

EXTRACTION, GENDER AND NEOLIBERALISM IN THE WESTERN AMAZON

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ABSTRACT

This chapter explores the work of Stephen Bunker through a review of the role of women in Amazonian extractive economies and how shifting ideas of development affected them in the Western Amazon. While the initial development programs for Extractive Reserves focused on green marketing, consumer coops and value added through processing carried out in an urban factory in the village of Xapuri, as structural adjustment programs gained importance, the development emphasis shifted to decentralized processing and piecemeal contracts on the individual seringal (rubber tapping estate) or in mini factories in forests. While this was an appealing approach given the kinds of development concerns at the time; non-timber forest products, income generation for women in the forest itself, and neoliberal ideologies of economic and labor decentralization, it failed to appreciate the demands and the opportunity costs on women's time in rural areas and underestimated the importance of formal employment in urban areas. The logics on which the shift was justified, enhanced production, efficiency and lower costs, did not materialize.

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The man of the house returned from the forest about noon, bringing nearly two gallons of (rubber) milk that he had been collecting since about daybreak...When he himself attended to the 120 trees he could collect the same amount for several months. But his girls could only collect from 70 trees...In making the shoes, two girls were the artistes in the little thatched hut which had no opening but the door...the (shoe)last was dipped in rubber milk and immediately held over the smoke...(where it) dried at once. It was then redipped and the process repeated until the shoe was of sufficient thickness...the shoe is now cut from the last and is ready for sale, bringing in about 12 cents.

Edwards, H.E. 1847. *The River Amazon*

1. INTRODUCTION: THE EXTRACTIVE QUESTION AND AMAZON DEVELOPMENT

Few scholars have given greater thought to the nature of extraction than Stephen Bunker. His paper on the Modes of Extraction (1984) and his book *Underdeveloping the Amazon* (1985) sought to recast the labor theory of value through an analysis of extractive economies at extreme peripheries. His research has moved into new directions and regions, but I will focus on his contributions to Amazonian extraction and use it as a platform for exploring the questions raised by modern extraction through a case-study in the Western Amazon.

Bunker's work was especially prescient in three areas. First, it illuminated the problems of ecosystem and social valuation, which is now a growth industry in Ecological Economics. As he points out, "production models cannot explain the dynamics of extractive economies because the exploitation of natural resources uses and destroys values and social formations whose worth cannot be uniquely calculated in terms of labor or capital." His ideas were used by many colleagues as a starting point for the understanding of a "subsidy from nature" in the creation of wealth and livelihoods in Amazonian frontiers and to emphasize the role of gathered forest products for export and subsistence in rural income formation (Hecht, Anderson, & May, 1988).

Next, in his clear elucidation of the differences between extractive and productive economies, he points out that expansion of scales in productive economies usually results in a decrease in unit price as infrastructure, production techniques and institutional structures change. This is an outcome of technical change and an increase in *relative* surplus value. Expanding the scale in extractive economies tends to increase unit costs as search, support, control and transport costs rise as more distant sources are brought into play. There is a deflection "price point" in capitalist economies where

distance starts to preclude extraction in many economic contexts because of costs of transport, labor and control. But this deflection point does not hold where labor deployment in extensive extraction systems is maintained by non-economic forces, such as terror and slavery on the Putumayo and the Congo, debt peonage, or by family effort (Hecht, 2005; Nugent, 1994, 2002; Raffles, 2002; Taussig, 1987; Weinstein, 1983). Thus *absolute* rather than *relative* surplus value characterizes accumulation in extractive economies, especially those that are based on forest products, and thus it is the extension rather than labor productivity that underpins extraction.

Bunker's extraction work also goes to great lengths to explore the effects of unequal exchange, a topic now also taken up by resource and conservation economists and development practitioners under the more comfortable heading of "getting the prices right" and marketing strategies that became part of the fair trade/green trade efforts throughout the tropics. His central point was that a given mode of extraction, by depleting the environment and deeply disrupting local societies, limits the development capacity in the next mode. Stagnation and boom thus become the defining features of extractive economies in extreme peripheries. This position is perhaps more open to contestation since technologies and markets can change what is considered a periphery in the long life of a region. Moreover, in the case of rubber, the resources were not depleted. It was labor control and the quantity of labor that could be pressed into service that ultimately was the problem, rather than environmental resources.

As a theorist, his contributions to understanding the underlying causes of economic stagnation in political economies of extraction stimulated a great deal of exploration of this topic. While Bunker has been widely critiqued, his work provided the groundwork and counterpoint for later research. His efforts are now especially germane in light of the emergence of Extractive Reserves (ER) as a regional development model for Amazonia. How ecologically sustainable is the extraction of non-timber forest products? How much do they reflect human manipulation of the environment (cf. Schroth et al., 2003)? What are the conservation and management dimensions of extraction (see, for example, Browder, 1992; Cardoso, 2002; Freese, 1997; Salafsky, Dugelby, & Terborgh 1993; Nepstad, & Schwartzman, 1992)? In the meantime, the social dynamics within extractive economies still remain relatively unresearched, (but see Almeida, 1992; Anderson & Ioris, 1992; Brown & Rosendo, 2000; Campbell, 1996; Gomes, 2001; Hecht et al., 1988; Kainer, Schmink, Leite, & Fadell, 2003). Finally, if his arguments hold, can modern regional economies be developed within the framework of extraction of non-timber forest products (NTFPs)?

This chapter has four central concerns: to review the narratives about extraction and stagnation in the past, to explore the narratives of extraction and development in the current Amazonian context, and to examine the “black box” of livelihood production in extractive economies today. The chapter then analyzes how current development approaches have shaped Brazil nut extraction in an ER in Acre. The study explores these questions through the political economy of gender.

2. NARRATIVES OF EXTRACTION, DEVELOPMENT AND ENVIRONMENT IN AMAZONIA

2.1. Extraction and Stagnation: Revanchist Drag or Sustainable Development?

Extractive activities have been part of an intense polemic about tropical development in the Amazon Basin for hundreds of years. What has remained a key question is the failure of the immense wealth of the rubber era to translate into capital and social formation necessary for the next phases of regional development. Why did highly profitable precapitalist structures not give way to capitalist production regimes and dynamic regional growth, as occurred with the coffee economy of Sao Paulo? What might this suggest about development and extraction today? This is a significant issue because ERs have been increasingly proposed as a development model today, and the National Rubber Tappers Council dreams of 10% of Amazonia in this form of tenure. How and why extraction constrained economic transformation earlier, thus becomes more than an abstract historical question. The issue of stagnation and extraction merits some review as a means of illuminating some of the features of the modern dynamics of extensive extraction.

There are several ways to approach this question, including those that focus mainly on macro-level dynamics, those emphasizing more “meso” processes, and those that explore the social relations of extraction itself. The most well-known model might be considered that of “Competition and Ecologies.” Ecology constrained developing plantations in Amazonia, while efficient Asian plantations based on waged labor could deliver rubber to industrial markets at a better price. This rural plantation proletariat was increasingly characteristic of the production systems for valuable commodities throughout the tropics during much of the colonial period. Warren Dean’s (1987) environmental history of rubber concentrates especially on

the local ecological conditions that thwarted plantation development and that made the region ultimately unable to transform itself into a more modern pan-tropical economic production formation on the basis of one of the most valuable commodities on the planet at the time. The thesis of Alfredo Homma (1993) then comes into play: as commodity prices rise, there are several outcomes, all of which produce stagnation in or undermine the initial extensive extraction systems. Overexploitation, domestication (and plantation development away from its center of origin), and the search for synthetic replacements made the natural product largely irrelevant. Rubber, of course, experienced all three of these processes.

Bunker, focusing on the ecological and social dimensions of unequal exchange of extraction, viewed stagnation as an outcome of the siphoning of energy and value out of the system and the disorganization of Amazonian ecologies and societies to the detriment of later productive activities (Bunker, 1984, 1985). For Bunker, the rubber economy was rooted in a world system where the dynamics of unequal exchange prevailed and where the distribution of the resource itself made it quite problematic. This, combined with an impotent state, one highly dependent on rubber revenues and the oligarchs who controlled them, produced such distortion that when the regime collapsed (as an outcome of the ecology/competition dynamic), it left the region largely starved of capital due to the very limited linkages to any local sectors, and with labor “stranded” by peonage on rubber estates. Bunker works out his ideas from the classic framework of the “blood rubber model” that involved slavery and terror on remote rubber estates in the upper Amazon (Taussig, 1987; Hardenburg, 1905; Stanfield, 1998). A somewhat different analysis emerges from studies that focus more on the central and lower Amazon where simple commodity producers, whose production was based on family labor, were far more prominent.

2.2. The Labor Question in Extraction

Stephen Nugent (1994, 2002), an anthropologist, also takes on the question of extractive economies, caboclos and stagnation largely through a discussion of mechanics of merchant capital. In this sense, he works at the meso-level to understand why extraction remained undynamic. Nugent, whose work on contemporary caboclos is informed by a historical consideration of post-rubber boom stagnation, argues that Amazonian mercantile capital was able to profit without disenfranchising populations or changing the social relations of production because it enjoyed a monopoly position in

the world market for most of a century, and because the ecological conditions of the production of Amazonian rubber did not really permit intensification. The Amazonian mercantile economy remained basically unchallenged by capitalist production regimes until the 1960s. Unlike many other areas in the tropics where simple commodity producers began to compete with plantations or other capitalist forms of production, in Amazonia extractors were insulated from this transformation by the nature of the mercantilism (*aviamento* – a clientistic form that advanced trade goods against products) that trafficked only in commodities, the isolation of producers, and a more general lack of regional economic dynamism. Thus, surplus extraction remained absolute rather than relative, realized through the mechanisms of unequal exchange.

Nugent focuses on the nature of the caboclo peasantry, pointing out that, like Weinstein (1983), there was no need to change the social relations of production as long as the commodity was delivered. Nugent emphasizes the inability of merchant capital to control and discipline workers on the lower Amazon, or even to penetrate its labor processes. As Henry Pearson¹ points out in his ironically optimistic panorama of the Rubber Economy on the eve of its collapse, *Rubber Country of the Amazon* (1911), “the tapper will tap tomorrow or the next day, or whenever he likes.” Nugent’s work builds on and extends the insights of the historian, Barbara Weinstein (1983), who brought attention to the array of forms that extraction could take as she focused on the petty commodity producers/extractors. Arguing from the idea of modes of production, Weinstein focused on the social relations of production in simple commodity production/extraction. While producing for markets, labor mobilization depended on family and kinship, as well as debt-based forms of recruitment, but Weinstein also emphasized the limited control over the labor process in these lower Amazon economies. Her research revealed the importance of autonomy to tappers, a widely bruited complaint among those who wished for closer management of Amazonian rubber production.

Weinstein’s and Nugent’s research focused on the lower Amazon, where several conditions prevailed that contrasted with those of the upper Amazon: first, the impacts of drastic Cabanagem rebellion had undermined elite control and dramatically altered local power relations over forest workers (cf. Cleary, 1998; Hecht & Cockburn, 1989). Next, populations were often organized in quilombos² of runaway slaves as well as detribalized Indian settlements. These producers were part of communities rather than isolated households and so had both more product and more negotiating power. These groups were not “prisoners of the landscape” in the way that migrant

recruits/debt peons from the Northeast of Brazil were in the upper Amazon, because, as local “caboclos”, they had kin and affines in the area, and they were natives of, rather than exiles to, Amazonia. Third, producers were part of families who relied on a portfolio of activities for their livelihoods, not just rubber. Their families also participated in the varied activities of agriculture and of extraction (see Edwards, 1847). Finally, *aviamento* certainly operated in these lower Amazon communities, but the system was more complicated and complex in lower Amazonia where proximity to many small-scale traders implied some competition among them. Pearson (1911) mentions the number of *aviadores*, and the relative ease with which one could become one. Pearson remarked that many *aviadores* were often *seringueiros* themselves, and thus the patron–client relation was often affinal and infused with a great deal of social meaning and mutual obligation, and not necessarily a strictly commercial transaction. It was the persistence of *aviamento*, which was based on the exchange/barter of goods and self-provisioning by local peasantries, that stunted internal demand and effectively stifled local commercial agriculture in much of the lower Amazon, to the regular howls of the regional elites.

Weinstein’s work presages elements of moral economies à la Scott (1976), particularly in light of contemporary research on Amazonian middle men, who are often themselves tappers. Thus, the relations may have been more nuanced, with clear benefits in stressful times (cf. Padoch, 1992; Nugent, 1994; Raffles, 2002). Scott’s (1997) “everyday resistance” also has relevance for this case. The defiance of some simple commodity producers/extractors toward waged activities was possible in part because of the feeble development of monetized capitalism in the Amazon economy, the difficulty of labor control in the Amazon, and the relatively weak presence of the state in frontier affairs, but especially because they maintained control over their agriculture and had access to the rich array of “use value” as well as exchange value extractive products. This permitted them to withdraw from some patrons, and helps explain why extra-economic means of consolidating this relationship have been so important, whether through affinal means or coercion. In addition, the various types of adulterations of rubber can certainly be seen as forms of evasion of control as well as fraud. This resistance to incorporation into capitalist social forms produced an “uncaptured” peasantry, with significant autonomy in some regions.

It was, after all, labor that was the element of production in shortest supply. As Nugent (1994) points out, mercantile capital is “agnostic” in terms of labor deployment as long as the commodity is delivered, and thus

simple commodity production/extraction (based on family effort) could co-exist with many other servile forms such as the corvee of terror, debt peonage in the more isolated reaches of the Basin, or the commercialization of tribute from native groups. But it was only the simple commodity form predicated on families that could physically and economically reproduce itself after the collapse of the rubber economy.

But, of course, the future of Amazonia did not necessarily have to reside in rubber. This concern is that of [Barham and Coomes \(1994\)](#), who point to the distortions of “Dutch Disease” on regional economies as capital was increasingly sunk into infrastructure for extraction that could not be easily or effectively released from or realized outside of the boom sector, and on spending effects located largely outside the region that engendered significant dislocations in the economy. The “sunkness” of capital precluded its movement into other sectors in the post-boom period. Thus the effects of unequal exchange, social relations, ecology and form of capital (mercantile) or “sunkness” are all invoked to explain why more complex economies did not evolve during and after the boom.

In Amazonia, what was certainly clear was that both labor and capital seemed immobilized in ways that caused extraction to be roundly reproached as a brake on Amazon regional development by locals and observers, a revanchist and despised activity condemning this tropical immensity to the status of permanent backwater. Demonized as the most regressive social configuration imaginable, extraction, until the end of the 1980s, was literally off the map, an embarrassing residue of the previous century in its spatial form, tenurial regimes and social relations. This attitude was parroted in virtually every government development document on Amazonia from the 1960s and 1970s, resulting in a systematic bias against investment in or appreciation of the important economic role of extractive economies for most Amazonian environments.

Extraction had persisted in its “portfolio” form of linked agriculture, use value and commercial extraction, undetectable to outsiders under the mantle of Amazonian forests. Its main configuration might simply be called “simple commodity extraction/production”, a hybrid of previous elements of Amazonian life and culture carrying out extraction of a vast array of products in a modified mercantile system. The omnipresence of this system was only matched by its invisibility and that of a large portion of its labor force: women and children. What came to dominate the perception of extraction, in spite of the literally hundreds of thousands of families that engage in it, was that of the isolated man, enmeshed in a pitiless production regime.

3. THE GENDERED ICONOGRAPHY OF EXTRACTION

The image of the lonely tapper setting out before dawn, disciplined by hunger, the patron and international capital, slogging on in endless repetitive cycles of tapping, curing and peonage in a pitiless regime of cruelty and isolation, may have been an accurate representation of some of the rubber producers at the “margins of history” during the peak of the rubber boom. But as evocative as this image was then and now, it fails to capture a forest reality that included families. The dominant image of rubber tappers (and by extension extraction) remains the solitary, enslaved man – a poignant vision, and one that makes the political triumph of the rubber tapper movement in the late 1980s all the more compelling. This image relies on descriptions by Alfred [Rangel \(1927\)](#), Euclides [da Cunha \(1906\)](#), and Roger [Casement \(1911, 1912\)](#) at the height of the boom as well as by more modern interpreters of the region such as Leandro [Tocantins \(1979\)](#). This perspective framed but one, albeit extremely brutal, incarnation of the rubber economy.

3.1. Invisibility and Women

Often overlooked in this highly masculine model of extractive systems in the western Amazon is that women and families were present, even at the height of the boom of the early 1900s on the main water courses in the upper tributaries, like the Purus, where the commerce in rubber and Caucho was thriving. Euclides [da Cunha \(1906\)](#) noted robust yeomen communities, and indeed, in legal cases the profession of men is as often self-identified as farmer (*agricultor*) as rubber tapper (*seringueiro*) ([Wolff, 1999](#)). In one of da Cunha’s most dramatic evocations, “Judas Asvero”, he describes a tapper making the effigy of Judas, a poignant symbol of the isolation of tappers, as his children play around him ([Da Cunha, 1906](#)). Da Cunha notes the casual cruelty toward women: his boat passes a dead women in a field, the off hand dismissal of loyal common law partners, and the harems of the Rubber Barons. Even “coffee table” books produced by local photographers during the boom showed women on the rubber frontier. The Paraense photographer [Facao \(1906\)](#) *Album do Acre* provided pictures of Acre’s revolutionary heroine, Angelina Gonçalves Sousa, and of various *seringais* that included wives (even women riding side saddle on beautiful mules), female servants and children. The first census of the Upper Jurua in 1904 notes that some

27% of the population was female. More than 50% of the civil cases were brought to the courts by women (Wolff, 1999).

A new historiography of women in the Amazon is emerging. Traveler commentaries such as that of Edwards (1847) show women and children collecting, processing and, in Edwards' case, making rubber shoes for export. Elite observers, such as Mrs. Agassiz whose husband founded Harvard's Natural History Museum and who traveled in Amazonia under the aegis of Dom Pedro II, reflected on the impact of the military draft for the Paraguayan War, which put all the burdens of agriculture, collecting and marketing on women and children (Agassiz, 1868). Studies of the historical role of women and their representation using an array of documents, ranging from court cases, travelers' accounts, newspaper sources and oral histories, is actively excavating a gendered regional history that includes the image of black women (Rocha de Almeida, 1996), those of "low repute" (Trinidad, 1996), and rubber tappers on the Jurua (Wolff, 1999; Simonian, 1996). This new scholarship provides insight into the culture of the regional economy that has been almost entirely lacking.

More recently, the influence of Brazil's women's movement in leftist political programs produced a self-conscious effort to include at least some rhetoric about women in virtually all the policy statements in Amazonia's labor movements such as CUT (Centro Unico dos Trabalhadores), PT (Workers' Party), STR (Sindicato de Trabalhadores Rurais), and CNS (Conselho Nacional de Seringueiros) and more recently the Movimento sem Terras (MST). Typically the documents focus on alliances³ and remain largely on the rhetorical and political plane (Deere, 2001). All worker movements in Amazonia claim women members. In rural Amazonia, women have taken part in the showdowns (*empates*) where extractors faced off against deforesters, in land occupations of the MST, and in public manifestations. Their political participation and influence remains overall fairly weak and poorly documented, although studies of emerging political mobilization emphasize women's empowerment with the rise of more rural organization and syndicalism (cf. Campbell, 1996; Deere, 2001; Hecht, 1992; Maneshchy, Alencer, & Nascimento, 1996). There are also spectacular exceptions to the "rhetorical" versus substantive role of women in Amazonian politics, such as Marina Silva, the rubber tapper and syndicalist who became the Senator from Acre, and then Minister of Environment under the Worker Party President, Ignacio "Lula" da Silva. Under increasing decentralization and local community development efforts, women's political participation does seem to be increasing, even as the empirical analysis of the women's role in regional economies remains relatively sparse.

Women remain shadowy figures in the popular understanding of extractive economies, in spite of documented studies that clearly show women as actors in extractive economies in land management (Anderson & Ioris, 1992; Kainer & Duryea, 1992; Kainer, Schmink, Leite, & Fadell, 2003), collecting (Anderson, 1988; Anderson, Balick, & May, 1991; Campbell, 1996; Hecht et al., 1988), processing (Hecht et al., 1988; Clay, 1997), and marketing (Padoch, 1992). In Brazil's North, the number of Babassu collectors (450,000 families), the Brazil nut processors and collectors throughout the Amazon (including Bolivia, Peru and Ecuador) number easily around 25,000, and intensive extractors of palm heart and palm fruits on the lower Amazon (20,000) include a vast female labor force within the forests.

3.2. From Demonization to Deliverance: The New Narrative of Extraction

The practices of the modernist and conservation visions of the Amazon that began to be implemented in the mid-1960s relied on enclosure and rational planning and were carried out under the aegis and power of the authoritarian state. To this juggernaut of regional transformation, extraction emerged as a significant discourse of political resistance that evolved from a complex history of human rights, liberation theology and rural labor organizing. It also reflected an emergent populist conservation movement that viewed tropical landscapes as artifacts of human management, rather than the pristine nature evoked by most conservationists, and emphasized forms of sustainable forest use.

The ideological foundations of modern extraction emerged as a counter-narrative to both of the main models of land use on offer and contested both conservation zones empty of population and the blasted and deforested landscape of ephemeral cattle production. To compete with the other models, and to rehabilitate extraction as a viable and reasonable activity, it had to challenge the premises and the practices of the dominant modes of both conservation and development, within the dominant frameworks of the ideologies of science, economics and planning. It required a means of developing a "forest path" that could reconcile and recast the powerful forces that were bearing down on forest and traditional peoples, both bent on excluding them from their traditional lands.

The rehabilitation of extraction required the idea that this economic formation, unlike the prediction of Bunker, could indeed transform itself and embrace the social relations of capitalist economies. That is, the rubber tappers were interested in the *modernization* of their economies by

developing the institutional structures (cooperatives, markets, etc.) and (waged) social relations of modern capitalism in lieu of mercantile capital, but they would do so within an “ecological equilibrium” framework that did not require deforestation. This approach has been baptized by some analysts as “Neoextractivismo” (de Rego, 1999). At the mythical level, instead of El Dorados or Lost Edens, the rubber tappers and other traditional peoples evoked the powerful, romantic images of tropical Arcadias – a benign forest form of land occupation calling up visions of a more harmonious time when economy and ecology coexisted. In this view, “nature” was part of a dialectical ecosystem with people inserted into them, creating and protecting them through their stewardship. In this sense, forests were neither obstacle nor antidote to development (the positions embraced developers and conservationists) but rather the result of, and a new platform for, autochthonous versions of development. They simply and brilliantly were able to disarm the critiques of each side of the debate by presenting a forest model of modernization. In communicating this message they had considerable help, but it was an extremely powerful one as a means of unblocking the ever more rancorous Amazonian conservation and development impasses, presenting a reworked past as a viable future.

While initially focused on the Amazon’s indigenous populations who were under massive and aggressive threat, the idea of the inhabited forest gained ground through an increasing amount of research on the region’s caboclo and traditional populations (cf. Nugent, 1994; Padoch, Ayers, & Pinedo, 1999; Raffles & Winklerprinz, 2003). Extractors were thus able to argue that, rather than a *tabula rasa* or a world without history, the region was deeply imbued with deep traces of its native and mestizo past, and that development approaches could build on these deeper historical structures, whether intellectual or tenurial. Thus, a hybrid science that melded the insights of local knowledge systems with the techniques and methods of modern sciences could be developed to improve management, production and sustainability. The emerging comparative research on indigenous knowledge systems began to suggest that the management approaches of traditional peoples were at least as good as the failing agricultural models that were being implemented throughout the Basin, and in many cases much better.

As a political model, it envisioned forest peoples engaged in the extraction of non-timber forest products – rubber, nuts, palm products, etc. within ERs, areas that upheld traditional access rights but ratified in a modern cadastral way. These were presented as a land reform for forest peoples (CNS, 1988; Hecht & Cockburn 1989) and focused on a kind of forest-based development that was based in participatory political processes (as opposed

to previous authoritarian practices), and a model of conservation *with* development, and one based in social justice (a weak point in the other models). Its cultural component included the “recovery” of local histories (Raffles, 2002), the preserving of traditional life ways and the local and indigenous knowledge within it, and the elaboration of grassroots versions of social transformation.

As an economic proposition the strategies for ER development in the 1990s were influenced by the important intellectual contribution supplied by the Workers’ Party, whose origins lay in the uprisings in the factories of Sao Paulo. Thus, the earlier conceptualizations of reserve development incorporated an essentially industrial model in their approach to region. The ER modernization programme argued that elements that inhibited development (*aviamento*, unequal exchange, precapitalist labor relations) would be transformed into recognizably modern forms within a framework of the new state and cadastral tenurial regime. While the architects of these ideas were inspired by egalitarian/socialist frameworks in the distribution of resources and political processes, the system itself would have to operate within the confines of the larger capitalist system.

For the National Council of Rubber Tappers (CNS), economic proposals for ERs relied on a range of strategies. In terms of marketing – the site which many viewed as the key area of surplus extraction via *aviamento* and its inherent unequal exchange – the CNS argued for the elimination of the *aviamento* in favor of consumption as well as production cooperatives that would, in principle, increase producer incomes by eliminating middleman markups. Next, “green marketing” was a priority so that products could exceed average global prices because of the ecological and socially desirable context of the reserves. In addition, a kind of “branding” associated with the international appeal of the rubber tappers and tropical conservation would be possible. Third, increasing the value added via the export of more elaborated products was also seen as central economic strategy for enhancing rural incomes. Rubber factories would be too costly, but the industrialization of Brazil nuts, whose processing factories stretched from the Andes to Belem, were an important option, especially in light of rising Brazil nut prices throughout the 1990s. The main nut traders, the Belem-based Mutran family, processed most of the Brazilian Amazon production, and thus had monopsonistic control on the prices paid to producers. By creating a means of adding value by processing and exporting through their own factory and into niche market producers, it was argued, they could capture more of the income associated with their products. In the case of Brazil nuts, extractors would in theory enhance their return by a factor of 10 (IDE, 1991).

Table 1. Brazilian Federal Extractive Reserves.

| Name | State | Created | Area (ha) | Population | Activity |
|--------------------|--------------|------------|-----------|------------|-----------------------------|
| Alto Jurua | Acre | 1990 | 506,186 | 3,600 | Rubber |
| Chico Mendes | Acre | 1990 | 970,570 | 7,500 | Rubber, nut collection |
| Rio Cajari | Amapa | 1990 | 481,650 | 3,800 | Rubber, nuts, copaiba, acai |
| Ouro Preto | Roraima | 1990 | 204,583 | 700 | Rubber, nuts, acai, copaiba |
| Ciriaco | Maranhao | 1992 | 7,050 | 1,150 | Babassu |
| Pirajubae | Sta Caterina | 1992 | 1,444 | 600 | Fish |
| Tocantins | Tocantins | In process | 9,280 | 800 | Babassu, fish |
| Mata Grande | Maranhao | In process | 10,450 | 500 | Babassu, fish |
| Quilombo Do Frexal | Maranhao | In process | 9,542 | 900 | Babassu, agriculture |
| Medio Jurua | Amazonas | In process | 600 | 600 | Rubber, fish |

Beyond this modernization program, the reserves were imbued with a kind of post-modernist luster: the juxtaposition of archaic and pre-modern production with the progressive social movements, the use of high-tech technologies (computers, GPS, satellite mapping) with models of local knowledge, advanced environmental paradigms coupled with a sophisticated understanding of “Green” globalization (international alliances, marketing strategies and media). The politics of the period coupled with growing international concern resulted in the establishment of over 2 million as ERs. [Table 1](#) outlines the main areas of ERs, their populations and main products.

3.3. From Modernization to Neoliberal Development

The reasoning behind the transformation of extractive economies was compelling and led groups such as Ben and Jerry’s Ice Cream and Cultural Survival to provide seed funds for the development of a small-scale Brazil nut factory in the village of Xapuri, located on the Acre River. The start-up funds attracted several other donors who provided monies for technical support, working capital and machinery, as well as gifts in kind. The enormous publicity that had surrounded the rubber tapper movement, and the idea that they were actually implementing a small industrial project, caused much excitement. The emerging Brazil nut cooperative and the processing factory all associated with the “Projeto Castanha” or Brazil nut project

captured everyone's enthusiasm. Indeed, local politicians allied with the movement pointed to the "Projeto Castanha" as a model of Workers' Party development which would bring economic benefits with environmental sustainability to the most marginalized classes of the Amazon. What was especially interesting about the factory was its emphasis on women workers as the new "industrial" workforce in the heart of the Amazon. The factory with its constellation of funders was the palpable sign of the ability of the National Rubber Tappers Council to actually get things done through innovative coordination of public, private and NGO efforts with a progressive social agenda, and one that modernized at least a few of the parts of the production processes. Implemented at the height of rainforest "craze", the project seemed the incarnation and model for sustainable, equitable development.

The factory represented the modernization of production within globalization's niche economies. By changing the terms of trade through external commerce, cooperatives, and their unique capacity to "brand" their product, the distributional outcomes would benefit local cooperatives rather than the historical mercantilists. This "modernization" effort seemed to transform the extractivist context in one rosy swoop. However, several processes intervened, most importantly the rise and diffusion of neoliberal ideas of decentralization, efficiency and market-based conservation approaches. Within 3 years, this dramatic and highly publicized "factory" story was on the wane, eclipsed by a new narrative, essentially neoliberal in its focus, that condemned the previous strategy as vulgarly centralized and classically industrial, contaminated with urban bias when compared to the new, forest-based decentralized development. Neither the old or the new decentralized "Projeto Castanha" paid much attention to the social context of workers. Both viewed the production processes and their local economies as "black boxes", and thus never assessed the relative impacts of the project on its rural or urban female labor forces. Infused with classical development theory ideologies of rural underemployment of women, enthusiasm for "in forest" employment, and the uncritical application of "efficiency" criteria, CAEX, 1993 (The AgroExtractive Cooperative of Xapuri, the export coop) dismantled the "urban" factory, ultimately exchanging an adult urban female labor force for a rural labor force of what ultimately became child piece workers.

3.4. The Castanha Projects: Trouble in Paradise #1: The Factory

Amid great fanfare, the Chico Mendes Brazil nut-processing factory was inaugurated in November 1989. Seventy people were initially hired at the

new factory, and it thus became the largest employer in Xapuri, and one of the largest in the whole state of Acre. Many of the women who were its main labor force were from families who had been pushed off the land during the very violent land conflicts of the 1980s. In addition, older men no longer able to work in the rubber forests also found employment in the factory. The factory thus was seen as having an important social as well as economic function for those who had been dispossessed. Besides the crackers, the factory included two managers, eight classifiers, two packagers, one accountant and two administrative assistants, as well as four janitors and two guards for a total factory staff of 70. In addition, the Castanha cooperative itself had a centralized staff housed with the Rubber and Consumption cooperatives where logistical, financial and policy decisions were made. After a 3-month training period, workers were paid a minimum salary (about \$50.00/month).

The model of the new factory imitated technologies and production organization practices widely found in Brazil and Bolivia. Brazil nuts begin to come out of the forest in January–March until about mid-May. They are stockpiled and processed for the next 6–8 months. Nuts are first dried and heated to release the moist nut from the shell. Then they are either autoclaved or placed in a water tank to soften the otherwise very hard shell. The nuts are cracked on work tables with simple individual mechanical cracking machines by a predominantly female labor force that carries out the repetitive task of cracking and the initial separation into rough categories (rotten, broken, first category). Nuts are then classified into the commercial categories, further dried, and vacuum packaged for export.

Various problems emerged right away. The first was the structure of the Brazil nut harvest itself, and the fact that the factory was often idle from 2 to 4 months because of lack of raw materials. The next, more central issue had to do with Brazil's labor laws: the employer must pay the social security costs of the worker, which is calculated at 65% of the salary. It is extremely difficult to hire or lay off people periodically, so payrolls had to be met whether the factory was running or not.

Productivity was not as high as hoped. By instituting a 10 kg/day quota (which produced about 3.3 kg of finished nuts), profitability could be maintained. But since the workers were waged, many did not come to work if their 20-day quota was reached prior to the end of the month. In addition, workers began to organize. Given the largely female nature of the workforce, there were demands from workers for child-care facilities at the factory, which they argued would reduce absenteeism. The only techniques for increasing productivity focused on fines and small financial incentives as

a way to discipline this labor force. No attempt was made to improve the technology, work tables or backless benches where the factory workers toiled. CAEX was often tardy in its payments to workers, which during Brazil's hyperinflation in the mid-1990s of close to 600%, reduced the wages to pathetic sums, even as CAEX nuts received premium prices on the world market.

However, CAEX also had to address the real question of global competition: Bolivian nuts arrive in the world market at a cost that is 42% less than that of the CAEX product using roughly the same techniques, paying lower wages but large state-supported social benefits, and with much lower storage losses since nuts were stored in warehouses in chilly, arid La Paz where post-production losses were minimal. In Xapuri, the costs of the factory labor force with benefits that produced nuts was seen as a key problem. Barely had the factory started up before attempts began with piecework subcontracts in Xapuri to supplant the nascent industrial enterprise. After the first year of operation, CAEX began to explore a strategy to decentralize production as a way to avoid paying the 65% benefit cost. To initiate contracting, the key legal mechanism would be to transform the waged workforce with its social costs into an "association" which could then crack nuts on a piece work, "putting out" basis. The cooperative began working with a labor lawyer in order to see how the factory could be transformed from a waged to a piecework outfit. This would require the dismissal of the entire cracking staff, and then sub-contracting to selected workers. Needless to say, factory employees were outraged, and this approach undermined not only their livelihoods but also an emerging political autonomy, which seemed at odds with the pro-labor rhetoric expounded by the Coop's masters. This ill will further oriented the decentralization strategy away from the village,⁴ in favor of decentralized production located in the forests themselves. While some analysts might have viewed this as a "runaway shop", the language of decentralization, which was especially appealing after a generation of highly centralized, authoritarian regimes, coupled with several efficiency and social welfare arguments (mothers could be near their children), enhanced the desirability of this approach.

3.5. Trouble in Paradise #2: Decentralized Production

The logic behind the shift to decentralized production was clearly oriented to reduce personnel costs of nut crackers, but the justifications were presented as part of an efficiency, decentralization, technology and rural

development package. Infused with neoliberal ideas on production, the castanha project leaders embarked on the new approach. In principle, decentralized processing would:

1. Reduce transport costs (the heavy shell and water of the nuts account for some 60% of its unprocessed weight);
2. Reduce losses – nuts that sit in the shell for a long time mold. More rapid processing would improve the general quality of nuts and reduce storage losses;
3. Permit better utilization of “excess” labor residing in the forests;
4. Improve the income of forest peoples; and
5. Create jobs within ERs, not in their villages.

Indeed, in the most delirious portions of the project literature on decentralization in ERs, advocates foresaw 180 direct beneficiaries, and that 900 collector families would gain improved incomes from the decentralized process (IDE, 1991).

Thus, not only would nut producers receive a better price, but the cooperative itself would run a more profitable, sleeker operation. Rural employment would be generated and a form of decentralized development would emerge. This approach fit well with the national eagerness for democratization and decentralization as a counterweight to the traditionally highly centralized and corrupt national economic structures. It was hoped that 50% of the production of the Brazil nut cooperative would be processed in four “microusinas” (small factories) with an estimated average productivity of 12 t a month. Forty people would be directly employed in cracking in these decentralized operations, with employment also generated in transport, supervision, etc. The upper tiers of factory management (accountants, classifiers, etc.) would be retained, as well as the central cooperative management personnel. The factory would still provide final processing if necessary, grading, fiscal control, and export packaging of the finished product. (Fig. 1)

The new forest processing would follow three main lines of organization. In the *seringal*, micro, mini and household cracking were possible. In the microusinas, there would be work stations for some 10 crackers, plus a manager and a helper. Nuts would come to the microusina, basically a storage shed and processing barracks consisting of tables and cracking machines. Then nuts would either be processed on site or distributed for mini and “household” crackers. In the miniusina, a complete system of dryer, wetting tank and final drying oven would be installed on a multi-family *seringal* so that extended families could process their own nuts, giving the

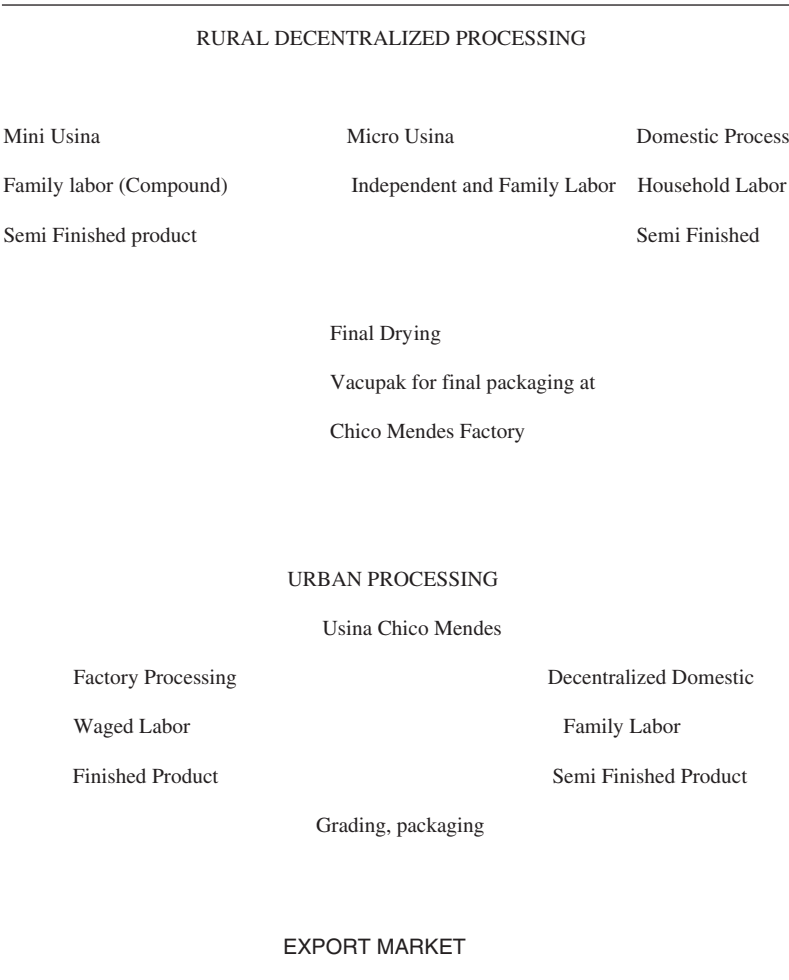


Fig. 1. Pathways of Processing Brazil Nuts.

final processed nuts to the micro factory for transport to the Xapuri factory and final sale. Household crackers were provided a water tank, drying platform and cracking machine. Processed nuts would be transported back to forest factory and then again to the main factory in Xapuri for export. All work was to be on a piece work basis. In urban areas, household cracking would predominate. This involved receiving nuts in the shell that had been

dried and moistened, and thus were ready for cracking, but was never extensively developed.

This optimistic scenario, however, was deeply at odds with the rural reality.

4. BRAZIL NUTS AND WOMEN IN DEVELOPMENT

The late 20th century “discovery” of extraction economies focused on a masculine re-imagination of forest extraction at the height of the boom in the most remote parts of the basin, and thus was at odds with the everyday reality of these economies that regularly included families, women and children engaged in agriculture as well as extraction. This imagery has obscured the very intimate links between gathering and agriculture that has prevailed in Amazonian livelihoods for millennia. The regional economic volatility appears to result in flexible emphasis in land uses between agriculture and extraction, both in the past and today.

Most extractors are members of families. These families participate in every extractive activity and carry out the agricultural work, animal management and domestic processing that makes the reproduction of life as a forest extractor possible. Tapping, which also includes activities necessary for maintaining the trees and *estradas* (rubber paths) involves significant family effort. The image of the lonely, fever-racked male tapper, belies the fact that extractive activities of all kinds are part of the cash and subsistence contributions of women and children, as mentioned by the observant Mr. Edwards in 1847.

4.1. *Structure of Income and Labor Deployment*

The emphasis given to rubber tapping reflects the historical origins of the occupation of the area at the end of the 19th century, the importance of the tappers in the forest peoples’ movements, and the reality that it is the activity most dominated by men. While rubber’s symbolic meaning in the region is tremendous, the economic role in regional economies is quite different. Surveys in the Acre Valley and in two ERs (Table 2) reveal a few important features: first, the structure of income formation varies among sites (and within *seringais* themselves) in terms of the most significant source of income, but agriculture is the largest income source on average (about 38%), a figure similar to those among extractors in Babassu in Maranhao

Table 2. Income Formation in the Vale do Acre (In Dollars and as a Percentage of Total Income).

| Product | Extractive Reserve | | | Mean |
|-------------|------------------------|---------------------------|---------------------------|------------|
| | Cachoeira ^a | Chico Mendes ^b | Vale Do Acre ^c | |
| | Return (US\$/%) | | | |
| Rubber | 288 (20%) | 388 (44.7%) | 221 (35%) | 299 (33.3) |
| Brazil nuts | 482 (34%) | 124 (24.6%) | 157 (25%) | 254 (28.3) |
| Agriculture | 648 (46%) | 144 (29.5%) | 240 (38%) | 344 (38.4) |
| Mean total | 1,418 | 656 | 618 | 897 |

Sources:

^aUCLA /IEA/Funtac (1995).

^bConselho Nacional de seringueiro (1992).

^cCIDA (1992).

(Hecht et al., 1988) and forest households in Ecuador (Thapa, Bilborrow, & Murphy, 1996), and Peru (Escobal & Aldana, 2003). Next, sites with more Brazil nuts have substantially more income. This income portfolio is significant, because it emphasizes the diversity of income-generating activities and suggests that, although there may be complementarity among the different activities, there is also the potential for competition for labor time.

4.2. The Gender Division of Labor on the Seringal

The division of labor on the *seringal* reflects those of gender and age, but in reality the lines are a good deal more fluid. The contribution of women in various productive activities associated with the reserves is largely under-reported, and the contribution of child labor, especially that between the ages of 10 and 20, is almost completely invisible in the published statistics on labor deployment, even though families in the reserves were young, with 32.3% of the population under the age of eight, and 27.2% younger than 17. The average family size on the seringal is six people (CIDA, 1992).

Families operate in a Chayanovian manner where the greater number of children permit one to exploit more completely the resources on the site. If one lacks children, or if they are too young to effectively work in extraction, share crop relations known locally as “*a meia*”; contractors (*empreiteiros*), or wage workers can be employed. For extraction, *meeiros* and *empreiteiros* are preferred, while short-time waged worker can be hired if necessary in

agriculture. In addition, worker families can also be *agregados* – affines or fictive kin who are given access to resources and are permitted to build a house or live in an existing building, but who also contribute to the main *seringal* family through labor corvees and products in kind. These may be newly married family members or families with very young children. While a detailed description and discussion of the gender division of labor are available in a different paper (Hecht, 2005) those results can be summarized as follows:

Table 3 compares the labor requirements in the main extractive and agricultural activities. Agriculture, largely dominated by women and children, is the most demanding in terms of labor needs, followed by rubber and Brazil nuts. What the table also emphasizes is the large contribution of women's and children's work in these activities (70% overall), which does not include the activities associated with household reproduction and subsistence extraction (hunting, fishing firewood collection, fruit collection, drawing water, etc.). As Deere and León (1987) have noted, the time demands of household reproduction are consistently under-represented. What is clear is that production of forest products and agriculture in extractive economies are highly dependent on family labor, with women and children supplying roughly half the labor in extraction and 91% of the effort in agriculture. The table reveals the large demands on female time, even as it excludes those activities associated with household reproduction. This was the context for the forest development of the various Brazil nut projects.

4.3. Decentralized Production and the Rural Economy

Women viewed decentralized nut processing with considerable interest, because it appeared to provide a mechanism through which women and girls

Table 3. Labor Time, Division of Labor and Returns to Labor.

| | Task Days | Production Activities | | | | | | % F + C |
|-------------|-----------|-----------------------|-----------|-----------|----------|------------|-----------|---------|
| | | MD | Return TD | Return MD | Male MDs | Female MDs | Child MDs | |
| Brazil nuts | 97 | 201 | 4.96 | 2.4 | 98 | 28 | 75 | 51 |
| Rubber | 155 | 225 | 1.85 | 1.13 | 117 | 12 | 96 | 48 |
| Land prep | 76 | 141 | – | – | 41.5 | 37 | 63.5 | 71 |
| Agriculture | 261 | 425 | 2.48 | 1.52 | 40 | 140 | 245 | 91 |
| Total days | 513 | 992 | | | 296 | 217 | 479 | |

could gain control of cash. Given the almost complete masculine control of funds from the sale of rubber and unprocessed nuts, and that most of their agriculture *and* household production labor is not compensated, this dimension of the domestic cracking was extremely attractive.

However, things in the forest factories were not running smoothly. Productivity was much lower than that of the now closed central factory. Forest crackers were only able to process about 6 kg of nuts per day with an average work month of 11 days, rather than the predicted 20 days. This compared poorly with the 10 kg/day minimum over 20 days for the Xapuri factory. Attrition of workers was very high. Labor discipline was a real problem because of the range of demands on women's time, the distances many had to walk to do the work and payment problems. The payment delays were a regular feature of the microusinas (as they were at Chico Mendes), which under the hyperinflation of 600% a year strongly devalued the effective purchasing power of the funds to those cracking, while lowering the costs of the processed nuts to the factory to practically zero – in essence reducing the labor value of the processed nuts to a fraction of its purported costs, an enormous site of surplus extraction. These payment delays could be extensive, in some cases as long as 3 months. The tables and seats were extremely uncomfortable for carrying out the tedious task, and backaches and neckaches were common.

The central feature of the microusinas was their social impact. While viewed as a positive feature of the landscape at first, and while interest in acquiring machines was initially high, the adult women soon ceased working in them. Intended for female labor, on the urban model, the usinas largely employ adolescents and children at the expense of their schooling. The poorly informed understanding of rural production economies and more specifically the demands on female labor completely underestimated the competing claims on women's labor time. Ironically, it was the urban context where employment was most needed, because of the lack of subsistence and income alternatives.

4.4. The Opportunity Costs of Labor in Rural Areas

While much conventional development theory is predicated on the idea of rural surplus labor, the Seringal economy operates in a context of labor scarcity. Women engage in extraction, agricultural production and household reproduction. What then are the comparative returns to the various activities compared with nut cracking? The miniusina was buying in

unprocessed nuts at around \$0.23/kg and selling the finished product to the cooperative at between Cr 950–1,500/kg. The payment to workers was \$0.63/kg of finished nuts. The average production for the rural factory per worker was 6 kg of unprocessed nuts per day or of 2.1 kg of finished nuts per day, generating a return of between \$1.32 and \$2.00/day. Thus the monthly 11 days would generate a wage of less than \$22/month, about half the minimum wage. What were the returns to the other activities that engaged women's time? As a monthly return, cracking was the most poorly paid, followed by agriculture. Agricultural effort is essentially unpaid, so we determined its value by shadow pricing (Table 4).

When one takes into consideration the domination of male labor in the first three more lucrative activities, the late payment for the processed nuts, the fact that relatively less productive labor (young adolescents, physically incapacitated adults) is being siphoned into this activity when families are large is not surprising. Even so, household labor was regularly pulled into other tasks when needed, as the 11 workdays a month clearly reveal.

4.5. Mini and Domestic Nut Production

The seringal family is hierarchical, with senior men and women given the power to organize production, to capture the returns that accrue to the family, and to make basic decisions for their allocation. In domestic production, the travel time to the main factory is avoided, and the processing can be more easily integrated into domestic tasks. For senior women able to deploy the labor of daughters-in-law and teenage girls, domestic and mini usina production – small factories of two or three cracking machines on a family compound – provided useful cash supplement; for the girls, of course,

Table 4. Returns to Activities on the Seringal.

| | Day (Per day) | Monthly ^a |
|-------------|---------------|--------------------------|
| Day labor | 2.06 | 41.00 (highly ephemeral) |
| Rubber | 1.13 | 24 |
| Brazil nuts | 2.40 | 40 |
| Agriculture | 1.52 | 54 |
| Cracking | 1.32–2.00 | 11 |

^aThis is calculated on the total returns to the activity using Table 3 as the baseline for extractive activities and agriculture, and CAEX data on decentralized cracking payments to the seringal.

it was yet another set of activities they are obliged to do as household members, thus consolidating the wealth of the central family. In small families with young children, the added labor time in an already extremely burdened day made the domestic form of processing extremely oppressive, often adding as much as another 5 h to the very long workday. These were the effects for individual women and girls, but the larger program itself had implications for patterns of differentiation among the seringais themselves.

4.6. The Social Implications of Rural Decentralization and Differentiation

The image of an unstratified seringal is a myth. During the rubber boom, the condition of workers was probably all roughly similar, but autonomous rubber-tapper communities are highly differentiated, reflecting patterns of life cycle as well as those of resource distribution and accumulation. While different household income strategies may evolve depending on resource endowments, available labor and other economic alternatives, there are also very sharp differences in wealth between households. This difference is expressed in the volume of products sold, control over the movement of commodities into and out of the seringal, and also in the number of share “croppers”, contracted workers, and associated “agregados” and extended family members residing on the colocacao. In Cachoeira, 35% of the resident population on the colocacoes are agregados, meeiros and contract workers. That is, 35% of the population is functionally landless.

In ER Cachoeira, there are sharp differences in production that are obscured by the use of averages. For example, the highest producing colocacao of rubber generated some 3,000 kg, while the other end of the spectrum includes one household which produced only 30 kg. About 10% of the producers sold 20% of the total production of the reserve. In the case of Brazil nuts, 43% of the production is derived from only 10 colocacoes. This lucrative activity is highly concentrated among a small number of households with the ability to capture this wealth and relies on the deployment of all forms of labor: meeiro, adjunto, and empreiteiro as well as able families are all applied to this activity.

A quick comparison of the production data of extractive products at Fazendinha from households initially involved with the first micro usina compared to the ER Cachoeira average is shown in [Table 5](#).

The table clearly documents the very high production of Brazil nuts in the mini- and micro usina households – double and triple the reserve average. The households of Nova Esperanca and Fazendinha included meeiros and

Table 5. Average Production of Extractive Goods at ER Cachoeira Compared with Beneficiaries of Projeto Castanha.

| | Rubber | Nuts (latas) |
|----------------------------------|--------|--------------|
| ER mean | 668 | 351 |
| Fazendinha families (Microusina) | 558 | 603 |
| Miniusina | 575 | 957 |

Source: CAEX documents.

agregados. The mini usina households were characterized by agregados/meeiros/resident relatives in all cases. The main beneficiaries were thus among the better off of the ER Cachoeira. There is a great deal of rationality to placing processing where there is product, but the net result of the decentralized intervention was to enhance differentiation of peasant households in the seringal and concentration of wealth.

The location of decentralized processing followed a rationale that focused on areas which were deeply politically organized and loyal to CNS, and where some transport infrastructure already existed. Most of the workers at the processing plant were kin.

The families who provided labor for the construction of the micro usina also came to dominate the "work stations" as well. Thus, in one rural factory, five of the 10 nut-cracking machines were initially dominated by one family, which also had considerable influence over who else could get access to the micro usina, and tended to distribute "position" along kin lines. While there is a great deal of consanguinity in the seringal, a cynic might argue that the micro usinas had a dimension of political patronage as well. More critically, the benefits of the microusinas were highly concentrated in just two large, comparatively wealthy families, and the distribution of miniusinas followed a similar pattern. Thus, rather than broadly improving rural incomes, it tended to consolidate the gains very narrowly among comparatively wealthy families, most of whom were quite closely related.

4.7. The Decentralized Model and its Future

Seringal life involves tremendous effort of all who live and work there to make ends meet and to assure the necessary income and subsistence. Women and children labor in all activities on the seringal, and in the activities that are not remunerated. For this reason the arrival of a source of cash income that could possibly be controlled by women excited a great deal of enthusiasm.

This dimension of the cracking machines is very positive, and was the reason that the microusinas were initially viewed so favorably. However, the time demands and the pay rate do not compensate for the value of time and their obligations in other activities of production and household maintenance. As a consequence, women withdrew their labor.

Decentralized production was promoted partially on the ideas of enhancing the use of the female rural labor force. As this chapter suggests, the strategy overburdens an already quite taxed workforce when the demands of all activities are taken into account. Participants in the project noted that payment was often late, transport of material irregular, and packing supplies were insufficient. In addition, participants who are adults do understand that they are carrying out the same work as the factory but receiving no social benefits. Workers in the project also had no security at all. Rural incomes were raised slightly, but these benefits were concentrated. In terms of any broader linkages in the regional economy, the impact was very low. Ironically, this strategy was chosen in lieu of one where these activities had high positive impacts.

5. THE URBAN SOCIAL IMPACT

The decentralization model that was promoted by the CAEX was predicated on the idea that the value of rural labor is zero and that there is a great deal of surplus labor, which was not the case. On the other hand, urban unemployment is extremely high throughout the Amazon (Browder & Godfrey, 1997). The reality is that, under the conditions of contemporary Amazonian development, rural to urban migration has been extremely high, and job creation in the formal as well as informal sectors is now stuttering to a halt. In villages such as Xapuri, jobs are given through the mayor's office, a few commercial stores, and some day work in agriculture as boas-frias and domestic work. For women, the economic opportunities were extremely limited. The Xapuri labor force was almost entirely composed of former forest dwellers forced by violence, abandonment or other personal catastrophe to the city, where they lived extremely modestly on the minimum salary, credit, garden produce, remittances from family members, taking in laundry, preparing snacks and pooling income. About 20% were single mothers, and there were also a few older men who had also fled the forest during the land wars.

Without question, this factory was seen as a major social good and became the largest employer in Xapuri. While its productivity was not

competitive with factories in Bolivia, its working conditions and benefits were not comparable either. However, this factory, while it operated, was capable of generating 100,000 t of Brazil nuts per year and became a symbol of progressive sustainable development with forest conservation.

The social costs and lack of discipline were widely cited as the reason this unionized form of factory organization had to be ended. Barely had it begun to operate before schemes to dismantle the unionized labor force were afoot, a rather strange position for a group associated with the Workers' Party to adopt. Finally, the capital for the purchase of Brazil nuts provided by the Austrian government was used to pay the social costs to the workers and they were all fired. The cooperative maintained a fiction that, because they had spent a great deal of money buying nuts (and then, ironically, selling them to the Mutran family for processing), they were unable to pay for nut processing. Yet, they constantly led the workers on, explaining that they would open in a few weeks, that they would call every one to work next Monday, etc. This lack of honesty was financially devastating to the female labor force, which waited to return to work. Accustomed to not working at the factory for 3 or 4 months a year, they had developed systems of credit with local merchants, and had devised numerous small-scale income earning strategies that were both transitory and poorly paid, but would maintain the household for 3 or 4 months until the cracking period started up. Keeping this labor force on a string had several very negative effects. First, no real economic plan at the level of the household could be sought, because it was thought that they would eventually return to work. Therefore, borrowing continued, purchasing "a fiado" proceeded, and financial promises were made, all of which could not ultimately be kept. Second, the ability to hold livelihoods together between cracking periods was generally fairly limited. To do so for 3 or 4 months was possible, but any longer than that was quite difficult. By May, 7 months after the golden handshake, some 15 workers had left Xapuri for points such as Rio Branco and Porto Velho. Four had returned to the *Seringal*. In essence, slightly more than 30% of its trained workforce had left the city. Since a 3-month training period had gone into worker preparation, this investment in human capital was lost.

At the level of the economy of Xapuri, the nut crackers' modest income was spread among the local micro enterprises which included the tiny barracks that provision the humble neighborhoods where these ladies resided, sellers of modest school supplies and children's clothing, local seamstresses, babysitters, etc. The linkages to the regional economy were much wider than those characteristic of the *seringal*, where the returns to the cracking were largely spent on provisions from the Cooperative, thus concentrating

expenditures rather narrowly. The monthly injection of U.S. \$2,450 into the poorest strata of the economy had broad linkages with the modest businesses of the informal sector of Xapuri. These linkages were dispersed through the poorer sectors of Xapuri's economy and had a very positive impact among the poorest sectors of the urban economy, contributing to the beneficent image of the cooperative and CNS. The shift to the decentralized forest model had its allures, but were the women and the social benefits paid to them really the source of the financial problems with the cooperative, or were other factors at work? (Tables 4 and 5).

5.1. *The Cost of Labor*

The promotion of the decentralized model was justified on three main grounds: worker productivity, quality and the factory costs. Table 6 reviews the comparative productivity of the workers.

Much of the promotion of the decentralized model emphasized efficiency and mentioned that decentralized productivity exceeded that of the factory counterparts. Factory production per worker was 10.5 kg/day or 210 kg/month. The decentralized processing operation in the forest, however, was far less productive than the urban crackers; total per worker productivity was only 28% of urban workers. Twenty three workers – roughly equal to half the CM workforce – produced only one-tenth the total commercial product. Of the data on worker productivity provided by ECOTEC (1993),

Table 6. Worker Productivity in Decentralized and Centralized Processing.

| | Microusinas ^a | Chico Mendes ^b |
|---|--------------------------|---------------------------|
| No. of Workers | 23 | 48 |
| Total Annual Production (finished nuts) (kg/worker) | 9,340 | 95,760 |
| Daily ^c | 6,7 | 10–16 |
| Monthly ^d (kg/worker) | 70 | 249 |
| Annual Production per Worker (finished nuts) | 406 | 1,995 |

^aData from Ferreira (1993).

^bData from CAEX Annual Report (1993).

^cUnshelled nuts.

^dCalculated by months per year operation. Microusinas only operate for 6 months. CM is calculated on an 8-month base.

the consultant group that developed the decentralized processing system, only one worker in 1 month ever reached 10 kg/day, the production base of the factory.

5.2. Costs and Accountability

In the decentralized system, the monthly cost of the managers and helpers was \$823, while workers received \$460, for an average monthly production of 1550 kg of finished nuts, calculated on a 6-month operation. This gives wage cost per kg of nut of 0.83 in the decentralized system. In the urban factory, the wage bill for crackers plus benefits was generally around \$4,000/month, usually between 5 and 10% of the total factory cost. With a monthly production (calculated on an 8-month production cycle because of the great volume of nuts and storage) of some 11,970 kg, or a wage cost of 0.33/kg, the CM factory workers delivered finished nuts at 50 cents less than the per kg cost of the forest factories.

More germane, however, was that the factory itself was extremely costly because wages and benefits paid to cooperative staff were charged as overhead onto the factory even when it was no longer a site of processing, and other analysts have raised concerns about the “management” of the factory and the deflection of funds into political campaigns. These data suggest that the factory was carrying a wide array of costs that had little to do with the production and commercialization of Brazil nuts. Rather, the factory was a cash cow, and when its inefficiency was noted, the approach was simply to extract the only productive element from it: the processors.

6. CONCLUSION

The number of alluring elements (sustainability, jobs for women, decentralization, cooperatives, forest conservation, etc.) made the project a sure sell. Coupled with the history of Chico Mendes and the rich rhetoric about the new forest development model, the castanha project was a foundation officer’s dream. Unfortunately, what was to be a job-creating enterprise ended up destroying more jobs than it created, substituting a less productive for a more productive system, and exchanging adult labor for those of children as women withdrew their labor from the activity. The project foundered due to gender mythologies about extractive economies, deep

misunderstanding of women's role in rural production, and a careless adoption of neoliberal decentralization approaches to forest economies.

NOTES

1. Henry Pearson was the Editor of the indispensable journal of the rubber era "India Rubber News" and traveled throughout the Amazon.
2. O Liberal, the main newspaper of the state of Para, reported on February 12, 2003 that 212 quilombos detaining some 350,000 ha still exist today in the state of Para.
3. For example, the statements about the policy of alliances in the Third National meeting of CNS in 1992, emphasized alliances with unions, politicians and delegates who defend the interests of CNS, global workers movements, popular movements and the women's movement.
4. Initially, the decentralization had hoped to widely contract to local households.

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