a practice grounded in locality. For young people however, that preservational aspect has no grounding in forest practice.

Some Concluding Thoughts on Forest Knowledge and Practice in Sacha Loma

The methods deployed in this chapter have attempted to flesh out a hybrid portrait of change in Sacha Loma begun in the last chapter. In order to paint this portrait I have attempted to use qualitative and historical methods to generate hypotheses that might give rise to quantitative threads of evidence. Together, these are meant to converge on a sense of the relationship between ongoing material change within the community, ongoing changes to habitual practice, and attendant conceptual change. What we are left with is a picture of persistent, ongoing, and perhaps permanent lessening of both the knowledge base that residents have about their forest, and about the possibilities that their forest affords to accomplish practical tasks. Crucially, however, the changes measured in this chapter are very small; as an average across all ages and participants, we are talking about changes around the margin of what is still a highly consensual body of forest knowledge. In this sense, the changes documented above are really more like symptoms of a changing learning environment that have rendered the universe of ideas about the local forest in Sacha Loma even more complicated than it was in the past. In

this new order, new understandings of the forest do not replace older understandings; rather they compete and interact with one-another in complex ways. In the next chapter, I will attempt to give those new ideas about the natural world qualitative form. By the end of the next section I hope to demonstrate that the term that mediates an epistemological frame which implies a relational engagement with the forest, on the one hand, and a frame that does not, on the other, is a particular breed of environmentalism that stems from the actions and assumptions of various actors that have come from outside of Sacha Loma, but currently hold sway there. These actors have ridden, and indeed have driven, the successive waves of material change that has swept over the community in the last decades. This breed of environmentalism, has its hallmark from both the pro-use and anti-use factions of the community, in notions of “concern” over the forest, and in the fundamental “fragility” of the forest. But, these notions do not necessarily entail relational knowledge of the forest, or even being *in* the forest. Rather, they have recourse to fungible, global ideas about “sustainability” and “exploitation” on the part of the “landowners” deciding its fate.

Chapter 6: The Underpinnings of Environmentalism

Producing a New Type of Forest through School: The Effects of Curriculum

The two previous chapters have tried to show that recent structural evolution in Sacha Loma, refractive as they are of change to the Upper Napo more generally, have had deep consequences for the types of habitual practice vis-à-vis the local forest that people find productive. It has also affected what people know about that environment. Land privatization and, subsequently, the rise of education in the community have created conditions within which new kinds of knowledge and practice flourish. I have also argued that the new form of valued practice espoused by young people does not importantly involve a relational engagement with the forest. This is despite the continued close association that such a relationship has to a “Kichwa” identity. Even young people do not completely devalue this identity; rather I have argued that the valuation of a “Kichwa” identity functions in parallel with school-based, cosmopolitan aspirations. Young people do not seem to see these as in conflict: they see their futures to include goals consistent with both their education and with a tie to the local landscape. In like manner, the parents and grandparents of these young people have striven to get these institutional improvements built, and have willingly changed their patterns of habitual practice to get access to these institutions. Whether young people will have access to opportunities in concert with these new goals, in particular well-paying jobs in the region, is not possible to know now: the first students to graduate high school on any large scale is just now trickling out of the Sacha Loma school and are being confronted with making decisions that might reconcile the disparate local images of a productive future. This will also be the first generation faced with only fractional access to land, based on historical norms.

Though young people do go to the forest on occasion, their visits there are exactly that: “occasional,” in the strict sense of the term. The farm remains a conceptual touchstone, if not necessarily one in practice, and the pain of the difficult decisions associated with family *herencia* remain on the horizon. Young people thus tend to be unconcerned with their bifurcated vision of the future, and certainly do not see much of a downside to living out the consequences of “adolescence,” as outlined in Chapter 4. Indeed, to the extent that adolescence represents the opportunity to delay marriage and children, young people see it as an opportunity (cf. Shenton n.d.). However, while school and the practices implicated in its schedule were something they manifestly fought for over decades, parents and grandparents are at times confused or even pessimistic about the changes to local practice associated with the production of structured time: it was certainly a common refrain for older people in the community to say that “children don’t want to learn anymore,” in relation to indexically “traditional” practices like shamanism, plant knowledge, and speaking Kichwa. But it is hardly shocking that parents and grandparents have a tsk-tsking, “kids these days” judgment of their children: that sort of dour ageism on the part of elders is probably universal. More interesting, though, is whether there are actual consequences for young school-attending people as the specific targets of this production of structured time: yes, kids still go, or are made to go, to the forest on occasion, but when they do just what is it they see? Are there new kinds of messages shaping the understanding of the forest itself? And, how does school underpin these?

My goal in this chapter is to outline some of the types of messages that are currently swirling around Sacha Loma on the part of various actors and imply new sorts of thinking about the local forest. Much of this new discourse related to the environment, I contend, falls squarely into a few specific flavors of “environmentalism” in both its message and its underlying

assumptions regarding its audience. I also contend that local young people are taking up and deploying these messages in their reasoning about, and valuation of, the local forest, and that this has fundamentally altered the conception young people have of the manner in which they consider their local forest to be “productive.” However, I also have gone to some length in previous chapters to show that the legibility of such messages is dependent on the production of structured time through school, and of the consequent practices and assumptions of living out a local version of what is understood as “adolescence” (cf. Cepek 2011 for an account of how environmentalist messages and practice, in isolation, may not be sufficient to change indigenous valuations of the forest in the Ecuadorian Amazon). In the following sections I hope to show that structural evolution in the Upper Napo is bound tightly to changes in the kinds of discourses about the forest deployed locally, and that these understandings will have future implications both for what Kichwa people in Sacha Loma think about the forest and how they function as indigenous Ecuadorian citizens.

One day toward the end of my field work I was surprised, while making my way into the community on the main foot path running along the south shore of the Napo River, to find a series of hand-lettered signs posted along the route. Walking around the community I saw there were several more signs posted at the community port, between the houses, and up on top of the hill by the *cancha cubierta*. The signs were printed in permanent marker, on leftover scraps of plywood nailed to other scraps of 1X4. Here is a sampling of what they said: *No arrojar basura en las orillas del río* (“Don’t throw trash on the banks of the river”), *Cuidemos nuestro entorno natural* (“Let’s take care of our natural surroundings”), *Cuidemos nuestra naturaleza* (“Let’s take care of our nature”), and *No contaminemos el medio ambiente* (“Let’s not contaminate our environment”). Asking around, I found out that this was a project carried out by the seniors in

the public high school as part of a year-end project for their eco-tourism class. Though these messages were plainly “environmentalist” in their content, they also moved beyond a mere imperative direction to local community members. In placing the majority of the signs where they did – on the pathway between the community and the eco-lodge, along which the lodge’s tourist guides routinely led groups of tourists on their way to visit the community, the downriver boarding school, and a family of pygmy marmosets that lived on the riverbank near the community port – the students were clearly indexing to an audience of tourists that they were fluent in the understandings of the Amazon forest they assumed these people to hold. In addition, while the students could easily have chosen the more common second person imperative form (e.g., “Do”/“Don’t”), the choice to use the first person plural command form (e.g., “Let’s”/ “Let’s not”) in the signs also seemed significant. This combination of factors indexed a conceptual inclusiveness with potential tourist visitors, in that it signaled that the terms on which these students claimed to “understand” the local forest, and its plight, were those same global terms on which those people staying in the eco-lodge understood it. In this way these signs were a signal of aspiration to a globally-scaled fluency, cast in an environmentalist light. The signs stayed up for weeks, even after the writing on them quickly faded in the elements.

What is the nature of the thing with which these students were attempting to index fluency, however? My contention is that rendering “environmentalism” legible to students in Sacha Loma necessitates a reorientation in the knowledge forms accepted as “authoritative,” that is, it requires an openness to a new sort of epistemology. This new epistemological mode specifically devalues a relational, inductive mode of inference about the forest based on experience, and instead prioritizes syllogistic principles of a deductive scientism. This is not to say that the practice of formal schooling is simply the *absence* of relational productivity.

Schooling is, on the contrary, richly productive of a new sort of relationality that prioritizes inter-peer social and intellectual reciprocity in both the classroom and the community. This is also not to say that formal schooling equals the negation of “knowledge”; rather it prioritizes knowledge *per se* to a level previously unknown in the community. However, knowledge *per se* necessarily prioritizes breadth over depth, in the sense that it champions amodal, propositional knowing over multimodal sensory knowing rich in personal interaction and contextual association. By knowledge *per se*, I mean that which can be learned and understood simply in relation to other knowledge, and without a practical context: this is the knowledge of textbooks, pen, and paper, that is, school knowledge.

In Sacha Loma this new epistemological mode is related directly to the production of structured time in the classroom: as I’ve claimed, the paradigmatic form of “education” in the community school is rote memorization and copying. This pedagogical form is particularly concerned with form over content: what teachers tend to reward, above all, is punctuality, neatness, and right conduct. There is almost no emphasis placed on creative thinking, exploration, or hands-on learning. The form of pedagogy teachers espouse in Sacha Loma is consistent with that famously critiqued in Freire’s *Pedagogy of the Oppressed* (2000[1970]) as the “banking” system of education:

The teacher talks about reality as if it were motionless, static, compartmentalized, and predictable. Or else he expounds on a topic completely alien to the existential experience of the students. His task is to "fill" the students with the contents of his narration—contents which are detached from reality, disconnected from the totality that engendered them and could give them significance. Words are emptied of their concreteness and become a hollow, alienated, and alienating verbosity. ... Narration (with the teacher as narrator) leads the students to memorize mechanically the narrated content. Worse yet, it turns them into "containers," into "receptacles" to be "filled" by the teacher. The more completely she fills the receptacles, the better a teacher she is. The more meekly the receptacles permit themselves to be filled, the better students they are. (2000[1970]:71-72)

The production of structured time through schooling in Sacha Loma has created implicit valuation of this epistemological mode simply by removing students from the forest and placing them in a classroom five days a week. But what kind of assumptions does a transition to valuing this new epistemological mode engender for the young people undergoing instruction under its auspices? My contention is that within the confines of the “banking” epistemology, a particular version of scientific knowledge comes to be seen as truth.

Constructed in this way, however, “scientific” knowledge as presented in the classroom is a far cry from how a scientist might characterize the “scientific method.” This is an important distinction because it gets to the heart of the distinction between the exercise of constructing knowledge of a certain type (e.g., “scientific” knowledge), and its subsequent presentation, reception, and institutional use. In earlier chapters I have characterized the nature of forest knowledge that is built out of a close engagement with the natural environment as *inductive*, that is, based on generalization outward from individual, concrete experience. In principle, the generation of scientific knowledge is no different. Charles Sanders Peirce, for example, characterizes the formulation of scientific theory also as *inductive*, in that it uses the generation of a hypothesis based on evidence (what he calls *abductive* reasoning), coupled with *deductive* predictions to construct a basis for experimentation. The hypothesis is considered true to the extent that experimental results confirm the hypothesis, though subject to future modification (Peirce 1974: vol. 2 Paragraph 96). This means that the scientific method is *iterative* in its movement toward understanding naturalistic processes, and is specifically *only* constitutes the formulation of a deductive premise on which future claims to truth might be based insofar as evidence permits. However, once scientific principles come to be associated, in the classroom, with the “banking” system of education it creates the illusion that science is, in reality, a

compendium of deductive syllogisms that take the form of abstract, fungible, and universalized “knowledge.” Concepts like those associated with “environmentalism” are rendered legible to students in Sacha Loma through their acceptance of this new epistemological mode, which asserts truth claims based on abstract principles. Critically, constructing science education this way does not make it imperative that students necessarily understand the concepts that are learned, only that they should be accepted insofar as they are in line with the epistemological mode implied as “valuable” in the school setting. In Freire’s words, under the assumptions of the “banking” mode of education the “contents” of the teacher’s “narration” are “detached from reality, disconnected from the totality that engendered them.” Just as I argued for the privatization of land, the production of structured time through school demands that one value the very fungibility of school knowledge. “Scientific” knowledge in this mold is fundamentally translocal, in the sense that as deductive “principles,” this knowledge can be picked up and put down anywhere. Its very lack of relational roots gives it its wings.

Scott (1998) has made the claim that the valuation of this kind of epistemological mode is also an act of hegemonic state power. Here he opposes two major epistemological modes: *mētis*, or a “wide array of practical skills and acquired intelligence in responding to a constantly changing natural and human environment” which are “difficult to teach apart from engaging in the activity itself” (1998:313), and *techne*, or “general, abstract knowledge deployed by the state and its technical agencies” (1998:311). Further, *techne* is also “at its most rigorous, ...based on logical deduction from self-evident first principles. As an ideal type, it differs radically from *mētis* in terms of how it is organized, how it is codified and taught, how it is modified, and the analytical precision it exhibits” (1998:319). Crucially, therefore, *techne* is “universal” (1998:320). As Scott claims, “many forms of high modernism have replaced a valuable

collaboration between these two dialects of knowledge with an ‘imperial’ scientific view, which dismisses practical knowhow as insignificant at best and dangerous superstitions at worst” (1998:311). By prioritizing *techne*, state-sanctioned institutions, with schools as the paradigmatic example, are able to create conceptual legibility and homogeneity among citizens by valuing translocal knowledge and devaluing “practical knowhow.” In this way state agencies ensure that they know what, and how, their citizens think.

But how is state hegemony tied to environmentalism? According to Argyrou (2005), two grand narratives on the relationship of the human-nature dyad have dominated Western thought from the mid-20th and early 21st centuries. The first, older version of this narrative arose in the wake of the Second World War and was focused on “modernization and development,” with the United States as the model for “progress.” Crucially, this model was based upon a teleological notion of development and its quantifiable measurement based on economic throughput. This Ameri-centric model, however, was an outgrowth of an older set of Euro-centric ideas of mastery and control over nature, based on ideas of cultural evolution and the European colonial duty to “civilize.” Both of these narratives were based in the notion that “cultural value and worth among peoples and nations was to be found in ‘man’s’ mastery of nature made possible by the power that science and technology put in his hands” (2005:27). In this way, the global developmental imperative was based on universal access to technology, in order to enable such “mastery” to unfold everywhere.

In the end, however, this narrative was put down in favor of something radically different, a conception of the human vis-à-vis the natural that literally upended centuries of civilizing and developmentalist assumptions on the part of the West. Even the concepts of the actors involved had altered to the point that Argyrou claims the terms “man” and “nature” were

no longer sufficient. Rather, he claims, we see the rise of the “environmentalist” paradigm, in which the relevant actors became a new sort of “nature,” on the one hand, and a new human creature, the “human being,” on the other:

The death of “nature” has given birth to what most people would now agree is a fragile domain, an entity hardly amenable to taming, compelling, mastering, or bending to “man’s” will. Nature, it is now recognised, is a system of immense complexity and delicate balance whose future is currently in the balance. It has been burdened with numerous afflictions – deforestation, acid rain, depletion of the ozone layer, the greenhouse effect, the contamination of the seas, lakes and rivers, the poisoning of the food chain, the extinction of species and the consequent depletion of biodiversity. It is at the brink of collapse and must be protected and cared for as a matter of urgency. The death of “man” has also given birth to a new creature, one that claims to be more perceptive and receptive, better placed to understand the order of things and its place in this order, a more cautious and considerate being. Gone are the many postures of confrontation, the language of subjugation and exploitation, the image of “glorious struggles.” Human beings, it is now pointed out, can no longer afford to be locked in combat with nature. They have caused enough, possibly irreversible damage. They must disengage, relent and make peace. They must now relearn how to coexist and live in harmony with nature. (2005:37)

Whether families in Sacha Loma ever fully embraced this earlier “mastery” epistemological mode in relation to nature is an interesting question: as I’ve argued, the land use model of the parents and grandparents of adult children is not conceptually very different from historical patterns. But, my contention that the community founding was conducted in accordance with a push to more fully integrate into the cash economy shows clear parallels with the basic “developmentalist” assumptions upon which Argyrou claims the “environmentalist” revolution hinged. Certainly, older people in the community have not eschewed a relational, experience-based understanding of the forest. But, neither do they have much compunction about cutting, clearing, growing, and selling. Interesting, however, is the leap required for young high school students to have unpacked what Argyrou calls the “second change” in the human-nature relationship – the move to the “environmentalist” paradigm – while simultaneously having undergone the shift away from a conceptual and relational proximity to the forest only recently

and for the first time. Argyrou's claim regarding the understandings of the human-nature relationship extend only to these entities as "pure" concepts and as "globalized" discourses, and does not consider the role of practice in the qualitative form that these concepts take. For him, both "man-nature" and "human being-nature" are evolutions of an abstraction, and the narratives of "mastery" and "environmentalism" are based on these concepts as narrative abstractions. This implies that the Western evolution in the conception of nature took place within a frame that could conceive of "the human" and "the natural" as two ends of a dyad, that is, different in kind. For Sacha Lomans, this conceptual separation is insipient, anything but determined, and takes idiosyncratic local form.

This is also not to say that the version of "environmentalism" that Argyrou outlines as gaining traction is the *only* sort of environmentalism possible, but only that it is the master narrative that has gained global traction and "goes without saying." Indeed, his project specifically focuses on environmentalist discourse as it developed in the most global of global arenas: that in the United Nations since its founding in 1945. The global purview of the UN has given traction to its proclamations regarding the status of the global environment in a way others have not. The argument, therefore, is that this flavor of environmentalism is the one with the greatest political reach. For governments like that of Ecuador, which strives to wear its progressive modernity on its sleeve, this is the discourse that gets promulgated in venues like state-controlled schooling. For evidence of this "progressivist" impulse in current Ecuadorian politics, look no further than the government's pervasive ad campaign, on billboards and television all over the country, focusing on "advancement": they read "*La revolución ciudadana avanza!*" ("The citizen's revolution advances!") and "*La revolución ciudadana está en marcha*" ("The Citizen's revolution is underway"). The president of Ecuador, Rafael Correa, also

rhetorically and routinely invokes the idea of “Alfarismo” in his speeches and visible propaganda, hearkening back to liberal president Eloy Alfaro, assassinated in 1912, and thus the dawn of progressivist politics in Ecuador at the turn of the 20th century. The global environmentalism that Argyrou points to, a global political project operative as part of the progressivist agenda in Ecuador, has its roots squarely in Judeo-Christian ideas of environmental “domination,” environmental “stewardship” (White 1967), as well as enlightenment and post-enlightenment ideas such as Cartesian dualism and Kantian “rationality” (Kant 2008). Of course, other Western environmentalist reactions to this line of thinking have attempted to re-center valuation of the environment and the relationality of human beings with nature, often with reference to non-Western, and thus non Judeo-Christian source material. These included movements such as “biocentrism” (e.g., Schweitzer 1923), “ecocentrism” (e.g., Leopold 1977[1949]), and “deep ecology” (e.g., Naess 1973).

However, I would argue that the homemade environmentalist signs posted around the community by the high schoolers that day did index many of the dichotomies and assumptions contained in Argyrou’s outline of the “environmentalist paradigm.” Especially salient here is the “we-it” distinction that delineates the “human” from the “natural,” and, as noted above, this is self-consciously a *collective* “we” that attempts to cut across ethnic, racial, national, and socio-economic borders – in short, an inclusive, global “we.” This is the “we” of the “human being” that Argyrou so rightly delineates, a “we” that is “perceptive and receptive,” “cautious and considerate,” and thus benignly paternalistic and protective of its charge: the “environment.” This version of environmentalism, linked as it is to the “progressive” (as a thinly-veiled gloss for “capital-generating”) motion of the nation state, specifically devalues the assertion that human beings are *part* of nature for the assertion that they should *care for* nature. This view of

environmentalism, to take the cynical tack, achieves the end of promoting “stewardship” while simultaneously justifying extraction *from* nature as being for the “good” of a citizenry that has been conceptually reified from nature.

As Argyrou points out, though, this new environmentalist “we-it” distinction hinges conceptually on the scientific notion of environmental “fragility,” as built propositionally through abstractions that negate and devalue relational knowing: fungible notions of “affliction,” such as “deforestation, acid rain, depletion of the ozone layer, the greenhouse effect, the contamination of the seas, lakes and rivers, the poisoning of the food chain, the extinction of species and the consequent depletion of biodiversity.” This is where school, and school pedagogy reenter the picture. Discourses associated with “environmentalism” in Sacha Loma are a form of Scott’s notion of *techne* par excellence, and come from many sources. School, however, is the place in which the legibility of *techne*-linked discourses like environmentalism are rendered legible to young people, through the production of structured time and the “banking” pedagogical imperative. This was manifest to me during my time in the Sacha Loma classroom. One unit I helped teach to the local class of 11th graders rings especially true here. The unit called for getting the students to understand (in English, though I had to do most of the explaining in Spanish) how heavy industry could be related to environmental degradation. To do so the book trafficked in abstractions: through illustrations and captions, the text referred to “a factory” and “a river.” The factory released “a chemical” into the river, and this resulted in a fish die-off. The assignment then called for the students to reflect explicitly on how cause and effect were related in this instance. Students had immense trouble with the assignment, especially in that the text required them to think linearly about abstractions: which thing was a cause, and which an effect? Whether they ever understood what was being asked, however, at that moment I

was complicit in modeling the valuation of a very particular type of nature knowledge that encapsulated the gamut of assumptions I have outlined above: a narrative of “affliction” which in turn assumes the existence of a fungible, translocal notion of an “environment.” This is the basis for an epistemological mode consistent with global, neoliberal “environmentalism,” and one that implies a different – and for these students perhaps entirely new – manner of relating to their forest.

State-issued textbooks in Ecuador clearly want to fall in line with what the Ministry of Education touts as a progressive, globally-scaled epistemology. This necessitates the kind of process of abstraction I have alluded to above. The 2011 version of the state-issued natural sciences textbook for the final year of “basic education” (the US equivalent of 9th grade, and the highest-level textbook publicly available online), entitled *Ciencias Naturales 10* (Ministerio de Educación del Ecuador 2011), is frank about this goal. The preamble to the textbook states its globally-focused goals explicitly:

Ecuador has been, according to the poet Jorge Enrique Adoum “an unreal country limited by itself, divided by an imaginary line,” and it is the duty of us all to make it into a real country without limits.

With this in mind, the Ministry of Education carried out the Updating and Strengthening of the General Basic Education Curriculum [Spanish: *Actualización y Fortalecimiento del Currículo de la Educación General Básica*] which seeks that the coming generations learn in a better manner to relate to the rest of humanity and with their environment [Spanish: *entorno*] and above all, to dream along with the homeland that lives within our dreams and our hearts. ...

... Ecuador needs to become a country that looks firmly toward the future and this will only be possible if education allows us to be better citizens. This is an enormous task and one in which we should all be complicit, so that “Good Living” becomes an everyday practice. (2011:3)

The clear mission of the text is to reflect a state-level imperative to conceive of its students as citizens-in-formation. The text does this by explicitly relating education to the larger idea of “Good Living” that is reflected all over Ecuador on billboards and on television (the ad

campaign refers to “*Buen Vivir*” in Spanish, and “*Sumak Kawsay*” in Kichwa; these concepts are also explicitly drawn out in the most recent Ecuadorian constitution, ratified in 2008). The short preamble above reflects three key elements of the movement toward strengthening the imagined community of the nation state (sensu Anderson 1983). The first is an inclusive vision of humanity that erases ethnic, racial, linguistic, and economic distinctions as irrelevant in the construction of the nation. The second is the positing of a moral, benevolent paternalism as the charge of this progressive humanity on behalf of the biotic environment. Third, this vision is couched in abstractly aspirational terms that necessarily centers on “dreams” as reflecting the progressive will of the nation.

These three elements, which seek to couch aspiration in terms of globally-scaled abstraction, are exactly what I read as invoked in the environmentalist signs posted around the community. But how is it that this aspirational vision falls specifically under the guise of environmentalism? I would contend that environmentalist discourse functions as a conceptual touchstone to this state-level goal. Further, concepts under the rubric of “environmentalism” imply the acceptance of an epistemological mode that prepares students to understand the state vision of “Good Living,” which prioritizes a fungible sort of aspiration to wage work and global citizenship and implies a valuation of forest knowledge in conceptual, and not relational, terms. In Unit One of the natural sciences textbook, for example, titled “The Earth, a planet of life,” it lists the “educational objectives” of the unit as:

To compare the characteristics and components of bioregions, especially the Neotropical, the ecozone in which Ecuador is located, by means of the interpretation of maps and satellite images in order to value the conservation of biodiversity. (2011:8)

This is about as clear and concise an encapsulation of my point about means to a conceptual end in the case of citizen-making: in order to become “better citizens” through “education” (those

with goals and aspirations in concert with state imperatives), it is vital to understand “nature” as a conceptual abstraction. “Nature” is rendered legible, on this account, through global scale technology: “maps” and “satellite images.” Understanding these globally-scaled documents, in turn, renders legible the understanding of Ecuador (a political entity), as far as it is situated geographically, as a very particular type of abstracted entity: a “country” located in the “Neotropical ecozone.” Crucially, then, this understanding, according to the text, leads one naturally to “value” the “conservation” of “biodiversity” [Spanish: *a fin de valorar la conservación de la biodiversidad*]. Global scientific discourse thus becomes a medium through which progressive, modern citizenship is forged, in the form of the caring but development-minded environmental steward. These goals, in turn, hinge on abstractions, particularly “biodiversity,” which itself has no concrete form. “Biodiversity” itself is an idea, rooted in the statistical notion of species variety in a given location (e.g., an “ecosystem”), and is thus fundamentally intangible, and fundamentally abstract. It may be worth noting that, as far as I can tell, the notion of “biodiversity” is never explicitly defined in the textbook. Rather, the notion is implied at several points in the text by linking headings containing the word “biodiversity” to charts that show the variety of a given type of species, such as reptiles, at a certain location. Students are being asked to “conserve” something that cannot even be given an accurate mental picture. We could not be much further away here from multisensory, relational knowing of the forest.

Crucially, scientific language, presented as syllogistic truths, not only mediates the construction of “Nature” and “Human” as distinct poles of a dyad, but also the environmentalist discourse on the fundamental “fragility” of nature, by opposing it to the fundamentally “predatory” nature of humans. This is achieved by mediating a narrative of destruction on the

part of humans which leads to inevitable, and irrevocable, loss. The textbook, for example, links soil erosion explicitly to the unthinking actions of human groups that place an instrumental use-value on trees and the land: “The need for a mode of subsistence has led populations to deforest primary forests, which is especially problematic when it occurs on hillsides, since this produces erosion” (2011:50). This destructive chain of cause and consequence is even more pronounced, and nuanced, in the text’s discussion of the extraction and transport of crude oil:

[Petroleum contamination] can occur because of the accidental discharge of the hydrocarbon at any point in the production or transport of petroleum.

Petroleum contains various contaminants that mix with soil, deteriorating its quality, and which are toxic for any living being that depends on it. Among these are volatile organic components (VOCs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals.

The most alarming of these are the PAHs and their derivatives. These are considered persistent components, and have the capacity to stay in the soil for long periods. They are not soluble in water but are in fats, which means that they accumulate in the fatty tissues of animals.

Upon entering food chains they cause irreversible effects on genetic material, producing mutations and malignant tumors in diverse types of living beings that enter into contact with the contaminated soil or water. (2011:52)

Contained here is a virtually vertigo-inducing telescoping of scale, couched in a panoptic scientific discourse: from oil drilling and transport, to fatty tissues of animals, to DNA, individual genes, and the individual molecules “responsible” for the damage. This sort of scientific whiplash serves a purpose that goes beyond the content of the knowledge implied in “understanding” what is written in the text. Snow, for example, argues that the “impersonal authoritative stance” (2010:451) taken in textbooks, in their use of “grammatical embeddings, sophisticated and abstract vocabulary, precision of word choice, and use of nominalizations to refer to complex processes” (2010:452) specifically obscure meaning and impede students’ comprehension of scientific theory. Rather more important here is the legibility rendered in the epistemic form the knowledge takes. A new kind of aspirational

thinking, and citizenship, is built on the back of accepting a degradational environmental narrative, which is based on the projection of a rational, utilitarian human actor to quantify the environmental “damage” he is responsible for using scientific propositional language. Environmentalism in Ecuador becomes good citizenship by accepting the premises on which school offers an account of what knowledge is valuable, and exactly how it should be valued.

I have gone to some length to draw out the pathway through which environmentalism is situated within the valuation of a new deductive epistemological mode for young people in Sacha Loma. The *legibility* of environmentalism’s underlying epistemology, however, is moot without it being also rendered *legitimate* at the hand of local authorities. The local universe for the valuation of “authority” on forest knowledge is definitely changing for young people alongside patterns of practice with the forest I discussed in Chapter 4. Ideas and discourses related to environmentalism’s degradational narrative, in addition, are in the air at the hands of these new, and newly valued, authorities. My contention is that there is a mutual reinforcement in the community between the existence of new kinds of authorities on the forest and the situating effects of schooling, in guiding the thinking of young people regarding the forest. The production of structured time and the curricular imperatives of schooling combine to legitimate these authorities, who function as envoys for the scientific, deductive environmental epistemological mode. These authorities are almost all either external actors or are those few people in the community who embody this new epistemology (tourist guides, for example). In this way these people also function as aspirational figures who embody a version of “success” that is not found in the relational, forest-based productivity of their parents, but rather in the fungible notion of the “forest” as a propositional ideal. “Environmentalism” thus becomes linked to a progressive ideal of personal “aspiration” for young people. Young people also

therefore have a manifest stake in adopting the scientific epistemological mode that seems to be the conduit to such “success.”

Oil and the State: Environmentalism as Rational, Benevolent Paternalism

If schooling provides legibility for a deductive epistemological mode that underpins a narrative of degradational environmentalism, the legitimacy for such a narrative gains traction from externally-based actors who provide a model of “authority” for people in the community. People in the community say that they have attended “talks” (Spanish: *charlas*) hosted by state agencies throughout the region in cities like Coca at which government and oil company representatives talk about environmental stewardship. It is also the case in Sacha Loma that it has become completely normal for (usually uniformed) “authorities” from various state and non-state agencies to come to the community to present “authoritative” material on various themes. Such was the case with the Red Cross, which held a series of periodic meetings with the community throughout the year that ended up establishing Sacha Loma as a place of “refuge” in the event of a large-scale flooding of the Napo River (since, as related above, Sacha Loma is one of few places on the river that is high and steep enough not to flood). The point here is that the acceptance of externally-based and well-funded “authority” has become second nature in Sacha Loma.

The Ecuadorian State also conducts business-as-usual practices explicitly within the degradational environmentalist mode. Most glaring during my field work was the elaborate system of justifications and assurances that the government and Petroamazonas, the Amazonian arm of its state petroleum company, Petroecuador, went to in the community in its push to conduct seismic oil exploration with local landowners. Sacha Loma is located in the “Wayzu Yaku” portion of Ecuador’s petroleum block 21. When I arrived in the Napo in July of 2011,

new seismic exploration had been opened up all along the Upper and Middle Napo River region. The exploration was already going on in communities just upriver from Coca, and was planned for the Wayzu Yaku sector in the near future. The community had previously given communal consent for Petroamazonas to begin the legally-mandated “environmental assessment” of the community in preparation for the negotiations that would lead to both community and landowner consent of seismic exploration. The consent for this assessment had also already been given by multiple neighboring communities included in the Wayzu Yaku sector. When I arrived, an environmental consulting firm called Procapcon Eco-assessment had already conducted the study. Petroamazonas was now holding public meetings in several larger communities in the sector outlining the study’s findings, as well as stationing a Procapcon representative in each community for a period of twelve days. This representative was armed with a binder that contained the contents of the presentation given in the larger meetings, which provided a summary of the community-by-community assessment. The representatives were prepared to give presentations to single individuals and small groups within each community.

Procapcon bases its mission self-consciously at the juncture of state-mandated environmental regulation and the corporate and state-based push toward capitalistic gain. The on its website, the company describes its “mission” this way:

The mission of PROCAPCON Co. Ltd., is the efficient and constant evaluation of the biotic, abiotic, and socioeconomic-cultural environment, as well as the promotion of technologies for the management and conservation of areas and habitats in which development and production activities are being carried out in each and every type of Ecuadorian industry under the provisions of applicable environmental laws and regulations and the internal environmental policies of our clients. To this end, Procapcon Consultants Co. Ltd. uses innovative mechanisms, supported by technology and internationally recognized, standardized methodologies applied by a group of technical specialists and professionals in the natural environment, which ensures the effectiveness, excellence and quality of our processes. The commitment of our company is to provide environmental advice necessary to enable a thorough assessment of the natural and socio-cultural conditions that characterize a particular area, establishing guidelines for the

implementation of projects covered in the enforcement of existing national regulations.
(procapcon.com)

In writing its regulations to require assessments like those Procapcon provides in state-level extractive projects like oil exploration, the government is explicitly locating its justificatory narrative for such extraction by conceding the likelihood of environmental “damage.” This means that the rhetoric applied to the justification takes form through assurances that the state will be able to act in an extractivist manner and, simultaneously, be an effective steward of the forest. The Procapcon representative stationed in Sacha Loma presented to me page by page the contents of his binder, which contained printouts of the Powerpoint slides the company had put together for the public presentations in the communities, along with a large regional map that had printed on it both the extent and internal boundaries of the exploration zone. The presentation consisted almost entirely of propositional, authoritative codifications of the “assessment” results, wherein Procapcon had attempted to quantify the environmental context of the proposed seismic exploration zone. Moreover, the representative explicitly focused on the “methodologies” that Procapcon used to arrive at their propositionally codified conclusions. He thereby provided a radically alternate model for constructing forest knowledge based on applying *etic, a priori* methods which were then deployed onto the local forest. This model implies a fundamentally different understanding of both forest knowledge, and the practice required for its construction, one which implies scientific systematicity and regimentation as the “proper” epistemological mode.

The representative reported that results of this study were being “submitted” to the community for the sake of “accuracy,” and that they were willing to “erase” their results if the community thought them inaccurate. This directly assumed the legibility of the information, and the mode of its construction, to its local audience, while simultaneously paying surface-level

deference to the situated knowledge they assumed local residents to possess regarding the forest. However, it would be difficult to see how these results could be challenged even by people fluent in this kind of scientific epistemology, given the dual tendency of the results toward both non-verifiable specificity and banal truism. It is also difficult to see how focusing on the narrowly-abstract “accuracy” of the “findings” in any way helps or would change the decision to go ahead with seismic exploration in the region. As such, the most successful aspect of the presentation was the authoritative rhetorical mode by which the “environment” surrounding Sacha Loma is reduced so effectively to propositional “facts,” and thereby representing par excellence the strategic use of environmentalist rhetoric in the service of extractivist state projects. In this way “scientific” environmental quantification functions as a gloss for “transparency” on the part of the state, while simultaneously serving a justificatory role that does not substantially threaten the progress of the proposed project itself. Here is a sampling of the presentation:

What we see is that the Wayzu Yaku complex covers an area of 280 square kilometers. It forms part of Block 21, which is operated by Petroamazonas. Before, it was part of the operation called Perenco, but since 2009 it has belonged to Petroamazonas. This operation neglected to move forward with its drilling project, and Petroamazonas took over.... Geographically the Wayzu Yaku complex is located within both Orellana and Napo provinces, and the cantons of Francisco de Orellana, Loreto, and Tena. ... The study area has an average temperature between 23 and 25 degrees centigrade. Rain ranges from 2,000 to 4,000 millimeters, and is located between 200 and 300 meters above sea level. The Wayzu Yaku area is characterized by forests in a state of recuperation, with trees over 30 meters. A large part of the study zone has a high rate of agricultural activity, with cultivated areas of cacao, corn, banana, and coffee. Parts of the forest are earmarked for the artisanal and commercial extraction of wood.

The first of the methodologies that we used was to evaluate physical constituents. What did we do in terms of physical constituents? We extracted a soil sample, cutting a portion of 50 by 50 centimeters, and from there we sent it to a laboratory in Quito. This was to understand the chemical components of the sample. In order to know what it contained, its constituents, that kind of thing. So that later when the seismic exploration project is carried out we know what the soil contains, what the soil is like, as well as the air. And, we want to do a study *before* the seismic exploration is carried out, *while* the seismic exploration is carried out, and *after* the seismic exploration is carried out. So, we’ll do a weekly analysis. There’s a group of Petroamazonas employees who will do weekly soil sample extractions to make sure that what’s going on with the seismic

explorations isn't causing any damage to the environment [Spanish: *la naturaleza*]. ... When we want to see if there's petroleum present or not, at the moment of the [seismic] detonation we want to see if this produces a change in the soil. ... So, what we want to see is that it doesn't produce this [change]. That's why we're going to take soil samples, and also samples of water... from all of the Wayzu Yaku complex to analyze the chemical composition of the water. To see if the water is clean or not. If there's contamination or not.

Among the constituents we examined was the biotic component. What do we mean by the "biotic component"? ... We did a study by walking in the forest... in order to understand the species, the animals, the insects, fish – that's what we wanted to do. In order to do this we set parameters. How did we do this? We would arrive at a sector, and then walk in a certain direction. And we'd walk, for example, one kilometer, placing a ribbon every so often, and with this we would analyze space by space. Each person would collect samples all along his path, the others would do the same. And then the information would be combined and it would be analyzed. The results we obtained in [Sacha Loma] indicated that the soil has not been used by man. Unlike other communities we visited where the majority has been used for agriculture. Here, we encountered trees that had not been cut, with no intervention by humans. ...

... Another part of the study was to obtain animals, in this case mammals. What did we do to obtain this information? We did it using traps. We had a mobile lab with us, so that we would not cause much damage to the species. What we did was, when the animal was contained we would put it to sleep, weigh it, measure it, and then let it go. It was the same for catching birds. What we did was to place mist nets. These nets are very thin, and do not hurt the birds. And we did the same: we captured the bird and analyzed its colors, its plumage, its weight, and then let it go. And the same with fish: we captured them, analyzed what we saw, measured them, and let them go. This was specifically for the acquisition of this information. What did we find? In the first place, analyzing what we obtained, we verified that the state of [Sacha Loma]'s conservation, its diversity, is "medium." In [other communities in the region] where we did the study, the state of conservation is "low."

The logic of this presentation is based on the compartmentalization and quantification of the forest as a series of empirical "averages," which lead in turn to generalizations based on *a priori* "types" (e.g., "low" conservation as opposed to "medium" conservation). However, the legibility of the typologizing hinges on a degradational environmentalist narrative that pitches human beings as utilitarian rationalists separate from nature, but who also must exercise a benevolent paternalism on behalf of a fundamentally "fragile" environment. The fact that this narrative can be used to justify extractionist projects in the region, though, depends on first cleaving a nature-human dichotomy, and then assigning the responsibility of benevolent

paternalism to the people, instead of the government. Here the state's logic is to indicate awareness, culpability, and conciliation in its role as hegemonic actor: the state says it won't "damage" anything, while simultaneously telling local people that it's their responsibility to police the state against the inevitability of such "damage." I asked the representative, for example, to explain how the results of the environmental assessment would affect how Petroamazonas conducted its operations. He said:

With this study, [Petroamazonas] won't destroy the species that have existed here in the communities for such a long time. For example, there are trees that have been here for millions of years. And what we don't want is to destroy the trees that are important for the communities. That the trees don't get cut and the streams don't get contaminated. That's why there's been this preliminary study, to see where it's possible to conduct the seismic exploration.

Interviewer: So you're going to use the study to decide where to put the seismic lines?

Yes, where we're *permitted* to put them. After this first step we'll have a meeting with all the communities to see if we can move forward. Now, if a community isn't in agreement we'll just tell the ministry that the community doesn't want it, and it will be impossible to continue.

He went on to add:

We will use all this [study] information, and the input of those who accompany us – they are the biggest carriers [of information], and the ones who can indicate where the trees are, those that shouldn't be cut. Where the plants are that they wouldn't want damaged. To show the areas in which the project shouldn't be carried out where certain species are found, because it would cause a [negative] impact. And we wouldn't want to do the project in this manner, because before doing the seismic exploration Petroamazonas has sent a group of technicians to analyze everything and thus when the seismic exploration begins, they wouldn't enter in that particular area. They avoid that area. Much better that they just continue elsewhere, so that they don't cause [negative] effects.

The representative even went so far as to implicate Sacha Loma directly in his degradational environmentalist narrative. He did so in a way that saw Sacha Loma as a possible site of "non-intervention," based on Procapcon's finding that Sacha Loma was in a higher state of "conservation," according to their typology. In this way the degradational narrative became

simultaneously a justification for and against extractivism, based on a particular location's typological "state" of biotic diversity. At the same time, however, the rational utilitarian actor, pitched here as the local landowner, is seen as trumping even this environmentalist rationale for non-action. Asked if Sacha Loma would be treated differently than other communities based on its environment, the representative said:

They won't come in [and do the exploration] the same way in [Sacha Loma] [as elsewhere]. They'll try to avoid it in favor of other locations that would be better, those landowners of farms that are already heavily used for agriculture. But, as I've said before if we're given permission [by both the community and each individual landowner] the project will move forward, but if not, then no.

Finally, the degradational narrative on the part of Procapcon included a preemptively conciliatory note on behalf of the state that brought the disparate threads of the justificatory environmentalist logic together. This rhetoric played off the themes of benevolent paternalism of the environment on the part of a homogenized "human being" on the one hand, and of the patriotic duty of the individual, rational, environmentalist citizen to police these state actions. So, the logic goes, we (the state) will do nothing unless you (the community and the individual landowner) consent. And, even though there will not be "damage" caused to the "environment" because the "impact" of the exploration will be so small, there still might be some impact. And, therefore, it is the responsibility of the people to police this possibility. And, if there were to be "impact" we (the state) would clean it up, anyway:

When the [exploration] sector is abandoned once the project is finished, Petroamazonas has presented a plan of rehabilitation for the affected areas. To what end? With the intention of avoiding the deterioration of the environment [Spanish: *ambiente*], to ensure that the intervened-upon areas return to their initial condition to the greatest extent possible. To establish adequate procedures for reforestation and to comply with the monitoring which will permit the success of re-vegetation. To this point, what we'd like to say is that, as indicated, soil samples will be gathered weekly. However, water samples will be taken daily. Every day, Petroamazonas employees will extract samples of water and analyze them, to make sure that everything is going ok. ... And if [the Ministry of the Environment] sees that they are not taking these steps, and that day in and

day out they are contaminating the water, the work will stop. ... If Petroamazonas complies with this norm that the Ministry of the Environment has established, there will be no problems. We have also said that people [in the communities] should monitor and be permanently vigilant that the work is going smoothly, that *they* will be the actual sector monitors. And if they see things that they don't like in the Petroamazonas project, they should automatically talk both to the Petroamazonas people and directly to the Ministry of the Environment.

The logic of the state seems to build the legibility of the extractivist state project through the use of an environmentalist rhetoric that bifurcates the human and the natural and posits humans as intrinsically harmful to it. The degradational environmentalist frame is, further, linked to an idealized image of the rational, patriotic citizen balancing this environmentalism with the imperative of capitalistic gain. The state, in turn, projects itself as just that kind of citizen, though one balancing the “conservation” of a fragile environment with destructive enterprise that it conducts on behalf of the whole society. In places like Sacha Loma, however, the use of this rhetoric implies more than a state-level invocation of a forest-based discourse with which local people are already fluent. Rather, because this rhetoric is associated with powerful outside actors, it is also linked to a fundamentally new type of aspirational understanding of the forest, especially for young people. If state representatives are invoking what is, ultimately, a model for successful citizenship, the vision of the forest implied in this model is one that is based on a level of quantification and typologizing that resists understanding the forest as a fundamentally local, relational entity. Rather, it posits a fungible projection of that entity, a “forest” than can be known by quantifying it in relation to other such entities, on various scales.

The NGO: Environmentalism and the “Eco-Entrepreneur”

Environmentalist rhetoric also comes in a slightly different flavor in Sacha Loma. Because the local NGO founder, Mr. E, not only made Sacha Loma the administrative site of the first school network in the region, but also piggybacked on this project the first eco-lodge in the

entire region, Sacha Lomans have been visited by groups of “eco-tourists” for close to twenty years. The environmentalism propounded on the part of the NGO projects a very different kind of environmentalist citizen: not one that posits local landowners as patriotic, rational, homogenized “citizens,” but rather one that treats residents as brokers of “authentic” environmental and cultural knowledge. Simultaneously, though, in the hands of the NGO, this culturalist narrative is balanced with a different kind of aspirational imperative: that of the eco-entrepreneur. This vision is pitched, at times, as just as ratio-individualist as the state’s vision of the productive, utilitarianist citizen. Taken together, this NGO vision posits a local populace as both culturally “exceptional,” but also as possessing an innate capacity to “achieve more.” On this account, what the local population needs most of all is the provision of access to education and resources, which, if offered in the correct way, will enable the innate human potential of the historically underprivileged population to flourish. This tension was evident, for example, in my discussion of Mr. E’s assessment of educational attainment in Sacha Loma in Chapter 4. There he clearly sees a discrepancy between the “capability” of local young people to achieve in school and at work on the one hand, and innate roadblocks to achieving ends in concert with this “capability” because of a lack of understanding of both the purpose and practice of education, coupled to (he says) a lack of intrinsic “motivation.” This narrative is homogenizing in that it sees but one teleological path to personal “advancement” through an understanding of, and success within, the confines of formal, progressive education.

However, this narrative of the entrepreneurial culture-broker also has clear environmentalist underpinnings. The environmentalist mode that fits this narrative is, to some extent, degradational in that it sees the future of both the forest and the global environment as grim. However, it is simultaneously supposed to be inspirational in its deployment of utilitarian

economics for the betterment of local people, which in turn benefits the world. This is, essentially, a model based on the goal of, as the foundation puts it, the “conservation of the Ecuadorian rainforest and the sustainable development of its indigenous and mestizo communities”¹. The mode by which this might be achieved is through training programs that offer young people a chance to successfully model “productive” work that falls in line with an entrepreneurial ideal of “motivation,” that is, not work *in* the forest but rather wage work that capitalizes on the *idea* of the forest, and of local, indigenous people as intrinsic to it. This notion is crucially bound to environmentalist rhetoric. As the foundation puts it in its mission statement:

[Our] Lodge is a first-class internationally recognized Amazonian eco-lodge whose mission is to share with international travelers, local visitors and regional students the rich cultural and natural diversity of the Amazon rainforest and the importance of its conservation. [It] also has the distinction of being the only lodge in Ecuador that is a training facility in hotel management for Amazonian youth, the rainforest’s next generation of leaders, teaching them the skills to allow them to stay in the region, find work or be entrepreneurs.

Fundamental to this process of successful “training” is the introduction of explicitly environmentalist practices which are underpinned by both a scientific and degradational understanding of the “environment.” Here is a sampling of the “sustainable” practices the foundation lists on its website, and some of the accompanying language used as justification:

Ozone drinking water treatment: The drinking water for the lodge and the training center are both treated with ozone for purification. Ozone is over 200 times more effective in the purification of drinking water than chlorine (DEL ozone company data). The water tastes better, has no chemicals in it (ozone is a gas), helps to eliminate bacteria on foods that are washed in ozonized water and reduces the need for hot water for washing dishes and clothes. It also affords major financial savings to the laundry operation of the lodge and training center.

Ozone for the laundry: Ozonated water eliminates the need for hot water resulting in up to an 85% energy saving. Ozone actually works better in cold water. Salt crystals left by the residual alkali in soaps are completely removed with water treated with ozone therefore there is no longer a need for fabric softener in wash formula; a saving of 10%.

Shorter drying times and removal of the salt crystals left by the residual soap alkali results in a 20% extended linen life. Normally these salt crystals are actually “cutting” the fabric during drying producing the lint that one finds in their dryer.

Waste water treatment at the [] Lodge: The sewage from the lodge is treated in a bio-digester, an anaerobic rubber tube that collects all the sewage and allows it to decompose. There are two bi-products: methane gas and contaminated effluent. The methane gas is being collected and pumped to a pressurization system where it is providing gas for cooking at the lodge. The effluent is highly contaminated but the foundation has developed a new invention to treat this liquid. The effluent leaves the bio-digester and goes to a covered pit that has a manifold drainage system that provides the liquid for the production of banana trees. A banana tree sucks up around 400 liters of water a day. This is completely eliminating any runoff and is producing stalks of bananas that can be eaten.

Solar hot water: In our effort to reduce energy costs through innovation, we have installed solar hot water heating. This is nothing new, but looking for a way to be able to offer a hot water system to people living at the Base of the Economic Pyramid, we have developed a new form of collecting panels. Normally, solar collection panels are made from copper tubes but copper is very expensive and more complicated to install with all the soldered joints. We have used sheets of polycarbonate, a plastic that is commonly used as roofing material over entrances or decks and not very expensive. The polycarbonate is 1 centimeter thick (approximately 1/3rd inch) with separations that run long way down the sheets. We paint the upper surface flat black to collect heat and the underside aluminum to reflect the heat back to the channels. A pipe is installed on both sides of the sheets where cold water flows through the channels to a pipe that collects the hot water at the top of the sheet. This hot water then goes into a collection tank and supplies all of the rooms. A second innovation that we have incorporated is to put the 3/4 inch plastic pipe that is the supply line for the hot water inside of a 2 inch PVC pipe that is the return line. This eliminates the need to insulate one of the lines and ensures that the water is constantly hot and reduces the amount of heating that the panels have to perform.

Garbage management: All compostable material is put in our compost system that is mixed with coffee or rice husks to reduce the moisture content and produce a better fertilizer that is used on the gardens. All leftover food will shortly be used to feed pigs in our own pig production (under construction). All plastic, metal or paper is taken to a sanitary land fill in the city of Coca. We ask that you take any spent batteries back to the city with you and not leave them with us.

Thin-client computers for the computer laboratory: The foundation has 25 computers in its computer laboratory. Applying the latest technology, instead of having 25 individual CPU's or servers which is the conventional type of installation for a PC, we have just one mega server that is running all of the computers. A regular CPU consumes around 130 watts of energy per hour in addition to the screen. Our program is using LED screens that use only 11 watts plus a small modem located on the back of each screen that uses 5 watts. By using this system we have reduced our energy consumption by 3,120 watts thus requiring only 514 watts total energy consumption for the system! By using just the

one terabyte server we have also reduced the heat that would have normally been generated by so many individual CPU's; a big plus working in a tropical environment.

The lodge is manifestly using the fact of its environmentalist initiatives both as a selling point to an “eco-conscious” Western tourist consumer and as a point of modeling such an ideal to young people in the community who work for them or fall within their regional sphere of influence.

Basic to this notion is the idea of “avoiding” what is to some degree “inevitable” contamination (since all human activity creates “waste”). This negative impact, as well as its avoidance, can best be understood through mathematical projections of possible negative outcomes on the environment of this human activity under different hypothetical conditions, that is, “business as usual” or “environmentalist.” Crucially, moreover, the environmentalist route is the route of technology: of engineering, or reengineering, new modes of practice within the environment, of inventing one's way out of the inevitability of negative human impact. In short, it is an entrepreneurial vision that promises not just lightening the “load” on the environment but rather a new, technology-based symbiosis with it. Here, the human actor is not simply benevolent and paternalistic toward his environment, but ever-mindful of the impact he has on its intrinsically fragile state and constantly working to mitigate it through invention.

The way the forest gets talked about by NGO actors brings together the threads of both noble savagery on the one hand and entrepreneurial self-motivation, on the other. Since 2010, the eco-lodge has partnered with another startup NGO whose goal is to focus on avoided deforestation schemes in the Ecuadorian Amazon. The two groups have spent several years toying with different versions of their model, initially preferring a model based on direct payments to farmers for non-cultivation of land for a specified contractual term. Over the years they have evolved to a system that takes its cues from both the worlds of both avoided deforestation and microfinance loans. They call this system a “forest bank”:

These micro-credit programs are unique in their major conservation component and are an outgrowth of the frustration of the foundation director and founder seeing hundreds of millions of dollars moving around the world for carbon credits or mega projects for rainforest protection but not seeing any of this money actually getting on the ground to the individual farmers who own the tropical rainforest. It is not a person in Chicago or London who decides if a rainforest tree is cut down or not, it is a poor farmer trying to subsist in the tropical environment. The farmers are not commercial loggers but instead they cut trees to sell for small amounts of cash for agriculture, health, education or other productive projects. ... When a village decides to be a part of this program, the members have to sign a commitment that they will leave part of their forest intact and not cut it in order to have access to credit through their micro-credit program. To date, there are two micro-credit programs created with tremendous success with 48 members and 1,020 hectares (2,550 acres) protected.

Immediately apparent here is the global-scale of the context into which rainforest landowners are placed vis-à-vis the microfinance program. The startup NGO's website pitches the relationship slightly differently, painting these landowners more as victims of untenable structural-economic circumstance:

We are committed to preserving Tropical Rainforests thru [*sic*] innovative relief strategies to benefit the poor. The initial work of [the] Foundation will target the impoverished Napo region in Ecuador. The Rainforest in the Napo region in Ecuador is being destroyed by rampant deforestation and sale of Rainforest timber. Due to the economic conditions, the impoverished farmers have little choice but to extract and sell the Rainforest timber to survive. Extracting the Rainforest timber irreparably damages the Rainforest ecosystem including the plants and animals that live in it. Preservation of one of the world's most ecologically rich environments, the Rainforest, is paramount to future stability of the planet, educational teachings and scientific discoveries.

The narrative in this case is one of inevitable global calamity that has been brought about by the perpetuation of structural inequalities between the "developed" and "undeveloped" worlds. The scale, however, is the same: clearly both foundations see their charge as refracting global imperatives in locally beneficial actions.

In January of 2012 the startup NGO's founder, an Ecuadorian with a JD degree in Ecuador and a master's degree in regional planning from Cornell University, visited the community to pitch the idea of the "forest bank" program to local landowners. His narrative to

the community brought together the particular breed of aspirational environmentalism I have been outlining: themes related to cultural exceptionalism, rain forest degradation, global environmental catastrophe, entrepreneurial spirit, communalism, and alternate conceptualizations of land “productivity.” Much of this, moreover, took the form of an extended meditation on the idea of the forest as both a literal and figurative kind of “bank.” In this narrative, the forest should be turned from one kind of perpetually-raided individual “savings account,” where standing forest is looked at as a route to short term gain through felling trees, to one in which the forest functions as a savings account on multiple levels above the individual: for the community as a source of “sustainable productivity,” and for the world as a whole, which through the microfinance program would alleviate the sins of having induced environmental catastrophe through structural inequality and runaway development:

So I'll ask you to put in your minds the image of a bank, and with [an actual bank] we know what it's worth. But with the forest, nobody can put a value on it. Now, I ask what happens if they [both] disappear? What happens if the biggest bank in the world disappears, one that might be worth three trillion dollars? What would happen to our existence? ... If this bank disappears, perhaps it wouldn't affect us, though certainly it's evident that there would be a global financial crisis. But if the *forest* disappears we're putting at risk the very subsistence of the human species, the entire species, the entire planet. But really, my friend, I don't have money in that bank. And I ask you, do *you* have money in it? ... But, how many hectares of forest do you have? You all are the owners of the *real* most powerful, the biggest bank in the world. *I* am not the owner – I don't have even one hectare of forest. *You* are the richest men on the whole planet. It's practically a utopia – you live for your families while the rest of humanity lives to grow its need for money. But a lot of times we don't see the forest in this way. *You* are the richest men, families, communities on the planet. ... I'm telling you, I believe that you all have the highest quality of life on the whole planet. First, you breathe the purest air you can find – no one else, *you*. In the cities there are all kinds of respiratory problems. So many cars, so many trucks, and all the oxygen is contaminated for the people there. *You* all live a much healthier life. And all the people [in the cities] are full of cancer, full of problems, full of stress. They're all stuck in traffic and going crazy. But *you* feed yourselves more healthily, with what you plant here. ... [In the cities] everything is garbage, we're contaminating our bodies. And why? To pay for more stuff, a bigger car, two cars, big-time universities, it all costs money... And of course it's difficult for all of you because you also see progress – growing and bettering your house, and then buying a car, and then a truck, and yes, you have the right to all of that. The only thing I'm saying

is that, as a society, let's clasp hands and see how we can work, how we can grow, but while keeping the forest in good shape [Spanish: *reteniendo este bosque bien*].

[...]

Ok, the concept – the “forest bank.” Farmers who have tracts of forest, or who perhaps have tracts of forest that has been cut but that they want to reforest; in order to be part of this “bank,” and we need to be able to come together at a community level, we deposit – not money, because we don't have money. We have *forest*. So, we “deposit” our conservation, an agreement. And then I become a part of this “bank.” And the objective of forming this “bank” at a community level is to gain access to the resources that we'll need in order to invest. ... And eventually, God willing, through this agreement we'll reduce the dependence that currently exists on the forest. But as I've said, even when we *don't* have these resources, we should be the first to take up arms and say “nobody touches my forest!”

[...]

I have a question for you all. I'm thinking about a long-term vision, but one that's real. And the worry is: where are future generations going to go? This is a real worry, because the most logical thing is that the same thing will happen that's happened now for many years, which is that [the young people] will be given a small piece of land, forested or unforested, and they'll make their life there, right? Five hectares, or whatever, and they'll build their house and be productive. But I challenge you – to think in a non-traditional way. How so? In that you ask yourselves “what benefits, what industries, what kinds of businesses is it possible to create in, or with, or for the forest?” This is a different way of thinking. Because if I give five hectares to my son, based on what happens now he's going to cut [trees], and he's going to plant coffee or cacao. Simply because this is how it's done here. Let's start thinking beyond all that – how can my son make this five hectares productive without touching the forest, leaving the forest as it is? How is he going to do it? There are medicinal plants, there are seeds – what kinds of industries, what kinds of microenterprises, what kinds of activities can I do *within* the forest, *holding onto* the forest? If I have no forest I can't do this – *holding onto* the forest. ... What are the things I can exploit in the forest, without damaging it? Remember that our ancestors lived off the forest – so many generations, just living off that forest.

[People offer up some suggestions: “medicinal plants,” “*chambira*,” “*pita*,” “artisanal products.”]

So in just a few seconds we've seen how the forest can be productive. So, the idea of inheritance [Spanish: *herencia*], in theory, should no longer be a problem. Because we can see how the forest can work like a deposit for future generations. We need to be creative, in order to create these sorts of businesses. And I believe that as a foundation that works on both a foreign and local level, we can work to help you, to identify markets, to guide you along.

What this man is advocating is nothing less than a radical revision for landowners not only in how they use their land, but in how they perceive it as “productive.” In fact, he seems to strive to re-orient the very idea of “productivity,” away from “land,” as such, and toward the “forest” as a coherent entity with an existence that is separate from, but importantly dependent on, “land.” Even more interesting, he is also advocating this move as a *return* of sorts, of reorienting “tradition” away from “land use” as fundamentally agriculture-based and toward the “productive” forest of the “ancestors” (pitched as a homogenized, collective “we”). Of course, as progressive, global citizens with the fate of the world and the human race at stake, this “return” is one under very different, and very modern, auspices: this return to “tradition” takes the form of “businesses” for which local people need access to liquid capital and to global “markets” for their newly-sustainable “industries.” Moreover, these new practices are to occur within a newly circumscribed entity, the fragile “forest.” What is being advocated is not a “return” to a relational symbiosis with the forest, but an independent, inherently destructive “human being” whose charge is to tread lightly, that is, to be “productive” on terms allowed by the limits of “sustainability” that the forest itself offers.

Conservation and the State: *Socio Bosque* as a Reflection of Intergenerational Patterns of Environmental Thought

While the Ecuadorian state has used the discourse of environmentalism in order to justify extractivist projects in the region like oil exploration, it has also deployed global environmentalist thinking in a much more straightforward way. The most clear-cut implementation of this thinking comes in the form of an avoided deforestation program run through the Ministry of the Environment called *Socio Bosque* (“Social Forest”). The program has been in existence all over Ecuador since 2008. Through the program landowners can submit

their titled land and receive direct government payouts based on parcel size. According to the program website Napo Province has a current total of 44,778.15 hectares under conservation both from community collectives and individual landowners; payouts were equal to an average of \$8.95 per hectare, per year, for this land (sociobosque.ambiente.gob.ec), priced on sliding scale inversely proportional to the size of the parcel (up to fifty hectares are paid \$30/hectare, with the lowest possible payout \$4/hectare). The landowner signs a conservation agreement for a duration of twenty years, during which time he or she cannot use the land for any kind of agricultural production or logging. In Sacha Loma there was no discussion about collectivizing land for entry into the program, and no individual land owner has chosen to participate. However, the program was a topic of discussion and rumination, and, I think, reflects an evolution in thinking about acceptable land use and local changes in personal aspirations. The program is manifestly and transparently “environmentalist” in its rhetoric, and understands “forest” as a fundamentally fungible notion, wherein *any* forest is considered worthy of “conservation,” as long as it falls within the political confines of the Ecuadorian state. As the program website puts its mission:

The Government of the Civilian Revolution [Spanish: *El Gobierno de la Revolución Ciudadana*], in compliance with the National Development Plan [Spanish: *Plan Nacional de Desarrollo*] which sets out a reduction in the deforestation rate of 50%, in 2008 created the Socio Bosque Program whose principal objective is the conservation of native forests and *paramos* in all corners of the homeland.

The program also posits certain types of human land use over others as fundamentally degrading, and placing value on what it considers “traditionalist” and “light use” practices. In a recent interview the program director was asked if there were permitted uses for land entered into the program, and he said he following: “yes, as long as there is no change to the ‘land use’ [Spanish: *uso del suelo*]. What is forbidden is to cut [trees]. Ecotourism, hunting, fishing, and the

gathering of flowers and fruit solely for consumption are compatible activities” (hoy.com.ec). In this way the program conceptually straddles the generational gap in Sacha Loma in terms of what it projects as idealized forest practice, considering as “acceptable” both paradigmatically “traditional” activities, on the one hand, and progressively modern activities on the other. Specifically, it forbids the type of land use practice that Sacha Lomans consider to be “traditional,” that is, cash cropping and subsistence farming, as particularly “harmful.” Critically, though, the acceptability of all of these activities is framed through the lens of “use,” which projects human actors in the forest as something of a commons management problem: without regulation, destruction is inevitable, and thus non-destruction should be directly incentivized.

However, people in the community do *not* talk about the program as a strategic means to get paid to revert to a “traditionalist” past associated with the “grandparents” [Spanish: *abuelos*]. Rather, the program is talked about as something of a “conceptual dumping ground” for evolving ideas about the forest, as a reflection of both land privatization and environmentalist rhetoric, and as a function of age. While older people see the program as an option of last resort for dealing with mounting land scarcity and uncertainty about the future as young people’s wants and needs change, young people see it as an opportunity. What this talk reflects, I think, is evolving understandings of the necessity of land to one’s understanding of place, and being “of” a place. For example, as I discussed in Chapter 4, Dorotea and Nemar struggled to procure land on the 5th line, near Waorani territory, on the assumption that in the wake of land privatization the community children would have “nothing” in the future, if all the community family farms were split up into smaller and smaller pieces. However, the community never went in with the couple on the deal, and she has become increasingly doubtful that it was a good idea to have procured

the land, if it will be possible to give it to her children, or whether they would even want it. This was what she said about it:

“If I can sort out the titling I want to give it to my kids. If not, I want to put it in *Socio Bosque*. But the title hasn’t come through yet, and there’s no money to resolve it. That’s what I think – the other day [Mr. E] came and said that even without title I can still put it in *Socio Bosque*; that’s what [he] said, at least. So, if he’ll help me I can put it in *Socio Bosque*.”

There is something definitely defeatist in Dorotea’s discourse. This is a woman who lived through the upheaval of land reform and all of the evolutions to follow that I have outlined.

Dorotea plays on two main themes here: privatization and poverty, and there is little reflection on the purported “purpose” of the program, either as “conservationist” in the large sense, or as “not cutting” in the more narrow sense. Rather, there is more a tone of utilitarian rationality to getting *something* out of what has turned out to be quite a quixotic enterprise in procuring the land, and has caused strife among community families (the woman claimed the fight over the land led them to secede from the community association). For this older woman *Socio Bosque* represents salvaging the idea of land as productive in a rapidly-shifting structural context.

On the other hand, younger people talk about *Socio Bosque* as a means to an end, and as an opportunity to de-couple the tie between identity and place. The most extreme example of this came from 18 year-old Yoana, who had recently graduated from the community high school and now served as the school’s English teacher. This woman thought of *Socio Bosque* specifically as a way to avoid a life that directly implied the forest. This woman said that her father Anselmo had been making noises recently that he wanted to start the process of breaking up his land legally and giving it to his kids as *herencia*. She thought he would offer her about six hectares, but she was adamant that she did not want his generosity, and she herself “had told him to keep it.” She hated working in the forest, hated living in Sacha Loma where it’s “hot and

there are so many bugs.” Rather, her dream was to go to the city of Riobamba for college, where she has her godparents, and if her father gives her the land inheritance she would “just leave it in forest or enter it with *Socio Bosque*.” Put in this way, *Socio Bosque* becomes something of a conceptual holding place for a turning-away from a relational knowing of the forest. For this young woman, leaving the land “in forest” or putting it “under conservation” is basically an act of abstraction, of leaving “it” alone, and positing it as essentially separate from human interest or concern. This is perhaps the clearest case of the kind of “environmentalism” that is evolving in Sacha Loma. This environmentalism justifies itself on the premise that land is less a “place” than it is an “idea,” and that by placing land in the communal, conservationist “pot” one is free to walk away and pursue other kinds of aspirational ends.

Intergenerational Environmentalism in Sacha Loma: Money, Fragility, and Contamination

I have argued that at least two different strategic manifestations of “environmentalist” rhetoric are deployed in Sacha Loma to various ends. The first of these is propagated by state interests, and includes notions of the homogenized Ecuadorian “citizen” and utilitarianist rationality as underpinnings. The second, propagated by non-governmental environmental groups, includes a global scaling of catastrophe, a notion of shared humanity and human capital, and structural inequality as working assumptions. Tying these together, however, is the imperative to view “nature” as through the lens of a fungible, deductive scientism that posits fragility and degradation as foundational to the human relationship both to the rain forest and to the globally-scaled “ecosystem.” Further, I have argued that the legibility and legitimacy of this rhetoric is rendered through both the practice and the content of formal state schooling as practiced in Ecuador, which relies on a progressivist, benevolently-socialist framework for the understanding of how society should optimally run.

But, how are these messages being internalized? My contention is that one can see threads of all of these strategic rhetorics at play within community discourse: formal state education as aspirational “promise,” citizenship and patriotic duty, the local crisis of appearing “civilized” to the outside world, the wish for monetary success, along with cultural exceptionalism and the ideal of being productively tied to place. Tying these disparate threads together, though, is the new scientific epistemological frame regarding the environment I have argued for above. Crucially, though, the coherence and legibility of these conceptual threads play out differently for older and younger people in the community. I have argued that the operational frame within which older people in the community reason about the environment revolves around an idea of productivity based on a close, fundamentally manual relationship with the forest. For younger people, I would argue that schooling has created conditions under which the “environment” as a fungible, homogenized entity is more highly legible, thus enabling the availability of “environmentalist” notions for actual reasoning both about the forest, and about one’s future.

One manner in which these discursive threads came together was during a meeting held one morning early in the school year. Anselmo, who was at the time also the head of the local school equivalent to the PTA [Spanish: *presidente de los padres de familia*], gave an inspirational speech in which he linked the ideas of education, progress, achievement, and natural resources: he said that “people think we [e.g., Kichwa] are not civilized, not advanced,” but that in reality that claim was not true. In order to alleviate this notion it was up to the community to send children to school, to “show them [e.g., outsiders] how educated our children are.” He then linked the idea of education to advancement, saying that with the school now in place, the current school-attending generation had an unprecedented set of “opportunities.”

Finally, he linked this notion of “opportunity” to the local landscape, stating that “our richness, our nature” is a big reason why external actors, like tourists and oil companies, are so “interested” in the people (presumably since they are people “of” that place). This fact, in turn, implicated both parents and children: the parents to sacrifice to send their children to school, and young people to take school seriously, so that they, as newly educated young people, could take advantage of such “opportunities.” Interesting here is the role that a notion of “nature” begins to play in older residents’ concepts of capitalistic and utilitarian gain, but on behalf of the community. Also interesting is that while the notion of “nature” as an entity, is certainly present, in practice it is not a truly fungible notion (as it would be in a truly environmentalist framework): “our nature,” for Anselmo, is different from others’, diagnostic of a certain place and people, and it is this aspect of nature that will help the community both financially and in its projection to the outside as “civilized” and “advanced.”

The conceptual uses of these various threads for older Sacha Lomans were even more dramatically on display in an impassioned, highly rhetorical speech Nemar gave within the confines of his house. I focus on this speech not only because it deals with many of the conflicting conceptual threads I have already outlined, but also because it was recorded about two months after the Ecuadorian founder of the “forest bank” microcredit loan NGO visited the community, and here Nemar is manifestly struggling to reconcile the metaphors the NGO founder used in his pitch to the community. Nemar is one of the fathers who had moved his family to the riverbank for school, and who had several older children who had already graduated, along with one teenage son currently attending the NGO boarding school downriver. Clearly, though, he is conflicted about his and the community’s choices regarding education and modernizing change. In the speech he reacts explicitly and almost aggressively to the line of

questioning by the anthropologist. However, he is also trying to come to grips with many of the paradoxes I have outlined as implicated in the understanding of “environmentalism” as the local model of progressive modernity par excellence. He reflects on ideas of educational “promise” and its links to capitalistic gain, but within the rubric of a fierce patriotism that is spot-on in its reading of structural inequalities within the Ecuadorian nation-state. He also reflects on the dislocating effects of education and its progressivist promise, and, crucially, he does so through the lens of new types of environmental knowledge, positing that new kinds of thinking about the local environment lead to new kinds of aspirational practice within the Ecuadorian economy. Interestingly, the ideas he is referring to are not explicitly “environmentalist,” but rather capitalistic, signaling, I think, that truly environmentalist thinking is not all that legible to a man his age. Rather, like Anselmo in the previous paragraph, Nemar focuses on the highly situated notion of local “richness” and the claim Sacha Lomans have to it, as a route to “getting ahead.”

In this community... here there is richness, but we can't get ahead, and why? Because sometimes we fail technically, or we fail in our studies, or we fail with our training [Spanish: *capacitación*], and maybe it would just be better that some person with training come [Spanish: *que mejor venga una señora o un señor*] to help us. ... Why is it that Ecuador, being so rich in oil and in its natural resources [Spanish: *en natural*], in all of its aspects, why is Ecuador poor? Just like that man who came to [the eco-lodge] said: Ecuador, he said, the bank, the national bank, he said, has millions of dollars, he said, there's so much money there, but all that money will come to an end one day if the president doesn't manage it well. But the millionaire-like richness that is our Ecuadorian territory, that can't come to an end, he said, it's more than just a “millionaire,” that is to say, it's worth more than money – I mean money is made by man, right? The natural world [Spanish: *la naturaleza*], the richness, that isn't made by man but by God, right? *That* can't come to an end, only God can bring it to an end. It's a science, you know? That's why we want our children to study – but really, the child who studies, sometimes he kind of abandons... a child studies, say, agronomy, but the child, instead of cultivating the land, doing his animal husbandry, doing his planting, helping out technically so that the animals don't die, or with the fact that the plants aren't producing, that kind of thing, goes elsewhere to work, just making his wage, and abandons the farm, not helping the community to prosper. So there, sometimes, we see a bit of change with boys and girls when they don't look backward [e.g., to the community], but always forward [e.g., to other kinds of work]. Ok, so they're trained, they have their title, and they say “no way, I'm just worried about myself and not those who I've left behind, those who aren't

trained, well prepared.” But there, that kid who’s worried about the rest of us, that’s the young person who should get ahead, not just for himself but for the rest of us.

The scale on which this man is thinking is not truly an “environmentalist” scale; here there is no real sense of the homogenized global citizen trying locally to avoid catastrophe. Rather, there is an abstract sense of the “natural world” as a repository of (perhaps inexhaustible) resources, but also a simultaneous inability of people like him to exploit them and to get ahead. Paradoxically to this man, the training that he sees as necessary to make the forest “productive” in the way that would make them all rich, that is, education and “science,” is also pushing young people out of the community, individualizing them and their sphere of concern out from a community-based relationship to the forest and into the a-relational vacuum of the wage economy. Education, then, is worthwhile only insofar as it helps young people to strengthen their focus on place, and relational productivity in that place.

It is precisely the paradox this man is wrestling with that I think is key to understanding intergenerational differences in environmental thinking. This man sees his goals for education (e.g., teleologically better relational productivity) and the visible outcomes of education (e.g., people stopping to care about the forest and moving away or working in other industries), as a paradox precisely because of his non-comprehension of the message the microcredit NGO founder was propounding. The head of the NGO was precisely *not* making his “banking” analogy with the forest in order to assert that the forest in the Upper Napo is a repository of untapped wealth for people who happen to live there, within the exploitative rubric of the Ecuadorian nation-state. Rather, he used the analogy of a “bank” to pitch the fact that because 1. There is the potential for globally-scaled environmental catastrophe, the community, as empathetic citizens of a fragile world, should 2. Save “their” forest on behalf of the rest of humanity, by 3. Using the forest as collateral for microcredit loans, which would 4. Make them,

in terms of practice, more like “proper” members of the market-driven global citizenry. That is, it would pull them out of the forest and make them both entrepreneurial and “modern” without jeopardizing their claim to being “traditional.” This lack in the legibility of truly environmentalist thinking points to the possibility that, for older people in the community, education is fundamentally paradoxical. This is because truly environmentalist thinking entails an appreciation of conceptual fungibility and global scaling.

I would contend that the environmental rhetoric generated by the state *is* legible for these older people, however, because it is built on notions of resource exploitation that are not incompatible with the ideas of relational utility on which the community was founded. However, Petroamazonas does spend a great deal of its time trying to rationalize the assumption that it will “hurt” the forest, arguing that “we won’t damage the environment, and even if we do we’ll clean it up.” This aspect, which fits squarely into a truly “environmentalist” framework in terms of its appeal to global scale, is less comprehensible to older people because of that scaling. However, I do not think this precludes acceptance of the premises upon which the community has allowed access to the oil company to its farmland, because this is predicated on a fundamentally local idea of ownership and resource use. On the other hand, understanding the microcredit speech on its own terms requires an entirely different set of assumptions about economies of scale and the place of both “humans” and “the environment” within the context of an idealized global citizenry. So, while the Petroamazonas project is legible because it is fundamentally still place-based, in order to understand the logic of the microcredit project one must sever all ties to the intrinsic value of “place,” other than, perhaps, the equally-abstract idea of the “rain forest” as the “lungs of the earth,” and so in special need of salvation. Or, as the microcredit NGO puts it: “preservation of one of the world’s most ecologically rich environments, the Rainforest,” which

is “paramount to [the] future stability of the planet, educational teachings and scientific discoveries.”

The distinction between environmental thinking for older versus younger people in Sacha Loma takes concrete form in the notion of “contamination.” Across interviews with Sacha Lomans of all ages, there was a large conceptual distinction that was drawn between urban living and rural living. This distinction took many forms both physical and ideological, and included notions of race, ethnicity, progress, and aspiration (cf. Shenton n.d.). However, along ecological lines one of the starkest distinctions that got drawn was in terms of the intrinsic “cleanliness” of the forest, in relation to the intrinsic “contamination” of the city. This distinction took almost moral overtones for some people: the city’s contamination was a reflection of its degeneracy. In contrast, living in the forest, like Sacha Lomans, in the “pure air” and lack of “contamination” was a morally superior mode of being. This is a theme the microcredit NGO founder explicitly played on in his speech to the community, as quoted above. In fact, this line of reasoning was used by older Sacha Lomans as an explicit justification for the founding of Sacha Loma. As Anselmo put it, describing his life in Puerto Napo as a child both before and after the beginning of rapid modernization:

I lived [in Puerto Napo] with my parents, and then for the first time the vehicles and the machinery came to construct the road. They brought in dump trucks, tractors, heavy machinery. They were opening the road. For us it was something new, something different, and we were very curious to get to know the road crew. Never in my life had I seen such a thing. It was new for many of the indigenous people. They had never seen a car, a vehicle, an automobile driving around. It was something really astonishing for us. We would always go to see how they worked, even though it was dangerous to be next to the machines. They would tell us to watch from afar so that there wouldn’t be an accident. This was during the morning. Then at about noon we would go down to the river in order to swim and bathe. And that was life for us, back then. Swimming and fishing – the older people didn’t even have to teach us. ... But we came [to Sacha Loma] and my parents were thinking that they would make a life here, far away from there. They didn’t want to be in the middle of all that noise, from the cars and the machinery. It

was in order to be where there wasn't any noise from the machines. That's why they ended up here.

What I want to focus on is the contention that environmental degradation is not, in and of itself, what is at issue here. Rather, it is specifically the process of *urbanization*, that is, imposing a city onto a town, which the man thinks of as destructive. That is, his notion of "contamination" does not extend beyond the confines of the (newly built) city, and does not really implicate the forest, at all. Rather, the forest remains here a conceptually distinct refuge: "rural versus urban" is directly analogous to "pure versus contaminated." In this logic the forest stands as an incorruptible edifice, by definition both objectively and perpetually "clean."

While this distinction, and analogy, is present in the community and persists across ages, I would argue that, using environmentalist reasoning, this clear analogy has begun to break down for young people. In its place is a new idea of a rural "environment" that is, just like urbanizing towns, liable to be "damaged" and "degraded." 20 year-old Modesto, a recent graduate of the private NGO boarding school and whose family lived just downriver in Agua Santa, reflects this new sort of logic. In his rhetoric he reflects clearly on the fact that while the forest is "resilient," there are clear limits to this, which must be policed by concerned local citizens. Further, he imposes a clear scientific and temporal logic to his discussion of resilience. Asked about the effects of oil exploration in the region, he said that once the companies come, it will be "the people's job to keep planting trees where they are working and not cut down even more trees." Local forest trees, moreover, are a reason that the forest as a whole is resilient, because "if you plant a tree where there is contamination it will grow, and it will take the contamination inside of it, and it will send it back to the atmosphere, and it will come down as rain, and it will water the tree, and this process will happen over and over, and over time, the forest will get clean again." Key to realizing this obligation, however, is long term, future-oriented thinking and temperance

in exploiting the forest, according to Modesto. He says that when thinking about the forest you have to think “100 years into the future,” and one cannot be greedy: “sure, you should plant crops, but one hectare is enough.” He went on to say that “cutting down virgin forest is like killing me.” In Modesto’s thinking we see a clear marriage of the ideas of both cultural and environmental exceptionalism that defines him as a person “of” the place, but also a clear overlay of a scientific justification for “conservation.”

For a 25 year-old Sirena, the forest, cultural identity, and their degradation/loss are also tightly bound. The reason for cultural and environmental degradation in the region is that people “don’t think about the future.” But, on the other hand, “taking care of nature is important in order to avoid contamination,” and, further, “to rescue nature is to live in a traditional manner.” As to this, she says, “Yes, I used to live in the forest, but even my parents, they aren’t like people used to be, things have been slowly changing around here. People don’t practice their culture any more, they don’t dedicate themselves to it, they just go on leaving it all behind, forgetting. ... what’s lacking is the custom [Spanish: *la práctica*], and it’s not good that it’s being forgotten. It is possible to get it back, but only through *practicing*.” Linked to this idea of traditionalism, though, are ideas about proper forest treatment: “not cutting too much [e.g., trees], not contaminating the rivers – it’s important to take care [of the environment].” This imperative on the part of the local people is a reflection of corporate and state interests in the region: “companies are coming in, and with them comes more contamination. They come to take out the oil, and they say they won’t cut trees, but it’s all a lie. With mines, too, they contaminate. The future is going to be very different – this government is like a crazy person, they want to change everything we have been; they just want to reject the indigenous people.” The environmentalist

turn, then, for young people in the region, hinges on this idea of the potential for “damage” or “contamination” to the forest itself.

As these two young people make clear, though, while environmentalist reasoning has broken down the hard-and-fast distinction between urban/white/contaminated and forest/indigenous/pure, it has *not* also removed the identification that these young people have of the forest as “their” forest. However, because the potential for “contamination” is eternally and everywhere present, rather than seeing “their” forest as an edifice of perpetual refuge these young people rather see themselves as vigilant stewards against the inevitability of degradation because of short-term, utilitarian thinking on the part of landowners, or from the blithely extractive efforts of state-sanctioned companies. In short, they have become environmentalists. In order to do so, however, perhaps the biggest irony I am pointing at here is that for young Sacha Lomans to become true environmentalists they need to extricate themselves, both physically and conceptually, from their forest. Environmentalism virtually requires the understanding of the forest not as a set of relationships but as an *idea*, and an idea that scales globally in terms of its implications for an equally global notion of a collective “humanity.” It also implies, in positing a “fragile” forest, that its “use” is coequal with forest “damage.”

Chapter 7: Reasoning like an Environmentalist

Plant-Animal Interactions as a Proxy for Environmental Reasoning

In the last chapter I identified multiple sources of globally-scaled environmentalist discourse that are operative within Sacha Loma. Coupled with the ongoing physical and political-economic changes involving land, inheritance, and schooling in the community that I outlined in Chapter 4, it should be clear that on a generational scale, the learning environment in which young people in Sacha Loma find themselves has changed radically over the past several decades. In this chapter I ask a crucial question regarding that learning environment, namely: Is there a corollary effect that this learning environment has had on the way local people reason about their forest? This question is crucial because it speaks to the *future* quality of habitual practice of local people vis-à-vis that forest: that is, how is it that people now coming of age in Sacha Loma will interact with their forest differently than their parents and grandparents?

The effects of reasoning on local patterns of land use are not effects that can be measured directly, or at least not yet. This is because the first generation of high school graduates is only now setting up homes in the community and sending their feelers outward toward Tena, Loreto, and Coca for more educational and work opportunities. Older people in the community, the parents of these graduates, are steadfastly holding onto their land while simultaneously assuring both their children and resident anthropologists that they want to break up their farms and bestow them on their progeny. This reticence on their part, though, is understandable in light of the radical changes that the conception of land has undergone since their own parents and grandparents homesteaded the community in the 1960s. The quintessential example of this pattern is Patricio and Valerie, in their 60s and currently the oldest living couple in Sacha Loma. As outlined in Chapter 4 in her feud with her sister Dorotea over her *herencia* on the other side

of the river, Valerie holds on tenaciously to her landholdings. She and Patricio spend as much time as they can *adentro* on their farm because, they say, they prefer it to village life. Patricio, for his part, is frail and almost completely deaf, but goes to the farm and stays there for days even without Valerie, who goes every few days to “check on him” and resupply him with *chicha*. They hold onto this lifestyle is even though Valerie and Patricio have five living sons in the community, four of whom are landless. The fifth and oldest, Anselmo, has purchased his own farm *adentro* and claims that he will bequeath parcels of this land to his own five children (as related in Chapters 4 and 6). This situation had become desperate enough by 2011 that members of Bartolo’s family (another of Patricio and Valerie’s sons who works as a chef in the eco-lodge), told me that they were contemplating a move far upriver to the much more urbanized town of Archidona, just north of Tena, because they thought there was a man there willing to give them a good deal on some land.

It has already been established in Chapters 4 and 5 that there is ongoing, measurable devolution in both forest-related skills, practice, and plant knowledge in Sacha Loma. A key contention of this chapter is that such “devolution” should not be considered in absolute terms, as simply something like a “decrease” from some previously rich understanding of the natural world. Rather, these are ongoing evolutions that are refractive of changes to practice-in-context, and as such entail new kinds of reasoning about how the relationship between people and the environment works. In particular, it is my hypothesis that in important ways the very lack of habitual, relational practice with the forest enables an understanding of that forest on terms concomitant with global environmentalist ideals. Though I know of no way to demonstrate this contention in a direct, cause and effect kind of way, what I can attempt is a rich circumstantial portrait of a community undergoing a complex set of changes that have led to the adoption of

this brand of environmentalism as just one part of their ongoing evolution of understanding the local forest.

In the last chapter I argued that the brand of environmentalism being peddled in Sacha Loma, coming as it does from both governmental and non-governmental sources, has certain particular qualities: it posits that the forest is fragile, that local people are its caretakers, and simultaneously that the natural state of affairs for humans vis-à-vis the forest is one of exploitation. This paradoxical contradiction in turn paints local people as mediators of difficult, even dangerous moral terrain: what to cut, when to cut, what to plant and how much, etc. In this way the “community” has been rebranded as nothing more than the cumulative effects of decisions made by a series of independent actors taking individual moral stances on their preferred mix of either “conservation” or “exploitation.”

There is thus something of a libertarian and entrepreneurial exigency to the model of environmental interaction coming from these outside actors: not to “work,” that is, to make money, is lazy, but to destroy the forest is morally reprehensible. For landowners and aspiring landowners, the question of to what uses the forest should be put quickly becomes tenuous, at best, and impossible, at worst. As I showed in chapter 4, currently the way out of this conundrum for young people is to hedge their ideals: young people want the benefits of having land *and* having a job, of clearing land for crops *and* conserving land for the future. Tourism, as an ideal, fits neatly into people’s aspirations because it plugs a lot of the holes: it is entrepreneurial, agentive, globally scaled, holds the prospect of monetary gain, and, simultaneously, provides an economic rationale for “conservation.”

In this chapter, I directly examine one aspect of environmentalist rationality in Sacha Loma: that is, the degree to which local people perceive the forest as fundamentally “fragile.”

This is key to understanding the overall shift in environmental reasoning ongoing in Sacha Loma. I then go on to examine the aspirational corollaries of this shift, as it relates to environmental reasoning: that is, does reasoning in new ways about the environment refocus the lens, so to speak, on the sorts of people locals think of as important and worthy of emulation? My hypothesis is that new kinds of reasoning about the forest on environmentalist terms does indeed have an effect on the kinds of people young Sacha Lomans want to be, and the kind of work they see as desirable.

In the first part of this chapter I make use of what has been called, in the folk biological literature, a “plant-animal interaction task” (e.g., Atran, et al. 2002; Atran, et al. 1999; Ross 2002a). These sorts of tasks have been successful in differentiating reasoning styles between groups of actors in the same environment. Versions of these tasks have been used more recently in order to elicit differences in reasoning that have been attributed to cultural factors (Medin, et al. 2006a). Ross (Ross 2002a) used the plant-animal interaction task to examine devolutionary effects in folkbiological knowledge among two adult generations of Lacandon Maya in Mexico. The strength of the way I deploy the plant-animal interaction task is that it asks participants directly for their *ad hoc* inferences regarding a set list of local species, and in this way can elicit systematic differences not only in the content and structure of the model of folk biological interactions, but in the epistemological frames that give rise to differences in reasoning patterns.

Methods for the Plant-Animal Interaction Task

Stimuli consisted of ten animals and ten plants. Subjects were asked about each plant-animal interaction in a sequential manner, for a total of 100 questions about potential interactions. Each plant was interrogated for animal interactions in turn. For example, the first plant was “guava,” and each of the ten animals was asked about in sequence (“*abeja negra*,”

“*watusa*,” “*mono araña*,” etc.). For each interaction, a three-part response was elicited. The pairing was presented to the subject (e.g., “*guava* and *watusa*”), and then the interviewer asked whether the animal “affects or doesn’t affect?” (Spanish: *¿afecta o no afecta?*) the plant. If the subject responded “yes,” the subject was then asked to indicate if the animal “helps, hurts, or neither helps nor hurts” (“*ayuda, daña, o ninguno de los dos*”) the plant. The “neither” (*ninguno*) response grew organically out of the refusal of some early subjects to commit to a “helps” or “hurts” distinction. These interactions were ones in which the subject insisted that the animal does in fact “affect” the plant (in the sense that they physically interact with one-another), but that the interaction the animal has on the plant was neither qualitatively positive or negative, but benign. The “neither” distinction was subsequently presented to subjects when they refused to commit to a “helps” or “hurts” distinction. The selection of a “neither” thus represents a strong existential commitment on the subject’s part to the truly benign nature of the interaction of these plant-animal pairings. Finally, for all those interactions for which the subject indicated that there was an interaction, the subject was asked the open-ended question “how does it affect the plant?” (*¿cómo afecta a la planta?*), and the subject’s response was transcribed.

The ten plants and ten animals used as stimuli were chosen as after a series of interviews with Medicio. The initial list of plants came from two sources: a plant walk I conducted with Medicio during which he listed 63 useful plants and their uses, and a plant free listing task conducted with 10 community members (aged 13-55 years, 3 female). This free listing task resulted in 26 further plant names that had not been mentioned by Medicio. In addition, an animal free listing task was conducted with 9 of the 10 same local residents that had performed the plant free listing task. This task resulted in a list of 44 animal names. Medicio was then interviewed a second time, and asked both for each plant if there were any animals that used the

plant, and for each animal which plants it most often used. Medicio was also asked to provide any other names for each of the animal and plant types; in this way each stimulus was given a “main name” (either Kichwa or Spanish) (this was the name deemed “most common” by Medicio), and additionally any “alternate” names by which some people might know the plant or animal (either in Kichwa or Spanish). Generally the “main name” was given in Spanish and the “alternate name” in Kichwa; only a few respondents did not know the “main” Spanish name. All of the elicited “alternate” names for each plant and animal were read for the respondent the first time the stimulus was used; thereafter only the name by which the participant recognized the item was used. This was done in order to mitigate linguistic effects in the task. With this information a ten-by-ten plant-animal matrix was constructed, with an emphasis on plants that had high salience and for which Medicio had indicated multiple animal interactions. This was done because the object of the experiment was to look at the systematicity of plant-animal interaction models that local people held, rather than absolute knowledge thresholds. Included in the list of ten animals were also three that were chosen for hypothetical interest by the researcher: these were “human being” (*ser humano*), chosen to interrogate the model of human influence on the environment, and two stimuli, “jaguar” (*tigre*) and “boa constrictor” (*boa*), which were chosen to interrogate the interaction of charismatic animals which figure prominently in mythical discourse about the forest (see Chapter 2). The same was done for two tree species: one tree species deemed “good for wood” (“cedar” (*cedro*)) was added to examine the perceived effect of humans on extractive species. “*Ceibo*” was added because it is a large tree species where “many animals are said to live,” but has no human use (though some respondents indicated that these tree were sometime cut down by locals). Other than for the stimulus “human being” (see below), the stimuli *tigre*, *boa*, *cedro*, and *ceibo* did not elicit many

positive plant-animal interactions, did not differentiate between groups of interest, and did not lead participants into discourses on the mythical effects of animals. Because the *cedro* is a tree that does not produce an edible fruit, the only interaction it was said to have was with human beings, who cut it down for wood (though this effect was also present for several tree species vis-à-vis humans). Almost all the effects the *tigre* was said to have on plants was simply that they scratched tree trunks with their claws and thereby damaged them, though some said that the *tigre* also climbed into trees to rest. The only mythical interaction elicited was with the *boa*; two participants claimed that the *boa* had the potential to damage a tree it was sitting in because it was said to either “attract” or “produce” “lightning and thunder,” thereby burning the tree during storms. These two participants were young women in their early 20s with young children. Though the interaction between the *boa*, lightning and thunder, and burning trees was not systematically elicited across participants, it is a great example of both the existence of multiple models of environmental causality at work in Sacha Loma. It is also an excellent example of the ability of the plant-animal interaction task to generate novel, *ad hoc* reasoning about environmental causality. It is probably not the case that anyone “learns” the propositional fact that *boas* have the tendency to start forest fires. Rather, the relationship of “power” between the *boa* and lightning/thunder is extrapolated in an inductive manner, leading these young women to conclude that this relationship must cause damage to local plants.

As with the formal results presented in Chapter 5, age 30 was used as a cutoff to differentiate those residents who had come of age in different learning environments. The analysis was conducted twice, once only with adults ≥ 20 years old, and once with younger participants included, so that differences in the adult model could be differentiated from acquisition effects. In each analysis an inter-informant agreement matrix was calculated by

counting the proportion of response-type matches between each pair of informants (e.g., “helps-helps,” “hurts-hurts,” “neither-neither,” or “does not affect-does not affect”). This inter-informant agreement matrix then served as the input for a CCM and analysis of residual agreement.

Results: CCM and Residual Analysis for Participants ≥ 20 years old

The analysis included 12 participants between the ages of 12 and 29 years (mean 23.7 \pm 3.1 years, referred to hereafter as “younger adults”) and 17 participants between the ages of 30 and 64 years (mean 42.6 \pm 9.7 years, referred to hereafter as “older adults”). The analysis indicated a good fit for the CCM (1st eigenvalue 19.95, 2nd eigenvalue 1.23, ratio 1st/2nd eigenvalue 16.26, variance explained by the first factor 68.8%, all first factor scores high and positive ($\geq .61$)). There was no effect of gender of participant on his/her first factor score ($t(27)=1.65$, $p>.05$); therefore participants of both genders were collapsed across groups, and only effects of “age” are considered below. The strong overall agreement demonstrated in the CCM justifies the use of residual analysis. Residual analysis indicated that both groups possess a submodel of plant-animal interaction reasoning that is not captured by the consensual model (respondents 20-29 years $t(22)=3.00$, $p=.007$; respondents ≥ 30 years $t(32)=2.21$, $p=.03$). Comparison of means revealed that the submodel for respondents from both groups is based on greater within-group agreement than between-group agreement (respondents 20-29 years .012 within vs. -0.006 between; respondents ≥ 30 years 0.0048 within vs. -0.007 between). The pattern shows that above and beyond the consensual model, members of both age groups agree more with their age counterparts than they do with others.

Results: CCM and Residual Analysis for All Participants, ≥ 12 years old

The analysis included 31 participants between the ages of 12 and 29 years (mean 18.9 \pm 4.6 years, referred to hereafter as “all younger people”), and 17 participants between the ages of 30 and 64 years (mean 42.6 \pm 9.7 years, referred to as above as “older adults”). The analysis indicated a good fit for the CCM (1st eigenvalue 31.34, 2nd eigenvalue 3.41, ratio 1st/2nd eigenvalue 9.20, variance explained by the first factor 65.3%, all first factor scores high and positive ($\geq .62$)). There was no effect of gender of participant on his/her first factor score ($t(46)=1.07$, $p>.05$); therefore participants of both genders were collapsed across groups, and only effects of “age” are considered below. The strong overall agreement demonstrated in the CCM justifies the use of residual analysis. Residual analysis indicated that both groups possess a submodel of plant-animal interaction reasoning that is not captured by the consensual model (all younger people $t(60)=3.91$, $p<.000$); older adults $t(32)=8.34$, $p<.000$). Comparison of means revealed that the submodel for respondents from both groups is based on greater within-group agreement than between-group agreement (all younger people .014 within vs. -.021 between; older adults .036 within vs. -.021 between). The pattern shows that above and beyond the consensual model, members of both age groups agree more with their age counterparts than they do with others.

The Model Content: What is the difference in Causal Environmental Reasoning between Age Groups?

Taken together, the two analyses presented above suggest that within a highly shared model of environmental interactional reasoning, younger adults show systematic differences in reasoning about certain kinds of plants and animals than their older counterparts. In addition, all younger people, considered together, also show systematic differences in causal environmental

reasoning patterns than those people age 30 and over. A look at the model content reflects this pattern of difference-within-similarity. Specifically, the difference between the two groups of adults on the one hand appears to be a nascent version of a more extreme reasoning style that can be seen in the all younger people versus older adults analysis. These differences between age groups speak to gradual changes in the epistemological models for environmental reasoning operative among different age groups in Sacha Loma.

In order to test differences in reasoning between groups, I first calculated the response rate for each group of interest (e.g., “older adults,” “younger adults,” and “all younger people”) for each response type (e.g., “helps,” “hurts,” “neither helps nor hurts,” or “does not affect”) on each of the 100 plant-animal pairings. This resulted in 12 matrices, 1 for each response type by age group. Across all participants, the majority of responses were taken up by the “does not affect” response (68.9% of older adults and 71% of all younger people responses). A similar lack of difference was observed for the small proportion of “helps” responses in each group (3.5% of older adults and 3.6% of all younger people responses). Larger differences, however, were detected between groups in both the “neither helps nor hurts” and “hurts” responses.

The strong cross-group consensus was not simply driven by the large proportion of “does not affect” responses across the two groups. In order to ensure this, the proportion of respondents making each type of “positive” response (that is, claiming some sort of plant-animal interaction, e.g., either “helps,” “hurts,” or “neither”) for each of the plant-animal pairings was compared by age group (e.g., all younger people vs. older adults) using Pearson correlations. All of these correlations were high, positive, and significant (for “helps” $r=.69$, $t(98)=9.47$, $p<.000$; for “hurts” $r=.89$, $t(98)=19.24$, $p<.000$; for “neither helps nor hurts” $r=.58$, $t(98)=7.06$, $p<.000$), suggesting that the high consensus was not simply driven by the random overlap in the large

proportion of “does not affect” responses between groups, but rather by the similarity in the distribution of all four response types across age groups.

Using the response rate for each response type (e.g., “helps,” “hurts,” “neither helps nor hurts,” or “does not affect”) for each of the 100 plant-animal interactions, I then calculated difference score matrices for each of the plant-animal pairings for each response type, and for each age group comparison of interest (e.g., “older adults”–“younger adults” and “older adults”–“All Younger People”). This resulted in a matrix of inter-age group difference scores for each of the four response types, for a total of eight matrices. Recall that the question posed in the task was targeted on the effect that the animal has on a given plant. With these difference score matrices, then, each of the animals in the task could be interrogated individually for the types of plant interactions each age group concluded it had. To do so, each of the animals that showed large difference scores across several plant interactions was tested using a single-sample t-test in which the null hypothesis was 0 (e.g., the hypothetical value of the difference score if there were no difference in reasoning across groups). Of course, this method is not aimed at eliciting a nuanced ecological model of specific plant-animal interactions (for example if participants know that a certain animal helps some plants, hurts others, and affects but neither hurts nor helps others). For this to have been the object of the task it would have been necessary to have a much more exhaustive list of plants and animals, and a much larger set of participants, in order to detect differences in reasoning about individual plant-animal interactions. The analysis employed here is certainly a somewhat blunter instrument than this, in that it collapses across plant items and looks at general reasoning patterns as a function of each animal. However, in this task the object was to use relatively high salience stimulus items as a proxy for the larger

ecological model of causation. This was not meant to elicit an ecological model *per se*, but rather to interrogate reasoning *style*, across groups.

The results of the model content analysis are shown in Table 1. This table displays the model content that corresponds to both the CCM only for adults ≥ 20 years old (“analysis #1”), and that which corresponds to the CCM for all participants (“analysis #2”). For each age group, the table displays all of the animals for which that group responded using a given response type significantly more often. The list of animals is further broken down for each age group as a function of response type.

**Analysis #1
Younger
Adults (20-
29 years)**

Hurts	does not affect	neither helps nor hurts
toucan **	black bee **	
	spider monkey **	
	paca ***	
	agouti ***	

**Older
Adults (≥30
years)**

Hurts	does not affect	neither helps nor hurts
black bee **		paca ****
spider monkey *		agouti ***

Analysis #2

**All Younger
People (<30 years)**

Hurts	does not affect	neither helps nor hurts
human being ***	paca ***	
toucan ***	agouti ***	

**Older
Adults
(≥30 years)**

Hurts	does not affect	neither helps nor hurts
	human being ***	human being ***
		paca ****
		agouti ****

*, p<.1

** , p<.05

***, p<.01

****, p<.001

Table 1: Plant-Animal Interaction Model Content

Results: Younger Adults versus Older Adults

The first thing that is clear in the table corresponding to the adults-only analysis (“analysis #1”) is that the interactional model, while showing differences between age groups, is not a simple matter of younger adults jettisoning one stark model for another (an extreme example would be one in which older adults understand all animals to help all plants, while younger adults understand all animals to hurt all plants). Rather, the elicited model is somewhat

more subtle than this. However, the model elicited for adults over the age of 30 is more nuanced than that for their younger counterparts. Younger adults, for example, are much more likely to think that a given animal does not affect a given plant than older adults. Though the proportions of “does not affect” responses are high overall (for black bee, 66.1% younger adults vs. 51.5% older adults; for spider monkey, 81.7% younger adults vs. 70.6% older adults; for paca, 57.2% younger adults vs. 38.6% older adults; for agouti, 59.7% younger adults vs. 36.8% older adults), this still speaks to the fact that older adults are more likely to infer a positive interaction between animals and plants than younger adults. Further evidence for this fact is that the paca and the agouti, while falling into the “does not affect” category significantly more for younger adults, falls into the “neither helps nor hurts” category for older adults. That is, for the same two animals, where younger adults tend to infer a lack of interaction between the animal and the stimulus plants, older adults infer a positive but benign interaction between them. This finding is especially stark in light of the fact that the paca and the agouti are still widely hunted in Sacha Loma (see Chapter 1). Thus, this result may speak more to reasoning style (that is, younger adults seeing animals generally as having little effect on plants) than it does have anything to do with direct knowledge of pacas and agoutis. The evidence for this contention is indirect: across all participants, every single interaction that the paca and agouti were said to have with plants were with the fallen fruit of the plant, that is, that the paca and agouti come across the fallen fruit in the forest and consume the fruit, seeds, or roots of the plant. Though it is impossible to know if those who responded that the paca and agouti “does not affect” a plant were thinking of it consuming the fallen fruit, it is likely, given the overwhelming consensus of the kind of interaction that the paca and agouti do have with plants, that this is the case for many of those “does not affect” responses. Though speculative, if this is the case then it speaks to a more

nuanced, relational model of forest species interaction for older adults: while younger adults think of the fallen fruit as independent of the parent plant, older adults tend to think of the fallen fruit of the plant as intrinsically related to it. That is, by affecting the process of the plant's reproduction, the animal is affecting the plant itself.

Second, the category "hurts" also differentiates the two adult age groups. Specifically, older adults certainly do see certain animals as capable of having a negative effect on forest plants. The proxies for this in the task are the black bee and spider monkey. Across all participants, there was high consensus that the black bee damages plants (91.1% of all positive interactions of the black bee with plants fell into the category "hurt"). The descriptions of these interactions came in various forms, across age groups: that the bee eats the plant's fruit, makes holes in the fruit and causes the fruit to rot, damages a plant's flowers, and that it makes holes in the plant itself. While this knowledge is distributed among younger adults to some extent, younger adults are less likely, overall, to know about the habits of the black bee (because younger adults are significantly more likely to say that the black bee "does not affect" plants). Similarly, the spider monkey tends to be perceived by older adults as generally damaging to forest plant species. For almost all (95.8%) of the positive interactions reported, participants said that the spider monkey interacts with a given plant by consuming it in some way. However, some older adults gave more nuanced responses for the "damaging" effect of the spider monkey on forest plants: for example, several people said that the monkey does not eat the entire fruit but leaves part of it on the tree, causing it to rot. Others said that the monkey has a propensity to pick unripe fruits and throw them to the ground, keeping the tree from reproducing. Still others said the monkey damages the flowers of the plant while occupying it, or that it breaks the plant's branches, thereby damaging it. This kind of nuanced justification is almost completely absent

from the interactions reported from younger people. Instead, a few younger people gave a much more “ecological” justification for the fact that they thought the spider monkey “helped” plants, that is, by consuming seeds and spreading them. Though only younger people presented this justification and it was only present in 3.3% of total responses, this is circumstantial evidence that younger people hold a more abstract, “ecological” model of forest interactions based on fungible knowledge about the capacities of animals such as monkeys in general, rather than applying direct interactional inferences regarding a particular plant-animal pair.

On the other hand, younger adults are more likely, in the case of the toucan, to see its effects on plants as “hurting” the plant in some way. While it is tempting to interpret this as evidence, as with the spider monkey and black bee for older adults, that young people have selective knowledge about the habits of toucans, a look at the model content belies this. 92.5% of the reported interactions for all younger people are in the form of the toucan consuming the fruit of a given plant. For all younger people, the negative effects of fruit consumption on the part of the toucan is spread widely across all of the stimuli, in an almost undifferentiated way. Older adults, on the other hand, report toucan-plant interactions in a very targeted manner: 91.7% of the positive interactions that older adults reported were for a single plant, *unkurawa*. Further, all of these interactions indicate that the toucan eats the fruit and seeds of the *unkurawa* while sitting in the tree. This pattern suggests that older adults have very specific, targeted knowledge of where toucans might be found and what they eat, while younger people are employing generalized, *ad hoc* reasoning on the basis of a model akin to “birds eat fruit.”

Results: All Younger People vs. Older Adults: The Role of Humans in Nature

In the section above I argued that the basis for the nuanced differences in the models elicited for older and younger adults shook out along the lines of a trajectory of decreasing

specificity on the part of younger adults in relation to their older counterparts. Younger adults, it seems, are less likely to infer interactions between plants and animals, and are also susceptible to over-generalization due to a lack of specific knowledge. While Table 1 differentiates the differences in environmental reasoning detected in each of the two CCM analyses, however, I reported justifications from all participants, including those under the age of 20, in the previous section. I did so for two reasons. The first is that at this level of detail about particular plant-animal interactions, and because the relative number of reported “positive” interactions was small, I needed to include all of the data in order to report inter-group patterns. Second, from analysis #1 to analysis #2, the models do not change drastically; in fact the only real difference between them is that the effects seen in the adults-only model for the black bee and spider monkey go away in analysis #2 (though a look at the difference scores shows that these effects still go in the same direction overall).

The one big difference between analysis #1 and #2, however, is the inclusion of the stimulus item “human being” into the mix as differentiating the two groups. Breaking the analyses up between adults-only and all participants then, gives an idea of both the stable adult model of environmental reasoning in Sacha Loma, as well as ongoing evolution to the model. The large change in the model detected in analysis #2 is that while older adults are more likely to see humans as having either no effect (e.g., “does not affect”) or a benign effect (e.g., “neither helps nor hurts”) on local forest plants, all younger participants, considered together, are more likely to see human beings as having a damaging effect on forest plant species (e.g., “hurts”). I should emphasize, however, that the differences we are talking about here are changes around the margin, and correspond to the symmetrical age-based submodels that exist above and beyond the strong cross-group consensual model. Thus, the overall proportions of

each response type for the stimulus “human being,” by age group, mirror each other to some degree (for “does not affect” 25.2% older adults vs. 15.9% all younger people; for “neither helps nor hurts” 16.5% older adults vs. 6.1% all younger people; and for “hurts” 47.1% older adults vs. 66.6% all younger people). Still, within this generally shared inferential model of plant-animal interactions, people age 30 and over tend to see human beings as having little effect on the plants around them, while people under the age of 30 tend to reason in accordance with a model in which human beings are fundamentally detrimental to their local environment. It should be further noted, however, that humans are seen as affecting the forest, either positively, negatively, or benignly, to a much higher degree than other animals: the proportion of “does not affect” responses for older adults for human being is only 25.2% (vs. 69.9% across all animal stimuli, including humans), and for all younger participants is 15.9% (vs. 72.8% across all animal stimuli, including humans). The model for human interactions with the environment is thus much more robust than for other animals, across all participants. It also indicates that to claim that human beings “do not affect” a plant represents more of an existential commitment to this answer, rather than it acting as a default answer due to lack of knowledge. The fact that older adults are significantly more likely to claim this response type thus puts them strongly in line with a model of environmental reasoning that sees humans as a benign influence on the local forest.

There are two more pieces of evidence that speak to the environmental reasoning differences between older adults and other participants. Across all responses, participants in the older adult group were significantly more likely to respond “neither helps nor hurts” than the all younger participants group (10% older adults vs. 2.4% all younger participants; $t(46)=3.12$, $p=.003$). Likewise, those in the all younger participants group showed a trend to be more likely

to respond “hurts” than the older adults group (17.6% older adults vs. 23% all younger participants; $t(46)=1.67$, $p=0.1$). Secondly, looking at the responses to the question “how does the animal affect the plant?”, the overwhelming majority of the answers concerned the animal consuming part of the plant in some way, either by eating its fruit, flowers, bark, roots, seeds, leaves, or nectar. To examine the distribution of these “consuming part of the plant” answers as a function of response type (e.g., “helps,” “hurts,” “neither helps nor hurts”) and age group, each participant’s “consuming” answers were coded according to response type. Because so few responses fell into the “helps” category overall, the responses “helps” and “neither helps nor hurts” were grouped together as one response type, while “hurts” served as the other response type. The analysis thus tested whether the participants of different ages felt that an animal consuming a plant was either “negative” or “not negative.” The analysis showed that while both groups perceived a large fraction of “consuming” effects as hurtful to the plant (50.3% older adults vs. 78% all younger participants), respondents in the older adults group were significantly more likely to think of consumptive interactions as “not negative,” while all younger participants were more likely to see such interactions as “negative” ($t(46)=2.99$, $p=.004$).

Some Concluding Thoughts about Models and Interactions

Within a highly shared model of forest interactions, the trajectory of change in Sacha Loma seems to be away from a frame in which rich experiential knowledge of plants and animals is brought to bear to reason about particular plant-animal pairings, and toward a frame that is less robust in terms of specific plant-animal knowledge, less differentiated in terms of specific interactions, and perhaps to some degree based on generalized, species independent rules (e.g., “birds eat fruit”). Overall, there is a general trend away from thinking about the effect that animals have on the forest as benign, or even positive, and a trend toward a reasoning pattern in

which animals are seen as negatively affecting the plant species they interact with. My hypothesis is that these two patterns, of lessening robustness of specific knowledge on the one hand, and the trend toward thinking of the effect of animals on the environment as damaging, are linked to one another and create the conditions for thinking about human beings in a way that ties them less intimately to the local forest. As I claimed in Chapter 6, abstract, fungible notions regarding the environment as a conceptual entity, propounded through formal schooling, are linked to notions of environmental “fragility” because they posit a “human being,” removed from nature, who acts *onto* this “environment.” This is in contradistinction to a rather more highly contextual notion of *place*, within which humans act *relationally within their context*. This conceptual movement can be seen dramatically regarding the effects that humans are perceived to have on the forest in analysis #2. While older adults acknowledge that humans use all of the plants in the task to a large degree, they seem to dismiss the contention, overall, that humans are capable of hurting forest plant species through such use. This effect holds even when the option for “hurting” forest species is explicitly presented to them in the plant-animal interaction task. Younger residents, on the other hand, tend to interpret all manner of human plant use – cutting, picking, harvesting, breaking branches – as harmful to the plant.

My contention here is that in the above analysis we can see the cumulative effects of a changing learning environment on causal environmental reasoning over generational time. Older adults, as I’ve claimed, came of age in a context in which relational experience with the local forest was taken for granted, and had even been specifically sought by their homesteading parents. Their understanding of plant-animal interactions, consequently, is based on inferences made from such relational experience with the local forest. Though the resultant pattern of elicited plant-animal interactions for older adults is not necessarily the result of direct empirical

experience with the plant-animal pair, it is certainly targeted based on concrete knowledge of the proclivities and physiology of each species in question. Further, in a general way this model of species interactions is less focused on the notion of the “impact” of such use, and these older people are much more likely to say that plant-animal interactions “just happen,” without much concern for longer-term, or larger-scale, consequences. This is not to say, however, that older adults cannot conceive of animals hurting a plant, as with the paca and agouti above. However, this model of damage is based on targeted inferences and is not generalized across stimuli.

Slightly younger adults, some of whom are the children of these older adults, however, came of age in a village context in which the imperative to habitually engage with the forest began to be replaced with more cosmopolitan ideals. The knowledge from relational experience with the forest these people use to infer plant-animal interactions lacks some of the specificity of their older counterparts. In turn, even younger residents of Sacha Loma, those now in grade school and high school, are living out the conceptual, ideological, and practice-based consequences of this contextual shift. For these youngest residents, my contention is that the logical consequence of this shift in habitual practice, as well as the knowledge base for environmental reasoning, has opened up the conceptual space for young people to think of themselves as separate from their forest, even while they are simultaneously “of” the place in a familial or ethnic sense. This line of thinking, in turn, is in concert with the “environmentalist” reasoning framework outlined in Chapter 6. This is because this brand of environmentalism posits a generalized framework of paternalism on behalf of a preexisting “environment,” and is thus not dependent on intimate, relational knowledge. The lessening knowledge base used to reason about environmental interactions is not a direct cause of the environmentalist epistemological frame, but it is consistent with its tenets in the sense that it accepts as normative

a lack of relational environmental engagement. My contention is that fifteen years of formal schooling in the village context literally created the conceptual conditions that rendered this environmentalist frame legible to local residents of Sacha Loma. When only adults 20 years and older are considered in the plant-animal interaction analysis, the only effects that are detectable are in relation to the relative robustness and specificity of the model of interactions. However, the fact that human beings are implicated in the conceptual shift when the youngest Sacha Lomans are included in the analysis is evidence that not only is the model of plant-animal interactions itself fraying around the edges over generational time, but the epistemological framework itself, that is, the very basis upon which young people form their inferences about the natural world, has begun to change as well. This new frame includes reasoning about human beings not in terms of engagement, but in terms of their “impact.”

Biological Information Sources: Where do Sacha Lomans Think they should Learn about the Forest?

We have established ethnographically that patterns of forest practice in Sacha Loma have shifted dramatically over the past several decades. Moreover, we have established that there is a corollary pattern of forest knowledge and forest-based skill devolution ongoing in the community, and in the previous section of this chapter I claimed that inferential reasoning about forest species has also undergone a shift in which it is less robust, less experiential, and more reliant upon fungible, rule-driven reasoning. A basic justification for making such a big deal out of people’s “frameworks” for environmental reasoning, as I’ve said, is that such reasoning does not happen in a vacuum, but rather has implications for future patterns of inference and habitual practice, that is, for motivated reasoning. The reason to look at how people think about their forest, then, is that it should have implications for the future of the forest: how it is thought about

by a new generation affects how it will be put to changing use over generational time. A key mediating factor, when we are looking at how environmental knowledge and reasoning are put to use, is to understand how that knowledge and reasoning intersect with *valuation*, that is, the *should* quality of environmental reasoning. As I argued earlier, forest knowledge devolution itself is, if not a prerequisite for, then at least consistent with and supportive of a particularly “environmentalist” reasoning frame. These, in turn, are linked back to and underpin changes to habitual forest practice. Changes in knowledge and reasoning about the forest are both the consequence, and a cause, of changing forest practice.

There is a rich extant literature on the factors leading to pro-environmental values in the developed world (for a review cf. Dietz, et al. 2005; Henry and Dietz 2012), and such valuation is thought to support both patterns of political belief and action, as well as pro-environmental action. However, this literature tends to focus on purported links between environmental values and their correlation with pro-environmental belief and action, rather than on the process of constructing the frame within which people “value” the environment in the first place. As we have seen for Sacha Loma, habitual practice, forest knowledge, and skills play an important role in this process. I wanted to explore the question of environmental knowledge valuation distributionally in Sacha Loma, to see how community-wide patterns of environmental valuation might be evolving. In order to do so I took an indirect approach. Because of my contention that frames for environmental reasoning lie at the intersection of knowledge and practice, I did not ask Sacha Lomans about their valuation of the environment in the abstract, or about their attitudes toward particular kinds of forest practice. In this task I was more interested in exploring changes in environmental valuation as a function of the relationship that such valuation has to the changes in knowledge and reasoning that I have outlined above and in

previous chapters. These shifts have so far been relatively minor in Sacha Loma, and are certainly not as politicized as they might be in places like the United States, in which one's environmental values and purchasing habits carry a strong indexicality to one's political and religious beliefs. Rather, in Sacha Loma the relevant question regarding environmental valuation is not affiliation with one particular "camp" of believers or another, but rather as to changing valences in where one learns about, or should learn about, the forest. In Sacha Loma, as I've described, changes in pragmatic motivation are the result of changes to local opportunities for the advancement of family through work and education; therefore the kinds of work that is desirable, and the kinds of people and things that represent that work, lie at the intersection of knowledge, practice, and valuation. Essentially, then, I sought here to ask Sacha Lomans about the kind of learning environment they thought of as most *desirable*. My hypothesis is that in Sacha Loma this kind of knowledge desirability would function as a proxy for subtle changes in forest valuation. This differs from asking directly about environmental valuation or one's propensity toward pro-environmental behavior in that it assumes, consistent with the ethnographic findings in this study, that certain kinds of people or media are the carriers of these messages. In this way I sought to create a task that elicited forest values that was relevant to community members, and gestured at this relationship between knowledge, desirability, and practice in the construction of frames for environmental reasoning.

This is certainly a messy proposition, and one that fudges the line between actual practice (e.g., "what kinds of things do you *actually* do?") and idealized practice (e.g., "what kinds of things are good to do?," or "what kinds of things do you *wish* you could do?"). However, it is also true that in terms of valuation, actual practice and desired practice might be equally valid, in that they are proxies for factors related to *motivation*, and thus indirectly to action. For the

purposes of this task then, I am not interested in evaluating the difference between practice and ideals, though I am fully aware that both are at work there. In fact, in a place like Sacha Loma, in which the promise of formal schooling for integrating oneself into the post-industrial service economy is deeply at odds with the relative lack of such work opportunities, I would expect nothing less. The important thing in this task is that we get a measure of *desirability* in relation to forest practice, as a reflection of the changing frame for reasoning about the forest.

That researchers should treat the overreporting of actual practice as signal and not noise is a topic that has recently been explored in the sociology of religion. Brenner (2011a; 2011b; 2012a; 2012b; 2014), for example, has quantified the overreporting of both church attendance among North American Christians and of prayer frequency among Muslims in three countries that lie along a continuum of conservative religiosity (Pakistan, Palestine, and Turkey). This research finds consistently that while demographic factors are not associated with the overreporting of religious behavior, the subjective importance of religious identity is strongly associated with such overreporting. As Brenner puts it, the tendency to overreport “is strongly associated with the individual’s sense of what is central to his or her self-concept” (2014:1032). This observation implies that whether people truly engage in a given activity or not, the *aspiration* to engage in a particular activity, or with a particular kind of person, is closely related who people think they are, and the kinds of things they want to do. I am interested in capturing something analogous in the task I report below: namely how central the importance of certain types of people and things, which have differing valences with regard to the work they do, is to Sacha Lomans. As I’ve related elsewhere, the types of people Sacha Lomans have access to function as proxies for different kinds of practice which implicate the forest, and local ideas about modernity, to greater or lesser degrees. Brenner’s idea that “self-concept” is captured in

self-reports about the *desirability* of certain types of practice, when applied to the idea of environmental valuation through work, shows us that notions of desirability are where the rubber meets the road in terms of shifting patterns of forest knowledge, skills, and practice.

Methods: Potential Biological Information Sources

To attempt to understand the local distribution of ideas at the intersection of environmental valuation, motivated reasoning, and aspirational practice, I presented 44 residents of Sacha Loma with 21 notecards, on which were written the names of potential sources of biological knowledge. These included family members, people in various positions of local authority, and various media sources. The specific items were chosen so as to reflect the structural realities that Sacha Lomans have faced over the decades since the community's founding. These fell into three broad categories: "personal contacts" (father, mother, grandfather, grandmother, brother/sister, other family member, friend), "structural realities before 1992" (petroleum company representative, shaman, curandero (e.g., traditional healer), television, the Bible, government representative, Catholic priest), and "structural realities after 1992" (tourist guide, plant/animal guidebook, website/internet, grammar/high school teacher, school textbook, movies). The stimulus "going into the forest alone" was also used, but did not elicit any systematic results and was not included in a large proportion of participants' lists. Of course the three "categories" of biological knowledge listed above are not hard-and-fast; as should be clear, all of these items represent sources of knowledge that are currently exploitable for local people, and the aspirational valences for all of these items are still being negotiated by members of the community of all ages. It was exactly the aim of the task to attempt to interrogate the relative valuation of these kinds of items across participants. The question used to prompt participants to rank the items was: "What, or who, do you consult when you want to

know something about the forest that you don't know?" The question was left intentionally open to participant interpretation so as to capture as many responses as possible, including responses related to aspirational practice. For many participants, their responses were overtly ideological. For example, one person flatly refused to acknowledge that one could learn anything about the forest from any source except the Bible. For other participants this was less stark, and they would complete the task by saying, "well, you *could* use an X" to learn about the forest, thereby acknowledging that they valued information sources to which they did not have consistent access. The subject was allowed to choose all of the 21 items that he or she thought relevant to their learning forest knowledge, and to eliminate the other items. Originally, the task had been conceived as a ranking task in which the subject rated the importance of the items relative to each other; however, in some early interviews some participants were unwilling to rank all of the items. Therefore the task was reconceived solely on the basis of item inclusion or exclusion, that is, whether the participant was willing to include the item as relevant to forest knowledge, at all. While construing the task this way precludes the possibility of analyzing the *relative* importance of items to each participant, it accomplished the main task of interrogating possible differences between generations in the construction of value-laden and motivated understandings of the local forest, while remaining amenable to local residents.

Results for All Group Comparisons

28 residents of Sacha Loma between the ages of 12 and 29 years (mean 18.9 \pm 4.9 years) and 16 participants between the ages of 30 and 64 years (mean 42.9 \pm 9.8 years) participated in the task. As in the other formal tasks the first step was to perform a CCM paired with analysis of residual agreement, to understand both whether an overall model of valid biological information sources existed, and then to look for systematic differences by age group. Also as in the other

tasks there were two significant age cutoffs, 20 years and 29 years, in order to interrogate potential differences between “stable” adult models and evolving child models. The input for each of the two CCM analyses was an agreement matrix that counted both mutual item inclusion (e.g., “yes-yes” responses) and item exclusion (e.g., “no-no” responses) as agreement. This was done in order to generate an overall portrait of item relevance for participants. Both the CCM including only participants ≥ 20 years old and the CCM including all participants indicated a good fit for the consensus model (for the ≥ 20 years CCM: 1st eigenvalue 16.31, 2nd eigenvalue 2.15, ratio 1st/2nd eigenvalue 7.59, variance explained by the first factor 60.4%, all first factor scores high and positive ($\geq .55$); for the CCM including all participants: 1st eigenvalue 27.19, 2nd eigenvalue 3.05, ratio 1st/2nd eigenvalue 8.93, variance explained by the first factor 61.8%, all first factor scores high and positive ($\geq .58$)). For the ≥ 20 years CCM no submodels were detected in either the 20-29 years age group or the ≥ 30 years age group. For the CCM including all participants there was a trend for significant symmetrical submodels (for participants 12-29 years $t(54)=1.72$, $p=.09$; for participants ≥ 30 years $t(30)=1.748$, $p=.09$). Average residual agreement also indicated that these submodels were driven by more within-group agreement than between-group agreement (for participants 12-29 years .005 within vs. -.006 between; for participants ≥ 30 years .009 within vs. -.006 between). Though not significant, the average residual agreement for the CCM including adults ≥ 20 years was also higher within-group than between-groups, and was of similar magnitude to the residual agreement with all participants included (for participants 20-29 years .015 within vs. -.006 between; for participants ≥ 30 years .003 within vs. -.006 between).

This pattern of results indicates that there may be an evolving model of forest knowledge valuation in Sacha Loma, wherein within a strong consensus there is a subset of items that differentiates generational groups. The reason there may be more variability, and thus smaller

effect sizes, in this task relative to others is that what is measured here is not either knowledge *per se* (as in the plant familiarity task) or systematic logical inference (as in the plant-animal interaction task). Instead, what is being measured is a more abstract valuation of this reasoning baseline, and it is thus difficult to know which items would capture this valuation for which people (that is, which item is the most “representative” of a valuation for any given participant; in this way one person’s embodiment of “progressiveness” might be “high school teacher,” while another person, of an equivalent age, might list “website” instead). For this reason the list of possible items had to be as exhaustive as possible, which while having the effect of capturing more responses, also waters down the overall agreement. It is also possible that there was some difference in task interpretation across participants, wherein only some participants reported potential or desired practice. Finally, it is also true that there was quite a bit of overlap in responses across age groups, as can be seen by the large standard deviations in ages of participants who included a given item (see Table 2). This suggests that the local model of forest knowledge valuation is more variable than the model of local forest knowledge, and certainly not bound to knowledge or skills in a 1-to-1 manner. However, the fact that there is strong consensus and a suggestion of age-based submodels indicates that the task did capture the desired effect.

Model Content for All Participants

Because participant age is the variable of interest, the first order of business is to look at a list of the items sorted by average age of item inclusion. These results are presented below in Table 2.

Item	Mean Age (Years)	Standard Deviation (Years)	Proportion of Participants Include
movies	19.4	5.46	0.11
going to the forest alone	22.58	7.57	0.27
website/internet	23.47	9.32	0.43
television	24	7.95	0.14
brother/sister	24.22	14.03	0.2
tourist guide	24.35	11.38	0.59
grandmother	24.59	11.83	0.61
plant/animal guidebook	25	12.29	0.57
grandfather	25.52	11.89	0.61
grammar/high school teacher	25.67	13.46	0.41
mother	26.92	15.01	0.55
Father	27.36	14.36	0.64
textbook	27.54	9.91	0.3
petroleum company rep	28.13	15.57	0.36
other family member	28.94	16.38	0.39
shaman	29.93	17.38	0.32
Bible	31.2	17.82	0.11
government rep	32	14.78	0.11
traditional healer	32.63	16.64	0.18
friend	33.83	18.95	0.14
priest	35.4	14.1	0.11

Table 2: Biological Knowledge Information Sources, Sorted By Age of Participant Inclusion

What is clear from Table 2 is that despite the large amount of response overlap between age groups, biological information sources of more recent introduction are included more often in younger participants' lists than older participants' lists; thus the average age for these information sources skews younger (toward the top of the table, in the lightest shade of gray).

Conversely, sources that have been present for generations in the region skew substantially older

(toward the bottom of the table, in the darkest shade of gray). These sources, though all were included in at least some participants' lists, do not make up a substantial proportion of total responses. In the middle, however, the "personal contacts" sources have both high inclusion rates and average ages that are very close to the mean age of all participants (27.6 ± 13.6 years). This indicates that these items make up a large proportion of the overall consensus. This pattern is consistent with an intergenerational pattern in which older people tend to value largely insular sources of biological knowledge, such as family members and close acquaintances, while eschewing "external" sources of information that they may have access to. However, younger participants seem to have tacked on a model of forest knowledge valuation that sees recently-imported sources of knowledge as valuable, *above and beyond* the influence of family members and close personal contacts. The fact that younger people add these sources to an existing model of forest knowledge valuation may account for the (weak) submodels detected in the CCM above; younger participants agree on valuing some recently-introduced knowledge sources such as "website/internet," "tourist guide," and "plant/animal guidebook," which have younger mean ages and relatively high inclusion rates, while older participants agree on *not* valuing them.

Second, because of the potential problem, mentioned above, that the individual value-laden valences of some items may be different for members of the same age group, it might be productive to collapse across items by their "type," that is: 1. Family and close personal contacts, 2. Information sources available for several generations, and 3. Recently-introduced information sources. Here again a pattern emerges that is similar to that in Table 2. Specifically, only differences in inclusion rates for "recently-introduced information sources" significantly differentiate older and younger participants. Interestingly, this is true when only adults between the ages of 20 and 29 are included in the analysis, as well as when all participants are included

(for the “adults only” analysis, $t(25)=2.62$, $p=.02$, younger adults 50.7% item inclusion vs. older adults 24.1% item inclusion; for the “all participants” analysis, $t(42)=2.46$, $p=.02$, all younger participants 43.4% item inclusion vs. older adults 24.1% item inclusion). The “family and close personal contacts” and “information sources available for several generations” grouping failed to differentiate across age groups. This is further evidence that these two item types make up the bulk of the consensual model, while the differences in inclusion rates for the “recently-introduced information sources” items constitute the weak age-based submodels.

Third, if we look individually at items with high inclusion rates, it is clear that a few items differentiate the two age groups. Specifically, the items “website” (45% inclusion rate) and “tourist guide” (61% inclusion rate) differentiate between age groups when participant age is used as a dependent variable and item “inclusion” (yes/no) is used as an independent variable (for tourist guide the effect is significant: $t(42)=1.96$, $p=.05$, mean age for inclusion 24.3 years vs. 32.3 years for non-inclusion; for website there is a trend for significance: $t(42)=1.79$, $p=.08$, mean age for inclusion 23.5 years vs. 30.7 years for non-inclusion). The other high inclusion items in the “recently-introduced” category, such as “plant/animal guidebook” and “teacher,” do not differentiate significantly along age lines, although they do go in the same direction as website and tourist guide (for plant/animal guidebook mean age of inclusion 25 years vs. 31 years non-inclusion, for teacher mean age of inclusion 25.7 years vs. 28.9 years for non-inclusion). High inclusion items in the “family and close personal contacts” category, like “grandmother,” “grandfather,” “mother,” and “father,” fail to differentiate along age lines. None of the items in the “present for several generations” category were high inclusion items; therefore they form part of the consensus in that most participants agree that they are not relevant to forest knowledge.

Some Thoughts about Aspirational Practice in Sacha Loma

In all, the results presented above point to a model in which most participants agree that close personal contacts are a good source of forest knowledge. In and of itself it may not be surprising that Sacha Loma is a place that still values the relational forest engagement of close family as the paradigmatically valid form of expertise. It also seems, however, that historical changes to community-wide practice have also led to the general valuation of school-related knowledge (e.g., “teacher” and “textbook”). These items have an average age of inclusion close to the overall mean (see Table 2), and thus form part of the overall consensus. This indicates that the valuation of knowledge sources that implicate the forest has been evolving relative to the structural contingencies of the community for years. Beyond this substantial overall agreement, however, the inclusion of valued sources of forest knowledge seems to be shifting in a very particular way for younger people in Sacha Loma. Specifically, these people seem preferentially to include items in their lists which represent local manifestations of new kinds of valued work (e.g., “tourist guide”), associated propositional knowledge (e.g., “plant/animal guidebook”), and items which represent globally-scaled aspirations to knowledge (e.g., “website”).

It is my contention that the items “website,” “tourist guide,” “plant/animal guidebook” are specifically aspirational in nature for young Sacha Lomans. Computers are present in the community in the form of a school computer lab, comprised of several desktop computers that until mid-2012 were not connected to the internet. One indigenous family in the community owns a laptop computer. However, internet use is almost universal among young people: a survey conducted by an MBA student in the community in 2011 found that 92% of students surveyed in the Sacha Loma public school had a Facebook account, which they accessed in internet cafés located in surrounding cities (Megan Christenson, personal communication). That

young people in Sacha Loma include these in their lists of valid forest information sources, it seems, is indexical of an aspiration to a new kind of forest engagement that validates propositional knowledge over experiential knowledge. I would make it clear that my contention here is not that young people are running to an internet café every time they have a question about the forest. Rather, the important fact is that engagement with internet-connected computers has entered the realm of the *possible* when it comes to building a relationship between knowledge and practice.

Secondly, becoming involved in tourism, with “tourist guide” as the paradigmatic expression, is perhaps the most salient aspiration for young men in Sacha Loma. These are positions, however, that are indexical of a very new form of community prestige, one that jettisons notions of manual labor on the farm as paradigmatic “work” in favor of a new kind of “work” that gives priority to fluency with foreign people and ideas. Crucially, these positions do not only involve fluency with, say, the English or German language, but a deeper fluency with globally-scaled ideas about what constitutes knowledge and modes of knowing. To want to be a tourist guide, then, is to want to know what people from the United States or Germany want to know, and how they want to know it. The desire for this kind of fluency may be embodied in the item “plant/animal guidebook,” which was included as an item in the task specifically because it is a visual representation of forest knowledge on propositional terms that prioritizes fungible and disembodied knowledge as valid for knowing the forest. While these books, to my knowledge, were not present in the community, the eco-lodge library and the tourist guides themselves did have them, both for the edification of tourist groups their own personal study. All three items that differentiate younger participants in this task thus represent an aspiration to an engagement with the forest based on new conceptual terms, and in terms of new sorts of practice which

implicate the forest as an entity but are disengaged from it in directly productive terms. In this way it also represents an aspiration to know about the forest in ways that are seen as consistent with being a certain kind of cosmopolitan person.

Chapter 8: Some Conclusions

Aspiration, Land, and Causal Reasoning in Sacha Loma

My main contention in this project, writ large, is that Sacha Loma has come to produce new kinds of people because it has become a new kind of place. This is significant in that these new kinds of people are being produced *in-place*, that is, the relationship between new structure and new knowledge has evolved *in-situ*, and in a place still both physically *in*, and in many ways importantly *of*, the forest. To do so I developed the notion of “epistemological practice,” which is meant to account for the reciprocal, structuring connections that occur between behavior, ideation, and structure in a given place. By focusing on these reciprocal connections, I have contended, it might be possible to begin to account for ongoing processes of cultural change.

The new kind of place that Sacha Loma has become, and those new sorts of people it produces, in turn implicate new kinds of motivations vis-à-vis the local forest. By labeling people as “new,” of course, I do not mean “wholly different.” I hope it is clear by now that people’s causal reasoning about, and motivated understandings of, the forest and what “should” be done with it are multifarious and sometimes contradictory. However, I do think that there is a relationship in Sacha Loma that I have demonstrated between evolution in the structure of place, families’ decisions in regards to those changes, and consequent reasoning about and valuation of work, the forest, and the role of humans therein. Knowledge of, practice in regards to, and reasoning about the forest are shifting around a common consensual core in Sacha Loma, which carries with it the weight of historical modes of relating to the forest. That these modes are in competition with new ways of knowing the forest does not mean the replacement of one type of knowing by another, but rather a co-evolution that leads to multiple and simultaneous ideas

about productivity and work both inside, and outside, the forest. This may well have long-term consequences for all young Sacha Lomans: those just out of high school and beginning families, those currently in school, and, in the future, for those youngest Sacha Lomans who will inherit the forest in 20 to 30 years.

The formal, distributional results I presented in Chapters 5 and 7 are not meant to encompass the full structure and content of the overall trajectory of change in Sacha Loma, or even to all of the changes to forest-related practice and reasoning. They are meant to function simply as proxies that point indexically toward the larger process of change. In fact “the forest,” conceived as such, is only one part of the intergenerational change in motivated reasoning ongoing in the region. That these changes do implicate the forest in quantifiably different ways, however, is a crucial part of understanding the future of the Ecuadorian Amazon itself. In this small slice of the Western Amazon, where both indigenous and non-indigenous smallholders and communities perform the bulk of the land use decisions, understanding the manner in which these stakeholders respond to state and non-state actors will go a long way to explaining the fate of the forest in decades to come.

I do claim that people in Sacha Loma have responded in particular ways to regional structural change over the past several decades. While to some degree I am ambivalent about the relative roles of “agency” and “structure” in the community in relation to their collective history, the more important point is that individual/community decisions and structural history very obviously act as mutually-constraining tensions that together have propelled community families in particular directions. It is certainly true that none of the current residents of the house plots near the school on the banks of the Napo “had to” move there; rather they convened and made a calculated decision to embrace formal schooling for their children as a potential route to personal

and family betterment. And this is what matters: that families in Sacha Loma have repeatedly exercised a willing eagerness to accept the kinds of structural changes that have gone on in their community over the years. They have actively formed, and reformed, their community multiple times to reflect the kinds of things they want, or think they want, or think they *should* want in terms of expanding the horizons of mobility and desire within the community, while simultaneously remaining tied to “place” in a physical sense. This kind of history is quite literally agentic. Fischer, for example, with deference to Bourdieu’s (1977) notion of the “doxa,” reminds us that “agency” is operative only within “a dynamic framework through which to interpret one’s own actions and those of others, *all the while bound by the realm of what is seen as possible*” (2012, emphasis added). In some sense, this whole project has been about the ways in which both older and younger Sacha Lomans have conspired over decades to expand their frameworks for what is “seen as possible.” This is an ongoing negotiation with infrastructural development and new kinds of ideas, and one that leaps forward, perhaps, in fits and starts. My point here is that the manner in which this negotiation and expansion has taken place has had particular kinds of consequences, both for the status of the community as a site of aspiration and valuation generally, and in particular for the understanding of, and practice within, the forest.

The structural changes implied in land reform – measurement and codification, an emphasis on cash-generating productivity as the most important aspect of land tenure, and, more recently, the perception of land as both “scarce” and “expensive” – literally restructured desire for people in Sacha Loma and changed the way both “place” and “the forest” were implicated in the construction of desire. Before colonization and land reform, there was very little that tied Kichwa people to a particular physical spot on the map, other than the mediating construction of

affinal kinship; even here, the relationship between “place” and “family” was much more fluid than it is today, as land was “open” and community fission common. Today, with families tied literally to place, the relationship of family to land is more formal, in the sense that “X family gets X land.” It is also more distant, however, in that the co-construction of family and place through marriage and community fission has given way to the linear, sequential passage of a (successively smaller) specific piece of land from parent to child.

It is this context into which formal education entered the picture. While land reform, in and of itself, may not have completely overhauled the nature of forest engagement for the young people then growing up on their parents’ farms, land reform did make the acceptance of formal schooling seem like a logical path to advancement for community families. This is the sense in which being tied physically to place (e.g., “the farm”) has had the paradoxical effect of distancing young people from the forest, in terms of the construction of practice-based knowledge and also in terms of their own constructions of desire – for work, family, and cosmopolitan mobility. To a large extent I do agree with Mr. E in his assessment, related in Chapter 4, that there is an ongoing disconnect between the provision and acceptance of formal pedagogy in the community. This is quite simply because community parents do not have the personal experience to relate to, and thus struggle to understand, what is entailed in the construal of oneself as a “student.” This means that these parents continue to want the education that the state currently provides them, even though its applicability to their children’s lives can be strongly questioned (see Chapter 6). It also sets up a situation that to me seemed deeply paradoxical during my field work, that is, that families had so vociferously *sought* to reorient their lives to put schooling their children at the center of their very existences, without truly being able to evaluate what they were being given or to advocate that it be provided more

appropriately. This was a conundrum to which I found no satisfactory reconciliation during my time in Sacha Loma, other than to appreciate that education really was completely integrated into local notions of striving. Because of this disconnect, however, schooling has evolved to be as much a set of reorienting bodily logics as it has the medium for the transmission of knowledge. That formal state schooling involves the production of a certain kind of person through practice is certainly universally true, just as engagement in the forest is a foundational part of becoming a forest expert. However, the emphasis that was placed on the reorientation of practice in the community school along the lines of performing “studenthood” (referred to in Chapter 4 as “the production of structured time”) has underpinned the legibility of codified, fungible knowledge about the forest in a manner unprecedented for Sacha Loman families (Chapter 6). This effect of “underpinning” is important, because it flies in the face of recent work that has shown structural modernization and externally-based discursive practice, in and of itself, to have little effect on biotic knowledge and environmental reasoning (Cepek 2011; Zarger and Stepp 2004). For the current generation of Sacha Lomans, the effect of underpinning translocal knowledge through education-related practice has meant that there are also direct implications for young people’s knowledge of and practice in the forest itself (Chapter 5), and for their aspirations beyond the boundaries of the forest (Chapters 4 and 6). In this way the active re-formation of the community in terms of structural change and the knowledge forms it implies act like something of a positive feedback system, bolstering knowledge and practice for young people that aspires to globally-scaled claims to scientific truth.

One manifestation of these globally-scaled claims to truth comes in the form of a particular kind of “environmentalist” reasoning (see Chapters 6 and 7). Young people have begun to reflect the reasoning patterns consistent with certain breeds of environmentalism

because they fit with the causal understandings of the forest implied in their school-centered reorientation toward “studenthood” and “adolescence.” My claim is that these patterns of causal reasoning have been fundamentally reorienting for young people, and this new orientation will serve as a baseline from which the youngest Sacha Lomans will begin their own evolution in forest understanding and practice in the coming years. Importantly, then, I do not see this as a one-time event that should be looked at from a “devolutionary” perspective: understandings of the forest have undergone constant evolution, as I tried to show for even the oldest generation of land-pioneering Sacha Lomans in the 1960s. Those motivations, whatever they may have been at the time, have been reinterpreted by their children, now in their 40s and 50s, in particular ways which impute a main value of land to be its capacity for productive cash cropping (see Chapter 4). New sorts of understandings of the forest, then, have always implied a reorientation of forest-based skill, and vice-versa. However, as a globally-scaled frame for understanding and reasoning, environmentalism functions in a manner that resists relational knowledge of the environment as irrelevant: this is not the language of “place” but rather of “environments,” writ large. The basis for this reasoning frame, as I contended in Chapter 6 and for which I argued as operative in Sacha Loma in Chapter 7, is a fundamental “fragility” to the (globally-scaled) “environment.” “The forest,” conceived as such, can only be thought of under the conditions of such “fragility” from the outside-in. From the perspective of the inside-out, that is, from the vantage of the individual stakeholder, the “fragility” of the forest, based on the consequences of individual action, is nonsensical. Environmentalist reasoning rests, fundamentally, on an appreciation of scale, and the appreciation of scale is a fundamentally non-relational proposition (cf. Ingold 2000b).

A provocative question this project raises concerns the nature of constructions like “value,” “desire,” and “aspiration.” The question, for a remote, indigenous place like Sacha Loma, is about the very applicability of these terms outside of contexts constructed by institutions with “global” pretensions, such as formal schooling. That is, do institutions like school simply *change* the sorts of things young people value, desire, and aspire to, or do they, as I have argued for “environmentalism” and its relationship to understanding the forest, *create the conditions* under which young people understand the very nature of valuation, desire, and aspiration? I do not have a cut-and-dry answer to this question, other than to say that “aspiration,” in the sense we tend to construe it – as the individual will to a certain kind of work and material advancement – is certainly operational in Sacha Loma, and all people think and talk in explicit terms about their own and their families’ futures (see Chapter 2). I have conjectured that “aspiration,” in various permutations, has existed in Sacha Loma since its founding, and is captured in the running discourse on individual and family advancement in teleological terms that people resort to as a kind of explanatory default for their own motivations: one does things in life in order to *seguir adelante* (to “go forward,” “get ahead”). That this notion is tightly bound to formal education may only be the most recent manifestation of this phenomenon. As I have argued throughout the project, the universe of possibility in terms of mobility, of frames for understanding domains such as the forest, and for aspiration within those frames, has expanded greatly for young people both structurally and ideationally in the past twenty years. This takes concrete form in the simultaneity of seeing oneself both on the farm and in a wage job, as both of the community and in the city, of both cutting trees/cash cropping and also conserving the forest. The trope I came across in Chapter 4 on the part of young people as a particular reconciliation of reasoning frames for the forest – “Cut, but not too much” – is aspirational only within a tightly-

bounded universe of possibility. Clearly, young people in Sacha Loma dream about the future and want to “achieve” for themselves and for their families. Even though the orientation “away” from the forest that enables this new kind of bounded aspiration comes with consequences for forest knowledge and skills, it is also balanced on a tight-rope with understandings that still tie young people to place and pitch both forest use and conservation as valid paths to self/family advancement. Aspiration, in this sense, is really nothing more than a reconstruction of the circumscribed reorientation of possibility for young people in Sacha Loma.

But how, in the end, is what I have contended in this project importantly related to the forest environment at all? Throughout all of the previous chapters I have avoided making any sorts of causal claims as to the relationship between the kinds of change I see as operational in Sacha Loma and the more obvious, and usual, quantitative measures of land use: deforestation, cash crop planting, soil fertility, and the like. I have done this for a two reasons. First, I was not interested here in the immediate effects of proximate independent variables such as school attendance, road construction, occupation, etc. on some dependent variable like “forest clearance.” Instead I have sought to gesture at much more subtle, and I think proximally-causal effects of reasoning about the environment and acting upon it. Something like “deforestation” (again a notion based on an appreciation of scale) is not the consequence of automatons reacting reflexively to market demand for products, or of hegemonic state-constructed modernity being imposed upon unsuspecting and unprepared recipients. Rather, it is about individual actors making individual decisions within a given context of structural constraint and causal reasoning (cf. Ortner 2006). Such decisions can, and often do, depend on market conditions, certainly, but are not preordained by them.

Second, given my focus on reasoning frameworks and historical contingency, it is far from clear just *what* the effects of the co-evolution of structure, knowledge, and reasoning will have on the local forest in the coming decades. Certainly it is true that young Sacha Lomans know less about their forest and understand it differently. However, what I have described in this project is something of a “limbo” state for the farms under the control of Sacha Lomans: during my field work, both extensive and intensive use of the surrounding forest had lessened substantially from the 1980s. This was due to the structural changes inherent in the coming of the NGO, formal schooling, and the move to the riverbank. The subsequent forest regrowth, however, was not necessarily precipitated by any change in a reasoning framework for older Sacha Lomans, but was, as I stated above, subsumed under the rubric of “getting ahead,” which has always been operative in Sacha Loma. As Mr. E said, when he arrived in Sacha Loma in 1992, people fervently knew they wanted two things: first health care, and then education. Now, however, I have tried to show that the situation is importantly different, and the reasoning frame precipitated though the production of structured time has changed the default value of the forest for people in significant ways. Young people are only now starting to make important decisions about how the forest will be implicated in their futures – will they take the five hectares from Mom and Dad? What is the logical endpoint of the *herencia* scheme, as it is currently understood? How will the forest, both as a locus of engagement and as a fungible abstraction, be implicated in this future? Is there an ever-expanding market for the perceived environmental panacea of tourism? The relationship of new reasoning frames to routinized practice in the face of new kinds of structural constraint will only be decided over decades. And, undoubtedly, it will evolve.

Social Emergence and the Fate of the Forest

As I laid out in Chapter 1, from a formal standpoint this study has proceeded from a distributional view of culture based on a notion of cultural epidemiology (Sperber 1996). Chapters 5 and 7 attempted to cast a light on particular pieces of these evolving distributions, inferring intergenerational differences in environmental epistemological frameworks from patterns of environmental knowledge, reasoning, and their implicit valuation. Chapters 2, 4, and 6, moreover, aimed to do the same from an ethnographic standpoint, tracking the current, sometimes paradoxical dynamism of emic views on “traditional” Kichwa culture and modernity (Chapter 2), evolutions in ideas related to land tenure and education (Chapter 4), and evolving ideas related to environmentalism and attendant aspirations (Chapter 6). On this view, the proper role of the ethnographer is not to codify the shared norms and rules that cause members of a group to act in predictable ways, but rather to take the construction and maintenance of the patternings we call “cultural” as the very object of study.

Cultural epidemiology in the Sperberian mold, however, while providing a blueprint for the justification of individual mental representations and their public expressions as a basis for the construction of shared thought and behavior, is more or less a bottom-up approach to the study of cultural formation: while it does allow for “public” representations of symbolic meaning to cohere in concrete objects out in the world, Sperber’s theory of epidemiology is mostly based in interactional/communicative acts between individuals who hold particular “representations” and the relative degree to which these representations are “catching.” Thus, for me, the value in the “cultural epidemiological” approach has been largely methodological, in allowing me the freedom to use methods that speak to intra-community patterns in the knowledge/inference interface vis-à-vis the local forest. Underpinning these methods, which seek to measure inter-

informant agreement, is the assumption that what is being measured is the relative “virulence” (to extend the epidemiological metaphor) of certain environmental ideas for certain subsets of the population.

Despite its methodological usefulness and its novelty as an approach to culture, however, such an approach does not address basic features of social reality for people in the community and which I have assumed to be operative (see Chapter 1): these are the causal influences of modernizing development in the region, which have taken concrete form in structures such as schools, NGOs, roads and transportation, and land reform. It was with this realization in mind that rather than cleave only to a bottom-up approach based on the unidirectional axis of knowledge-inference-epistemological framework-valuation in laying out the basis for shared understanding, I instead have tried developed the notion of “epistemological practice,” which seeks to meet the cognitivist versus structuralist rift half way. Here, changing material and social structure is seen as mutually constraining, and mutually constitutive, with causal constellations of bottom-up knowledge and understanding.

In this way, my theoretical lens on the nature of culture has much in common with what might be called an “emergentist” view of social forms. Sawyer (2005), in particular, has made an attempt to develop the notion of emergence for the social sciences. “Emergence,” which Sawyer defines as “the processes whereby the global behavior of a system results from the actions and interactions of agents” (2005:2), can be thought of as an antidote to dogmatically collectivist notions of culture prevalent in the social sciences, sometimes called the “superorganic” (Atran, et al. 2005; Kroeber 1963[1923]). In emergence theory, emergent structures are often said to be those which arise as a result of the interaction of individuals, but are irreducible to those interactions (Atran, et al. 2005; Hutchins 1995). For Sawyer, the

principal value of social emergence lies in the fact that it allows for a theoretical “way out” from dominant so-called “elisionist” theories (from Archer 1995) that rely on what Sawyer calls a “process ontology” (Sawyer 2005:125). In such theories, paradigmatically exemplified in Giddens’ (1984) theory of “structuration,” “the individual and the social cannot be methodologically or ontologically distinguished” (Sawyer 2005:125). Such a conceptualization of social form, while successful in avoiding the “reification” of social forms (as in the traditionalist view of the “superorganic”), does little to map a programmatic way forward for the social sciences. Instead, Sawyer (2005, along with Archer 1995), argues that an emergentist view, based on an “analytic dualism” between individuals and particular social forms, is more productive in that it allows the researcher to model individuals, their interactions, and their emergent forms as separate entities with autonomous but mutually interdependent qualities.

For Sawyer, *social* emergence displays a particular trait not found in other emergent systems. In complex systems such as the human brain, for example, the interactions of individual neurons, on a massive scale, is conceived as producing the emergent quality of “thought”; however, this quality of “thought” is not capable, in turn, of directly affecting the firing patterns of neurons. For socially emergent forms, however, Sawyer claims that there is a “continuing dialectic” between interacting individuals and the emergent forms they create: this property is known as “downward causation,” and is compatible with a line of sociological reasoning going all the way back to Durkheim’s notion of a “social fact.” On this view, the “social fact” can be conceived as “frames” that come about as the result of individuals and their “interactions.” Such “frames,” in turn, are “analytically independent” of the individuals who created them, but carry the property of “constrain[ing] the possibilities for action” (Sawyer 2005:210-211). In this way emergent “frames” might be said to be directly causal, setting the

boundaries for future interactions between agents. This “downwardly causal” property is the sense in which social emergence can be said to be importantly different from other emergent forms.

The notion of emergent social forms as causal at multiple levels is in concert with my notion of “epistemological practice.” Sawyer, for his part, is interested in providing a holistic account of emergent social forms, and as such provides a five-level “paradigm” of emergence, based on an expanding scale of interactionality. These go through level “A,” “individual” (intention, agency, memory, personality, cognitive processes), “B,” “interaction” (discourse patterns, symbolic interaction, collaboration, negotiation), “C” “ephemeral emergents” (topic, context, interactional frame, participation structure, relative role and status assignments), “D” “stable emergents” (group subcultures, group slang and catchphrases, conversational routines, shared social practices, collective memory), and “E” “social structure” (written texts [procedures, laws, regulations], material systems and infrastructure [architecture, urban design, communication and transportation networks]). The particular methodology, and the field context of the isolated rural community, however, has allowed me to focus on the role that structural context (Sawyer’s elements related to “social structure”) have had on low-level patterns of emergent understandings, within the particular domain of the forest. My contribution to this emergence paradigm has been to demonstrate how researchers might infer emergent modes of knowing from inter-informant patterns of individually-held environmental knowledge, as well as consequent patterns of reasoning about that knowledge. This allows us to infer, in the language of the literature reviewed in Chapter 3, the “epistemological frames” (akin to “stable emergents” in Sawyer’s scheme) that guide future environmental inference and behavior. Critical to these emergent social forms is the influence of “downward causation” at the hands of state-level

discourses and institutions (environmentalism, school). This complex interaction results in multilevel causality and constraint onto evolving understandings of the forest.

Understanding this project in terms of “emergence” is important in that it provides an avenue to think methodologically about the nature of cultural change. It unmoors the venerable notion of the “social fact” from the assumption that social forms are static and unmovable; rather a focus on social forms as emergent allows us to think through the dynamic aspects of human interaction in terms that preserve the causal efficacy of individual agency and simultaneously appreciates the constraining qualities of the forms human interaction creates. In short, it provides a theory of cultural change that can in turn be viewed methodologically through the lens of cultural epidemiology. I would argue that this sensibility is particularly important in the realm of environmental understandings in places like the Ecuadorian Amazon, because in places like this individual smallholder understandings and actions are so closely cleaved to the fate of natural spaces. As Hecht (2014) has argued, inhabited tropical landscapes like the Amazon Basin need to be conceived from the point of view of their existence as “socio-natures,” hybrid spaces in which human groups and forests are continually co-constructed (also cf. Raffles 2002, for a compelling account of Amazonia along these lines). Such co-constructions, as I hope to have shown, are complex, causal at multiple levels, and constantly evolving. They represent ongoing change in knowing, behaving, understanding, and valuing the local landscape, but also in how those things are reflected in new kinds of state-level institutionality: school, work, transportation, and economies of scale. My contention is that the only way to know such places, and the fate of such places, is to know them through the evolving lens of the people who construct them, and construct themselves through them.

Endnotes

¹ The URLs for the webpages related to the two NGOs have not been provided so as to protect their anonymity.

Appendix A: Plant Familiarity Model Content for Adults ≥ 30 and Adults 20-29

The 16 plants forming the “high consensus, high familiarity” group: *cacao, chonta, chukri yuyu, guava, laurel, morete, piton, sangre de drago, uva, cedro, chambira, chunchu, pindo, chilka, eguiron, and malaire panka*. These plants fall into a few predictable categories: common wild/semi-cultivated food plants which are also commonly sold in nearby cities for extra cash (*uva, piton, chonta, morete, guava*), trees used for construction and for wood to be sold to middlemen (*cedro, chunchu, laurel*), and trees and plants used for common medical ailments (*chilka, sangre de drago, eguiron, chukri yuyu, malaire panka*). In addition, *chambira* is a palm-like plant used in making traditional skirts and artisanal products for sale to tourists (some respondents mentioned that this plant also produces a coconut-like fruit). *Pindo* is a common plant that grows on banks of the Napo and is commonly used as a “punt pole” for dugout canoes. Cacao is the most commonly cultivated cash crop in the Napo region, and the main agricultural source of cash (along with coffee, which is dwindling) for every family in the community, whether or not members of the family have other sources of employment.

The 11 plants forming into the “high consensus, low familiarity” group are: *caña agria, krus kaspi, sikuanka callu, uksha, zorillo, perfume de amores, uju kaspi, yawar panka, mariposa, suelda con suelda, and cordonsillo*. Four of these plants, *caña agria* (43%), *sikuanka callu* (37%), *krus kaspi* (37%), and *uksha* (27%), were mentioned by enough respondents that it is possible to report their range of reported uses. It is a characteristic of some of these “high consensus, low familiarity” plants that there is a much larger variability in the listed uses of the plant. *Caña agria* (sour cane) is a plant that resembles sugarcane and can be cut and chewed for the juices or the juices cooked and drunk. Several people claimed that these juices have

medicinal qualities, for “infections,” tropical diseases like dengue, for kidney/liver problems, fever, hair loss, gonorrhea, or as a purgative. *Sikuanka callu* is a plant with purported magical love-producing qualities: also called “*sigame sigame*” (follow me follow me), it is a small, vine-like leaf which clings to the trunks of large trees; the leaves have the peculiar quality that when placed on the surface of water they will skitter across the water. It is said that when the leaves are dried and crushed they can be used by a young man to make a woman fall in love with him. I heard various methods for this: a man can mix the powder with the fat of a boa snake and rub it on his beloved while she is distracted, he can place it on his hand and she will touch it when they greet each other by shaking hands, or he can mix the powder into a beverage that she will drink. Two people mentioned that the powder can also be used to bring luck in hunting by attracting game, or given to a hunting dog to make it a good hunter. Used this way the powder can be blown all over the body. *Krus kaspi* (cross stick) is a plant that can be used, according to Medicio, as an anti-conceptive. Many respondents answered in this vein, saying it could be used as an anti-conceptive, for menstruation regulation/female hemorrhage, for stomach pain, for headaches, or for body aches. *Uksha* is a plant with a wide, durable leaf that respondents say was used in the past for weaving the roofs of houses and *chozas* (a traditional wall-less structure used for cooking, gathering with others, or relaxing). This is interesting in that it coheres with local patterns of changing practice – most new structures in the community and the region are now made of concrete with metal roofs. Traditional woven roofs are now mostly made for tourist demonstrations. In fact, one of the most common uses for *choza* in the plant-based skill task was listed as “making artisanal products.” This links the idea of “traditional” structures directly to the past through the lens of the tourist trade – this is a past being preserved only for sale. In the local school, the only structure with a woven roof is a small, round structure with bamboo walls

which serves as a small “store” in which “traditional” artisanal products are laid out for sale. One person also mentioned that *uksha* could be put in vapor baths to alleviate fevers and body aches.

For the remaining seven “high consensus, low familiarity” plants, so few people reported familiarity with these plants that I will simply report the use reported to me by Medicio. Medicio uses *yawar panka* (blood leaf) as a menstruation regulator, drunk as a tea. He uses *cordonsillo* as a remedy for diarrhea in children. He uses *zorillo* as a “*cicatrizante*” or healing agent for wounds, and to stop bleeding. He uses *suelda con suelda* as a remedy for gastritis that is cooked and drunk. He uses *uju kaspi* (cough stick) as a remedy for coughs. *Perfume de amores* is used in vapor baths as an energizer and stress reliever. And *mariposa* is used as a remedy for women who bleed excessively during childbirth. According to Medicio, it also “acts like an antibiotic.”

The eight plants that reached significance ($p \leq .05$) based on their difference scores, and are thus presumed to constitute the submodel for older adults are: *kotu chupa*, *chali panka*, *sangre de gallina*, *bol*, *pati vaca*, *camacho*, *tukuta*, and *wayakan*. *Kotu chupa*, also called “*rabo de mono*” (monkey’s tail), is a vine which is used medicinally, according to Medicio, to regulate bleeding after a woman has given birth. Respondents who reported familiarity with this plant gave a variety of uses for it, most of which have to do with birth or female reproduction. Some report that it regulates female menstrual bleeding, while others report that the tea of this plant can be taken as an abortive. Other answers were for “heart pain,” rheumatism, as an appetite stimulant, as a remedy for diarrhea, as a purgative, for asthma, for colic, and for skin tumors. *Chali panka* is a plant that has a very highly consensual and specific use among those who have heard of it: it is boiled with the preparation of *ayawaska* by shamans and gives “clarity” to the visions produced by the *ayawaska*. Some also report that the leaves can be used to “clean” and “ventilate” sick people; this refers to a local healing practice in which the leaves of various plants

are bundled and the shaman or curandero “cleans” the patient by “sweeping” the patient of bad spirits with the leaves. *Sangre de gallina* (chicken’s blood) is a large tree. Medicio reports that it has several uses; for its wood (though it doesn’t last long), or its latex used for skin problems like birthmarks or scars, used to clean out the mouth, or drunk as a remedy for stomachache. As for respondents, by far the most common response was that this tree could be used for its wood, either for house construction, fences, canoes, or for tools (such as shovel handles), though a few people mentioned that the liquid could be drunk for stomach problems (stomach ache, ulcers, gastritis), or drunk as a cold remedy. *Bol* is a medicinal plant which is dried, turned into a powder, and can be used in wounds, hemorrhage, and skin problems, according to Medicio. Respondents also said it could be used effectively in steam baths for skin problems like fungal infections and boils, or drunk to regulate bleeding or for stomach pain. One person said it was effective after snake bite, and another as a remedy for diarrhea. *Pati vaca* is a plant that grows along the riverbanks and has an extensive root system which is very difficult to extricate. People report planting it purposefully to keep the river from eating the fertile land near the riverbanks as the river changes course, as it does continually in its flood cycle. Several other people say that this plant has no practical use, some just for tying up canoes, some say it can be drunk to stave off hair loss, others for bone pain, or for infections/boils. Interestingly, several people say it can be used in a steam bath or given to children to drink either to “make them strong” or make them “walk quickly,” or given to children who are weak or cannot walk well. This, I think, is a case of mimetic representation in traditional medicine, where the “strong” roots of the plant are identified with imparting “strength” to the child. Medicio reports that *pati vaca* bark can be boiled and drunk for gastritis. *Camacho* is a plant which, people say, when the liquid is touched, gives the area of skin an immediate, uncomfortable itching sensation. Respondents report can be

used in wounds, and specifically for insect bites (conga ant, wasp), and for snake bites, by either drinking it or placing the liquid from the leaf or root on the site. One person said that when a poisonous snake is killed in the forest, you can bury the snake with *camacho* leaves so that the snake “will not come near.” Two said that this plant could be used for hunting burrowing animals: the leaves were placed over the entrance to the burrow and the animal either would eat the leaves and die of the itching sensation or would “die from the smell.” Others said it was useless for humans but snails and turtles eat the leaves. The remaining two plants, *tukuta* and *wayakan*, are both large trees that are used for building canoes, houses, *chozas*, *batanes* (large, shallow wooden bowls used to mash boiled manioc for *chicha*), *bateas* (shallow bowls used for panning gold), and artisanal carvings for sale. In particular, several people said that *wayakan* was the “hardest, finest” wood tree in the whole forest. Both these trees are also commonly sold to middlemen for extra cash.

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