How are household lifecycle-land/resource use relationships mediated by ethno-cultural difference?

Panel Contribution to the Population-Environment Research Network's Cyberseminar on Household Micro-demographics, Livelihoods, and the Environment, April 2006

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Inspired by the questions posed in Alex de Sherbinin's background comments on "Household Lifecycle and the Environment" and by recent postings in this Cyberseminar, this contribution considers one of the unresolved questions related to the links between household lifecycle and particular forms of smallholder land use in biodiverse environments.

Let me begin by stating that the past decade of research into the relationships between household life cycle and land/resource use—particularly in neotropical settings—has been remarkably productive. The 'age' of a household has now been established as a critical variable shaping its land/resource use, even as the strength and direction of this relationship is understood to be influenced by such micro- and meso-level factors as the age of the frontier, tenure security, the completeness of product and factor markets, and biophysical factors. It is now *de rigueur* for any researcher interested in teasing out the determinants of land/resource use in smallholder-dominated landscapes to account for the variables that measure household lifecycle (e.g., age of the household heads, the family's residence duration on site, the year of household formation).

Yet several issues remain inadequately addressed. Among them is the influence of a household's ethnocultural context and communal history in mediating how household attributes translate into particular forms of land/resource use. Drawing in part from research experiences with indigenous smallholders in Honduras and Ecuador, I outline some aspects of this issue and directions for future research.

Background

To date, household lifecycle-land use links have been investigated across a broad spectrum of environmental and ethnocultural settings. Studies have focused on new arrivals to the Brazilian and Ecuadorian frontiers (McCracken et al. 2002; Brondízio et al. 2002; Pichón 1997; Murphy 2001; Vosti et al. 2002), indigenous colonists migrating from land-constrained environments to lowland frontiers (Weil 1989a; Bedoya Garland 1995; Carr 2004), long-established ribereño communities in Peru (Coomes et al. 2001; Takasaki et al. 2001), and long-settled indigenous smallholders in Bolivia and Honduras (Godoy 2001; Godoy et al. 1997; McSweeney 2004) .

Despite this variation, discussions and meta-analysis of this research have tended to overlook cultural differences in favor of identifying similarities across case studies (e.g., Walker et al. 2002). This may be due to the preponderance of recent studies from frontier settings; indeed, cultural issues appear insignificant given the common finding that *within* any given research setting or social group, household life cycle remains critically important in understanding inter-household variations in land/resource use.

What has been obscured by this insight, however, is a critical examination of whether or not the same underlying mechanisms are at work *across* the diverse research sites. Thus, as Robert Walker asks in his contribution to this Cyberseminar, "is HLC theory applicable to populations other than colonists, such as long-standing residents of forest regions who often possess some indigenous ancestry?" I engage this question below.

Long-settled Indigenous Societies and HLC Theory

According to HLC theory (see Walker's panel contribution and (Walker et al. 2002)), the low worker: consumer ratios, risk aversion, and high discount rates that characterize 'young' colonist encourage them to invest their scarce labor in the extensive cultivation of annual crops, with associated high rates of forest clearing. As the household ages, rising worker:consumer ratios and greater familiarity with the agro-ecological environment encourage intensification and a corresponding slowing in forest clearance. This hypothesis has been supported by research across multiple colonization sites, particularly in Amazonia. But a closer look at studies from long-established indigenous and ribereño communities suggests an imperfect fit.

That is, even though researchers have found that in these long-settled contexts, younger households tend to deforest more and to extract more forest products than do 'older' households (e.g., Godoy et al. 1997; McSweeney 2004), they may not be motivated by the same factors as young colonist households. Further, their aggregate impact on the landscape may be considerably more benign.

One of the most important factors to consider here appears to be the ethno-social context. Unlike remote homesteads on the colonization frontier, indigenous and ribereño households are bound up within the tight-knit kin networks of long-settled villages. Risk is therefore carried as much by the group as by an individual household. A young indigenous family, therefore, may have less need to spread their agricultural risk through extensification; crop failure can be mitigated by the post-hoc safety net of inter-household food transfers. In addition, their risk is lessened as household members benefit from their own and their community's agro-ecological knowledge. Further, the constraints of high dependency can be somewhat loosened for young indigenous families through communal child-care support, on the one hand, and access to established systems of labor reciprocity (known as *minga*, *mano vuelta*, etc.), on the other. Thus young households may be able to access the labor required for intensive pursuits (e.g., establishing, weeding and pruning an agroforestry plot).

Why, then, if freed from many of the constraints that drive deforestation by young colonist families, do young indigenous households appear to clear forest at comparable rates? Part of the answer lies in the persistence of usufruct land tenure systems under rising population: land ratios. In many indigenous and ribereño communities, land is held in usufruct—i.e., land is accumulated through forest clearance and continued management of fallows. (In frontier environments, by contrast, families typically are apportioned, or stake out, primary forest, which they then own.) Among Tawahka smallholders in eastern Honduras, where usufruct systems dominate, I found that young indigenous families were under considerable pressure to clear forest—irrespective of their ability to effectively cultivate the land—in order to accumulate land for themselves and

their children (McSweeney 2004, 2005). Thus young indigenous households may appear relatively environmentally rapacious. Yet the long-term effect of such actions may be relatively benign—cleared patches are rarely contiguous, and are cultivated over relatively long cycles. Further, these same families may be simultaneously cultivating polycultural orchards.

In short, although the land and labor poverty of young households in both indigenous and colonist settings might predict high rates of deforestation, the basic underlying rationale may vary considerably.

New Questions and Relevance to Neotropical Deforestation Dynamics

These observations are based on relatively limited empirical evidence. Much more work needs to be done to test how lifecycle and land use interact in other indigenous settings. How widespread is the scenario described above for eastern Honduras? How might the scenario vary when indigenous communities relocate to unfamiliar ecological zones (see, e.g., J. Weil 1989b)? Ultimately, can such research contribute to a modified HLC theory? Indeed, is a more generalized, trans-cultural model of the relationship between household lifecycle and land/resource use possible?

These questions suggest ripe areas for future research. Further, a closer look at lifecycle issues within indigenous communities has at least two important policy implications.

First, a growing body of research is showing that indigenous populations are growing much faster, and are correspondingly younger, than their non-indigenous rural counterparts (McSweeney & Arps 2005; Pagliaro et al. 2005). In many cases, half of their populations are under 15 years old. For those interested in household lifecycle-land use dynamics, this implies that present and future indigenous landscapes are likely to be dominated by the imprint of youthful households. In short, in indigenous landscapes more than anywhere else in the neotropics, “young people are central to the population-environment relationship” (as de Sherbinin notes in this Cyberseminar’s Background paper).

Second, there is the possibility that a better understanding of these dynamics can help to more systematically explain why, despite high and growing population densities, long-settled indigenous societies are increasingly found to be associated with much lower per capita rates of deforestation than non-indigenous settlers (Nepstad et al. 2006; Stocks et al. 2006). In the past, indigenous peoples’ light ecological footprint was explained by their low population densities, relatively low rates of market integration, and simple technologies. New data are showing that even when these conditions change, indigenous people can be extremely effective forest/resource stewards (Guzmán et al. 2003; Zimmerman et al. 2001). As a result, well-defended indigenous territories are now, more than ever, perceived to be oases of forest preservation, particularly in Amazonia (Nepstad et al. 2006). Yet we remain remarkably ignorant about the land-labor dynamics that make this so. Closer attention to the interaction between household age and land/resource use in indigenous landscapes holds considerable promise for shedding light on this issue.

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