

**Traditional Goods and the Modern Marketplace: Preference for Commercial
Substitutes and Knowledge of Traditionally-Used Plants Among the Tsimane'**

Indians of Lowland Bolivia

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Abstract:

A survey (n=67) in two villages of Tsimane' Indians of the Bolivian lowlands is used to determine whether knowledge of two plants, jatata (*Geonoma diversa*) and corochó (*Poulsenia armata* (Miquel) Standley), used to make roofs (jatata) and clothing (corochó), is being gained or lost as the younger generation integrates into the market economy. The survey included questions on preference for commercial goods or traditional items made from plants. Results of a multivariate regression suggest that the distance of the village to the market town is more strongly correlated with knowledge and preference for traditional or commercial goods than age or gender. Residents of the more distant village had greater knowledge of both plants, and they preferred traditional goods made from plant materials more than commercial goods. Age and gender had no statistically significant effect on the preference for commercial or traditional goods.

Key words:

Bolivia, Corochó, Jatata, Market, Material culture, Non-timber forest products, Tsimane'.

Introduction:

One of the difficulties cultures face while transitioning from a relatively autarkic to a market-based economy is the possible loss of traditional folk knowledge, or the focusing of that knowledge solely on commercially valuable items (Chicchón 1992; Dove 1996; Goleman 1991; Linden 1991; Plotkin 1993). When indigenous people become part of market economies, they may lose traditional knowledge of game, plants, and cultivars (Brush 1993; Chicchón 1994; Gullison 1996; Padoch and Pinedo-Vásquez 1996). Here I focus on folk knowledge of plants used to make manufactured goods and to what degree markets erode this knowledge. I examine the problem in two different ways: First, I test for knowledge of a plant that is sold and compare it to knowledge of a plant that is not sold and used only for traditional purposes. Second, I examine people's preference for traditional goods and for their commercial substitutes. The answers to these questions can be used to predict future trends within the culture by telling us whether knowledge of non-commercially used plants is being eroded and whether people will eventually stop using traditional goods altogether in favor of commercial items.

To examine whether markets erode traditional knowledge and induce preference for commercial goods, I did field work among the Tsimane' Indians of Bolivia. The Tsimane' are a horticultural and foraging society of lowland Amerindians who live in the tropical rain forest of the department of Beni (Chicchón 1992,1994; Daillant 1994; Ellis, Arauz, and Velasco1998; Godoy, Jacobson, and Wilkie 1998; Piland 1991; Riester 1993; Steward 1948). The Tsimane' live in over 100 communities along several of Beni's river basins. Though first described more than half a century ago (Steward 1948), the Tsimane'

have received a considerable amount of attention by natural and social scientists only during the past decade. Researchers have studied the Tsimane' use of game and forests (Chicchón 1992, 1994; Godoy, Jacobson, and Wilkie 1998; Gullison 1996; Rice and Reid 1997), agricultural practices (Piland 1991; Plotkin and Famolare 1992), and their symbolic and religious systems (Daillant 1994; Ellis, Arauz, and Velasco 1998; Riester 1993).

This study is unique because it extends the ethnographic information collected by previous investigators by attempting to predict future trends among the Tsimane'. Young people can be looked at as a predictor of change in a society. The interests of young people will determine what knowledge will be gained or lost in the next generation and how working and purchasing patterns will change. Plattner (1989) said that dependence on commercial goods is only reversed in times of disaster. This study asks whether the next generation will still have the knowledge of plant products to lean on in the future. In this study I use the knowledge of plants and the preference for commercial goods on a household level to understand the thinking of the young people versus that of the older Tsimane'.

Setting and people:

The Tsimane' are a group of lowland Indians that inhabit the plains and the rain forests of the department of Beni in eastern Bolivia. According to the last census of lowland indigenous people in Bolivia, the Tsimane' population reached 5,709 people (Censo Indígena 1994-1995). They did not seem to have much contact with outsiders until the

late nineteenth century. In the early twentieth century, they began to work as wage laborers in logging camps and cattle ranches (Piland 1991; Chicchón 1992).

Some Tsimane' villages are close to the town of San Borja and therefore have easier access to the market economy. Other villages are much farther from the town and are economically more autarkic, though all villages have contact with the market to obtain basic goods such as salt.

Tsimane' who participate in wage labor often work as loggers or sell goods such as rice or jatata, a palm, which is used to make roof panels. The Tsimane' gather jatata from the forest rather than cultivate it (Añez 1992; Rioja 1992) and use it in the village or sell it to traders who bring it to distant towns in the lowlands.

Determinants of preference for traditional or commercial goods

The Tsimane' use the forest to get the goods they consume and sell. Many Tsimane' know about the plants available to them and how to use them, but there are several reasons they may choose to buy a commercial product rather than using a product made from a plant. A commercial item may be more durable, cheaper or more prestigious than the traditional item. In every household one can find traditional and commercial goods. For example, most people eat with metal spoons, but they drink out of calabashes. It is common to carry manioc in a traditional woven bag, but the beverage made from the manioc is often brewed in a plastic tub. Most people wear traditional rings made from plant products, but they comb their hair with plastic combs.

Selective literature review:

There have been relatively few quantitative studies about the microeconomic or household determinants of why indigenous people might prefer a good made from a plant or a commercial good. Several scholars have studied the social value of material culture. For example, Dant (1999) and Glassie (1999) discuss interaction with objects as part of social interaction, which gives rise to social forms. The material culture is created by society, and every society is influenced by the creation and presence of its material culture. The two things evolve together. Dant says that material culture such as clothing and homes are important because they tie people to society and each other in a more concrete and enduring way than language.

Research by Magnarella (1993) provides some insight into the driving forces behind changes in material culture. His research with Turkish peasants migrating to industrial Europe showed that after survival needs are met, social status becomes the motivation for change. Magnarella describes three types of reactions to the market economy: homogeneity, heterogeneity, and differentiation. In homogeneity, peasants prefer the old ways and resist change. Heterogeneity is when peasants embrace change whenever the opportunity presents itself. Differentiation is a full transformation from independent producers to market sellers. The three reactions to integration to the market generally take place at the same time in a community.

Plattner (1989) discusses distance from town as a determinant of how many synthetic goods people will buy. He also talks about the effect of seasons on buying patterns. In

the hungry, pre-harvest season people will buy less. Plattner describes integration to the market as “universal and inexorable.” “It is reversed only briefly in times of disaster, when the market breaks down.”

We can derive three conclusions from this selective review of the literature. First, material possessions are an important indicator and a determinant of overall social trends. Second, social status is an important driving force behind changes in the material culture, and integration into the market economy is met with open arms by some and rejected by others at the same time. Third, distance from the market place and season of the year affect buying patterns; integration to the market is irreversible.

Motivation of the study:

In this study I focus on what is happening to the material culture of the Tsimane’ as they integrate into the market economy. The first part of the research focused on knowledge of two plants, jatata and corochó, and how to use them. Both plants were used widely by the Tsimane’, jatata to make roofs and corochó to make clothing (Steward 1948:492; Nordenskiöld 1979). Corochó is not sold, but jatata panels are often sold or traded. I chose these plants because I expected the younger generation to know less about corochó and more about jatata. If young Tsimane’ participate more in wage labor and other types of market transactions, it seemed that they would know more about commercial plants and less about traditional plants that do not enter commercial channels. Also, it seemed that people with more access to the market (i.e., living closer to the market town of San

Borja) would know less about corochó because it is more convenient for them to buy cloth in the market.

In the second part of the study I focused on whether people are continuing to use traditional goods made from plants for such things as tools, bags, clothing, and cooking implements, or whether they are switching to commercial substitutes. In the second section I estimate whether people prefer to have the traditional goods or commercial substitutes.

Hypotheses:

Hypothesis #1:

Young Tsimane' will have a greater knowledge of plants used for commercial products than older Tsimane', but they will have less knowledge of plants used for traditional, non-commercial goods.

Rationale behind hypothesis #1:

I view knowledge as a stock of intellectual capital that people accumulate slowly over their lifetimes. Older Tsimane', through experience, will have accumulated more knowledge than their younger counterparts. Older Tsimane' will also have accumulated more knowledge because of necessity. Many synthetic items were not readily available a generation ago, so the older Tsimane' had to learn to make whatever they needed. They had to have broad folk knowledge to survive. Young people have the option of buying

items in the market. They are the group most likely to enter the market economy as wage laborers or as sellers of forest goods and agricultural products (Plattner, 1989).

Hypothesis #2:

Young Tsimane' will prefer commercial products for personal use to the ones made of plants, but older Tsimane' will prefer traditional plant-made products.

Rationale behind Hypothesis #2:

In many communities, the young generation is the first to have access to synthetic goods in their youth. Since people tend to prefer using products that they trust, older Tsimane' might prefer traditional products because they are more familiar with them. Also, if older people have more knowledge of manufacture of traditional goods, but less cash income, it may be more advantageous for them to stick to traditional items. Young people who take a greater part in market activities have more cash but less time.

Methods:

To test the hypotheses, I carried out a survey of about 67 adult (age 12 or older) people in two Tsimane' communities, Yaranda and San Antonio. The sample represented about 62% of the adult population of San Antonio and about 67% of the adult population of Yaranda. Both villages are located along the Maniqui River and differ in their access to the market town of San Borja. Yaranda (15°16.369, 66°50.838) lies about one day up river from San Borja in motorized canoe. Yaranda represents a more autarkic community than the second study site, San Antonio. San Antonio (14°48.698, 66°39.761) lies only

about three hours walk from San Borja and during the dry season can be reached by motor vehicles.

An interview schedule for each village was designed to include members of every household. Each day members of various households were interviewed. As many people as possible were interviewed in each household. Subjects had to be at least 12 years old to be included in the sample because it is at this age that many Tsimane' begin taking on adult responsibilities, such as buying household items or working outside the home. An attempt was made to sample an even size of male, female, old (45 years or older), and young (less than 45 years) subjects. Most interviews were conducted with the help of Tsimane' translators unless the subject was fluent in Spanish.

I designed the survey in collaboration with members of a research team that was studying the effect of markets on health and folk knowledge. The research team included Tsimane' researchers, graduate and undergraduate students, and faculty. I tested the survey several times before administering it in its final form.

In the first survey I focused on two plants: jatata and corochó. To devise a test for knowledge of jatata, I first gathered qualitative and ethnographic information about jatata. I observed every stage of jatata production from the gathering of the fronds, to the sewing of panels, to the sale and construction of roofs. Research by Rioja (1992) and interviews with several Tsimane' provided more background information about jatata and its use.

I devised the test for corochó knowledge in similar way to that of the jatata test.

Interviews and previous research (Steward 1948:492) revealed that corochó was the main source of clothing a couple generations ago, but observation shows that it is rarely used today. I gathered information about corochó through interviews. I also observed an older couple through the process of creating corochó cloth, from cutting the tree and softening the bark, to washing, drying and sewing the final product.

The interviews and observations of jatata and corochó processing were used to formulate questions for knowledge tests. I tested knowledge of the jatata and corochó plants and how they are used through interviews with Tsimane' in the two sites. During the interview, I asked each person five questions about the attributes and uses of the plant. Each correctly answered question contributed a point toward a total knowledge score.

Besides collecting information of knowledge of jatata and corochó, I also collected socioeconomic and demographic information about subjects and their households. For the present analysis I focus on the variables gender, age, and geographical location.

I tested the second hypothesis about people's preference for commercial or traditional goods by asking them to choose between pairs of items. I showed each subject several pairs of photographs. Each pair consisted of one item that was a traditional, usually made of a plant product, and a commercial substitute for the item, usually made of metal or

plastic. Then I would ask, “Which one is better?” “Why is it better?” and “Do you own it?”

The items had a broad range of uses: kitchen implements, weapons, clothing, hygiene items, etc. The test was given to the same subjects who had answered the jatata and corochos questions. Fourteen pairs of items were shown to each subject. The total number of synthetic items preferred by each subject determined their preference level.

Limitation of research design and information:

At least two shortcomings deserve discussion before turning to the empirical analysis.

First, each pair of products shown to the subject was as close to exact substitutes as possible, but the nature of some items may have been ambiguous. For example, a rifle was shown as the substitute for the bow and arrow, but most people prefer to use both - a bow and arrow for fishing and a rifle for hunting. Similarly, commercially-made bars of soap were shown as the substitute for traditional handmade soap. The handmade soap is difficult to make, however, so most people buy both traditional soap and commercially-made soap in the marketplace, rather than making either one of them.

Second, Jatata may not be a good comparison plant when age is the main explanatory variable because it is not commonly used in San Antonio. This would perhaps make it more valid comparison plant for knowledge between villages, but not between age groups of the entire sample.

Description of the sample:

Table 1 contains a summary of the demographic attributes of the sample and the variables used in the analysis. The sample was evenly split between the two villages: 56% of the sample came from San Antonio and 44% came from Yaranda. The samples were also evenly split along gender lines in each of the two villages: 49% female, 51% male. There were many more young people (<45) than older people in San Antonio, but not in Yaranda. In San Antonio, the share of subjects under 45 years of age was 76%, but in Yaranda the share was 53%. The sample size for the knowledge test was slightly larger in San Antonio (n=38) than in Yaranda (n=29). The sample size for the preference test was also slightly larger in San Antonio (n=37) than in Yaranda (n=31).

Results:

In this section I discuss the results of the analysis. I have divided the section into two parts. In the first part I discuss the results of bivariate analysis between dependent and explanatory variables. In the second part I discuss the results of the multivariate regression.

Results of bivariate analysis

The results of the bivariate analysis, shown in Table 2, suggest that age is associated with greater knowledge of both plants. The knowledge increase is more dramatic for corochó than for jatata. Knowledge of jatata increased by 0.46 with older age, and knowledge of corochó increased 0.63 with increasing age.

Women had less knowledge of both plants than men, although the differences were small. Women had 0.16 less knowledge of jatata than men and 0.08 less knowledge of corochó.

People from Yaranda, the more autarkic community, had greater knowledge of both plants than people from San Antonio. Residency in Yaranda increased knowledge of jatata by 0.59 and increased knowledge of corochó by 0.42.

The information in Table 2 shows that older people were 0.14 less likely to prefer commercial goods than younger people. The information also suggests that women were less likely to prefer synthetic goods than men, but the difference was not marked (0.01). Living in the more traditional village of Yaranda was associated with 0.32 less desire for synthetic items.

The information in Table 3 shows the ages when subjects first learned about jatata and corochó. The most common age to learn about jatata is 10 years. As the information in Table 3 suggests, 53% of the subjects learned about jatata between 10 and 12 years of age. The information also suggests that 10 years was the most common age to learn about corochó. As the information in Table 4 shows, 33% of the subjects learned about corochó between 10 and 12 years of age.

The information in Table 5 shows that 42% of the subjects learned about jatata from their father. Table 5 also shows that 22% of the subjects said their mother taught them about corochó.

Although it is most common for Tsimane' to learn about jatata from their father and corochó from their mother, the knowledge tests do not indicate that men know significantly more about jatata or that women know more about corochó. The mean jatata knowledge for women was 3.26, and for men it was 3.94 ($t = -1.30$, $p > |t| = 0.20$). The mean corochó knowledge for women was 3.26, and for men it was 3.55 ($t = -.63$, $p > |t| = 0.53$).

The information in Table 6 suggests that most subjects preferred a good because it “functions better”. Thirty-three percent of the subjects said that they chose the item because it functions better than its substitute. The second most common answer was durability. Twenty-three percent answered that they preferred the good of choice because it was more durable. Twenty-two percent did not give a reason for their preference.

Results of multivariate analysis

The multivariate regression results are shown in Table 7. Jatata knowledge, corochó knowledge and preference for synthetic goods are regressed against age, gender, and a village dummy variable for geographical location. The dependent variables for preference and corochó knowledge were normally distributed and the error term displayed constant variance, so I used ordinary least squares regressions. Since the error term for the regression with knowledge of jatata as a dependent variable displayed non-constant variance, I used robust standard errors with the ordinary least squares regression. The information in Table 7 and the following section is expressed in natural logarithms.

The regressions show that being 45 years or older increased knowledge of jatata by 41% ($P > |t| = 0.00$) relative to people below 45 years of age. Older age also increased knowledge of corochó by 56% ($P > |t| = 0.00$).

Living in Yaranda, the more remote village, increased knowledge of jatata by 57% ($P > |t| = 0.00$) relative to San Antonio. Living in Yaranda also increased knowledge of corochó by 36% ($P > |t| = 0.00$) relative to San Antonio. Being female decreased knowledge of jatata by 4% ($P > |t| = 0.73$) and increased knowledge of corochó by 3% ($P > |t| = 0.81$), but the difference was statistically insignificant at the 95% confidence level or above.

The results show that there is much less preference for commercial goods in the remote village of Yaranda. Living in Yaranda decreased preference for commercial goods by 37% ($P > |t| = 0.03$) compared to San Antonio. Older age decreased preference for commercial goods by 7% ($P > |t| = 0.69$), and being female increased preference by 3% ($P > |t| = 0.87$), both of which were statistically insignificant at the 95% confidence level or above.

Discussion and conclusion:

The results of the empirical analysis partly supported the first hypothesis. Older Tsimane' did have much more knowledge of the non-commercial plant, corochó, but the older subjects also had much more knowledge of the commercial plant, jatata. Since the young people knew more about jatata than corochó, it is possible that they are focusing more on

the commercial plant while the older generation has greater knowledge of both because of more experience.

The increased knowledge of corochó in the more remote village of Yaranda can most likely be explained by increased difficulty in obtaining commercial goods due to distance from the market town of San Borja. If it is more difficult to obtain substitute materials, traditional knowledge will have to be retained longer. The increased knowledge of jatata in Yaranda compared to San Antonio can also probably be explained by distance to the market place and by the lack of jatata in San Antonio.

The analysis did not support the second hypothesis. The strongest predictor of preference for commercial goods seemed to be distance to the market town rather than age. Again, residents of San Antonio have greater access to synthetic goods whereas residents of Yaranda may not have enough experience with the synthetic item to trust it over the traditional one. These results may also reflect a tendency to prefer whichever item the subject actually owns.

In conclusion, location, or distance from the market town, seems to be the defining factor in knowledge and preference for commercial goods rather than traditional ones. Older people had greater knowledge of both types of plants, but younger people demonstrated more knowledge of the commercial plant than the non-commercial one. Age and gender do not seem to be good predictors of preference.

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Tables:

Table 1: Summary Statistics

Variable	Definition	#of Observations	Mean	SD	Min	Max
Dependent:						
Preference	Preference for synthetic goods	68	5.25	3.40	0	14
Corocho	Sum of corocho knowledge score	65	3.55	1.86	0	6
Jatata	Sum of jatata knowledge score	65	3.94	2.12	0	6
Explanatory:						
Age	Dummy variable: *0=<45 years; 1=>=45 years	67	0.33	0.47	0	1
Yaranda	0=San Antonio; 1=Yaranda	68	0.46	0.50	0	1
Female	1=female; 0=male	68	0.50	0.50	0	1

Table 2: Correlation coefficients

	Knowledge of Jatata	Knowledge of Corocho	Preference for Synthetics
Age	0.46	0.63	-0.14
Female	-0.16	-0.08	-0.01
Yaranda	0.59	0.42	-0.32

Table 3: Age at which subject first learned about jatata

Learning Age	Freq.	Percent
4	1	2.04
7	1	2.04
8	4	8.16
9	2	4.08
10	13	26.53
11	4	8.16
12	9	18.37
13	1	2.04
14	1	2.04
15	8	16.33
16	2	4.08
17	2	4.08
21	1	2.04
Total	49	100

Table 4: Age at which subject first learned about corocho

Learning Age	Freq.	Percent
5	2	6.67
6	1	3.33
7	1	3.33
8	1	3.33
9	1	3.33
10	6	20
12	4	13.33
13	4	13.33
14	4	13.33
15	3	10
16	2	6.67
20	1	3.33
Total	30	100

Table 5: Person who taught the subject about jatata and corochó

	Father		Mother		Grandfather		Grandmother		Other	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Jatata teachers	28	41.8	16	23.9	9	13.4	0	0.00	14	20.9
Corochó teachers	3	7.14	22	46.8	7	16.7	6	14.3	4	9.52
Total	31	48.9	38	70.7	16	30.1	6	14.3	18	30.4

Table 6: Why the subject preferred the commercial or traditional product

Reason	Freq.	Percent
No reason	223	21.59
Easier to make	92	8.91
Easier to buy	34	3.29
Functions better	344	33.3
More durable	232	22.46
Multiple uses	36	3.48
Tradition	18	1.74
Prestige	5	0.48
Aesthetics	29	2.81
Other	4	0.39
Both equal	16	1.55
Total	1033	100

Table 7: Results of multivariate regressions (in natural logarithms)

Variable	Jatata*				Corocho*				Preference*			
	Coef.	S.E.	t	P> t	Coef.	S.E.	t	P> t	Coef.	S.E.	t	P> t
Age	0.41	0.01	4.21	0.00	0.56	0.12	4.63	0.00	-0.07	0.18	-0.40	0.69
Female	-0.04	0.12	-0.35	0.73	0.03	0.11	0.25	0.81	0.03	0.17	0.17	0.87
Yaranda	0.57	0.11	5.55	0.00	0.36	0.12	3.06	0.00	-0.37	0.17	-2.17	0.03

Note: For definitions of dependent variables, see Table 1.

Sample size: n=67

Adjusted R2 (For Jatata only)=0.46