

The Origin of Hunter-Gatherers' Foods

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ABSTRACT The concept of contemporary hunter-gathering societies is of unclear definition and their so-called “distinctive” characteristics of doubtful temporal sustainability. In terms of subsistence, there are few studies which have objectively compared the foods consumed by neighboring forager and by peasant populations. The present paper aims at doing this through the semi-quantitative statistical analyses of foodstuffs consumed by Agta and Filipino peasants (Lowlanders). Through interviews, data was collected on the provenience of 1734 dishes consumed in 112 Agta households and on 603 dishes consumed in 86 peasant households. Results show heterogeneity in the way these groups obtain most of their food, although not in the contribution of agriculture to their diet. The main differences concern the use of money which is substituted by foraging, sharing, and exchanging among the Agta, apart from their exclusive practice of working for food. With deforestation, the consumption of game is becoming rare but it is still a good example of differences in subsistence. While Agtas eat red meat mostly of wild animals, Lowlanders usually buy domestic meat from local shops. Nonetheless, exchange between the two populations follows the traditional “carbohydrates for proteins” format, involving mainly rice and fish. In the increasingly common inter-ethnic households (N=38), the origin of foods is more similar to the Agta than to the Lowlander pattern. Access to alternatives sources of food might be one stimulus for inter-ethnic marriages. The conclusion is that the Agta's socio-economic marginalization is partially responsible for maintaining foraging activities but that, coupled with deforestation, might threaten their survivorship.

INTRODUCTION

Alternative strategies to deal with adversities, including dietary shifts, trade, exchange, small-scale agriculture, husbandry, and mixed economies have always been used by hunter-gatherers. Their development dates back at least to the time of the origin of food production itself, when hunter-gatherers first got into contact with agricultural societies. Many cases of long-term coexistence between foragers and peasants are supported by linguistic data. The length of contact between Pygmies and Bantu farmers is estimated around two thousand years (Cavalli-Sforza, 1986), and as for the Agta of the Philippines and the Aka Pygmies of central Africa, the foragers' languages are today mostly related to those of neighboring farmers (Reid, 1987; Renfrew, 1999). It is a relevant question whether different subsistence strategies can co-exist for so long without absolute convergence taking place at some point. In fact, the number of hunter-gatherer societies in the world has decreased and there are numerous evidences that this is due to an

intensifying dependence on sources of food other than hunting and gathering (Binford, 2001).

Modern human groups usually known as “foragers” compose a very broad and diverse category and occupy a similarly large variability of environments, including African deserts and the Arctic (Kelly, 1999). The definition of contemporary foraging societies can be questioned on the basis that virtually all living human groups depend on cultivated food sources and are integrated at some level in the global market economy (see as examples B. Griffin, 1991 for the Cagayan Agta, Headland 1986 and Early and Headland 1998 for the Casiguran Agta, Lee, 1979, 1984 for the !Kung). Although hunter-gatherers' plots are usually of smaller size, less carefully weeded, and both planted and harvested out of the normal regional season, this is not necessarily due to inexperience with the practice (see Griffin, 1985; Silverwood-Cope, 1990 for examples). Most living foragers are indeed commercial hunter-gatherers, characterized by being heavily dependent on bartered foods, trading meat, furs, forest products, or labour for starch foods

(Hayden, 1981). According to Lee (1981), what really defines contemporary foraging is a unique mode of production largely based on sharing, communal ownership of land and resources, and equalitarian political relations. Their supposed uniqueness must be then reflected not so much in the types of foods consumed, but rather in the provenience of these foods in terms of production and social relations.

The present study aims at testing the validity of the concept of “contemporary foraging” by comparing the origins of foods consumed by two neighboring groups of Agta “foragers” and of Filipino peasants leaving at the coast (the later are hereafter referred as Lowlanders following the suggestion of Early and Headland, 1998). The social and political system as well as activities schedules and diet of the Casiguran Agta groups of the Philippines have been approached elsewhere (De Souza *unpublished doctoral dissertation*, Early and Headland, 1998; Headland, 1990; Headland, 1991). Such studies have revealed that although the Agta fit both the social and political models of a foraging society, hunting and gathering activities do not fill most part of the individual schedules. The degradation of previously forested territories and the rising immigration of peasants are pointed out as the main responsible for such changes in life-style. At the present time, they have cultivated rice as staple food and most of the protein consumed comes from the sea (De Souza *unpublished doctoral dissertation*, Headland, 1991). Nonetheless, the hypothesis of an absolute convergence between their subsistence strategy and that of neighboring peasants has not been checked before. The present article aims at doing this through the study of the Agta and Lowlander food sources and to speculate on the outcomes of possible future changes.

MATERIAL AND METHODS

The present dietary data was obtained during a seven months-long fieldwork in 2002 in the San Ildefonso Peninsula in east Luzon, where there are both Agta and Lowlander families. It is a tropical environment surrounded by the sea, with few remnant forested patches, some logging areas and horticultural plantations. Because of the irregular topography, there are virtually no rice fields in the peninsula and both Agtas and Lowlanders depend on the rice cultivated on the mainland.

One adult individual per household was asked what foods he/she and the other members of the household had consumed in the previous days. A total number of 357 individuals, who are members of 198 different households were interviewed (which will be referred as “ego households” in the results). The unit employed in the analyses and descriptions is the “dish”. A dish is a single kind of food, namely rice, meat, fish, etc., eaten at one meal in a given household. According to this concept, a meal is composed by two dishes if one eats rice and vegetables, no matter how much rice or which kinds of vegetables are consumed. Most people ate three meals a day: one at early morning, one at early afternoon, and one at early night. The ideal number of “meals” which composition was to be collected was nine for Agtas (three previous days) and six for Lowlanders (the two previous days) but sometimes not all meals had been consumed or were missed by the interviewer. Because of the method of collection, the data presented is semi-quantitative, intended to give a measure of variability rather than of quantity. The number of Agta and Lowlander households approached, and the number of meals and of dishes collected are given in Table 1.

The various foodstuffs which usually compose dishes were classified into: Rice, Fish, Meat, Tubers, Vegetables (Veg.), Fruits, Seafoods (Seaf.), and Others. During the interviews, individuals were also asked about the provenience of the foods they had consumed in each meal, that is, whether it was collected, hunted, given, exchanged, and in all cases, by whom or with whom.

Two-sample parametric tests (T-tests) are used to test the homogeneity in the mean values of variables with normal distribution while two-sample non parametric tests (Mann-Whitney U) for those which deviate from normality. At a first instance, households were defined either as “Agta” or “Lowlander” according to their location, life-style, and self-affiliation reported by the members of the household in terms of ethnic origins. There are, however, other variables linked to the composition of the household in terms of family size, age, and ethnicity of individual members which may influence the origins of food consumed. When controlling for household composition in a second instance, the self-affiliation of members defines: exclusive Agta (where all members are

Agta), exclusive Lowlanders (where there are no Agta members) and inter-ethnic households (composed by Agta individuals married to Lowlanders and their dependents). There are also many kinds of temporal variations defined by factors such as luck in a hunting trip, which would affect representation of meat in the diet of a certain household, for example. It is impossible to account for all of those variations, but their impact should be minimized by the similarity and simultaneity of data collection.

RESULTS

Most of the results obtained from the descriptions and analysis of the data are summarized in Table 1. From all meals that were to be registered, 22 had not been consumed, 18 in Agta households and 4 in Lowlander households. Therefore, a total of 904 meals were collected in Agta household and 299 in Lowlander's, which were composed by 1734 and 603 dishes respectively.

The overall set of proveniences of dishes reported by the ego household during interviews was divided into the following categories:

1. Bought: dishes acquired with money by a member of the ego household, from local shops which are usually owned by Lowlanders or their relatives.
2. Given by a relative: dishes given to ego household by an affinal or consanguineal relative living in a different household. The foodstuffs reported might have various origins themselves (hunted, gathered, fished) but they are used here to indicate sharing between relatives. It is not considered as and exchange because when payback does occur, it takes place at a later or previous date, which conforms more to the social code of "sharing".
3. Foraged by house members: foods hunted, gathered, or fished directly by a member of the ego household. This category is based mainly on the categories perceived by individuals. For example, although most tubers consumed are not wild, when they are collected by people who did not plant them, they are considered as gathered food by the Agta and reported here as such.
4. Got from Agtas as gift: dishes given to ego household by Agta individuals who are not

Table 1: Summary of description and comparisons of food origins

Variable	Agta			Lowlander			Mann- Withney U/ T-test
	N	% of total	% of main foods (s) acquired	N	% of total	% of main food(s) acquired	
Households	112			86			
Meals collected	904			299			
Total dishes	1734			603			
1. Bought	780	46.2	Rice: 86.9	427	70.8	Rice: 60.4 p<0.0001	t=-9.032
2. Given by relative	84	5.1	Fish: 66.7	21	3.5	Fish 42.5 Veg. 38.1	z=-1.939 p>0.05
3. Foraged by house members	371	20.4	Fish: 48.5 Seaf.: 29.6	32	5.3	Fish 62.5	z=-8.508 p<0.0001
4. Got from Agtas as gift	112	6.6	Fish: 41.1 Tubers: 12.5	6	1.0	Fish 83.3	z=-5.261 p<0.0001
5. Got from non- Agtas as gift	37	2.0	Fruits: 40.5	9	1.5	Veg. 44.4	z=-1.718 p>0.05
6. Got as payment for work	102	5.6	Rice: 77.5	0	0	————	z=-4.840 p<0.0001
7. Got through Exchange	22	1.5	Rice: 100	4	0.7	Fish 100	z=-1.482 p>0.05
8. From own Farming	226	12.6	Veg.: 47.3 Fruits: 19.7	104	17.2	Veg 68.8 Rice 18.3	z=-0.879 p>0.05
9. Got from non- ego group member	161	9.2	Rice 62.7	10	1.6	Fish 90.0	z=-5.540 p<0.0001
10. Got from ego group member	196	11.3	Fish: 52.0	30	5.0	Veg.: 40.0 Fish: 33.3	z=-4.402 p<0.0001

direct relatives. As for category 2 above, these foods have their own origins in turn, but are used here to indicate sharing between non-relatives and between Agtas and Lowlanders.

5. Got from Lowlanders as gift: the same as above but when given by Lowlanders.
6. Got as payment for work: dishes given to a member of the ego household as payment for his/her work in somebody else's land. The land owner is usually a Lowlander. Few Agtas own land and the ones who do, rarely have properties large enough to require extra people for cleaning or planting.
7. Got through exchange: dishes got through exchange of products by a member of the ego household and an individual of the non-ego group (Agta with Lowlanders and vice-versa). This is an indicator of the "symbiotic" relationships between hunter-gatherers and agriculturalists described before for the Agta (Early and Headland 1998) as for many other groups (Binford 2001).
8. From own farming: dishes coming from the farming activities of members of the ego household, being of vegetable and fruit cultivation or from domestic animals.

Up to here, the total number of dishes is a sum of the percentages of each of the categories cited before.

9. Got from non-ego group member: is a composite category formed by categories 4+6+7 for Lowlanders and by categories 5+6+7 for Agtas. It is a total measure of all dishes obtained by member of the non-ego group (Agtas from Lowlanders and vice-versa) giving indication of total exchange (including proper exchange, gifts and payment for work).
10. Got from ego group member: the same as above, but when obtained from a member of the ego group (for Agtas: 4+2 and for Lowlanders: 5+2), giving an indication of total in-group sharing.

The first aspect noticed from the analysis is that there are both similarities and differences in the origins of Agta and Lowlander foods. Table 1 shows that from all the ten possible origins of the foodstuffs consumed, four are equally common among Agtas and Lowlanders while six vary in frequency. Lowlander and Agtas get similar proportions of their dishes from relatives, as gift

from Lowlanders, through exchange, and from their own farming activities. Most of the food consumed by both Agtas and Lowlanders are bought from local shops. However, Lowlanders buy a higher percentage of their food (72.5% vs 46.2%). In contrast, Agtas obtain a higher proportion of their dishes from direct foraging (20.4% vs 4.4%), as gift from other Agtas (6.6% against 2.7%), and as payment for work (5.6% vs null). Overall, Agtas get a higher percentage of their dishes from Lowlanders than the other way round (9.2% vs 1.6%). They also get a higher proportion of dishes from sharing with their own group members (11.3% vs 5.0%). The results of all tests performed were confirmed both by the parametric T-test (t) and the non-parametric Mann Withney U test (z).

It is clear that the food both groups buy most frequently is rice. Agtas buy very few of other products (only 13.1% of dishes bought are not rice) in comparison to Lowlanders (39.9% of dishes bought are not rice). Such difference is also statistically significant (not in the table: $N=192$, $z=7.227$, $p<0.0001$). Fish composes the greater part of the food shared between relatives of both groups (66.7% for Agtas and 42.7% and for Lowlanders), is the most frequent dish foraged by members of the households (78.1% for Agtas and 62.5% for Lowlanders), and the most usual food given by Agtas as gifts (41.1% to other Agtas and 83.3% to Lowlanders). Lowlanders give fruits and vegetables as gifts and vegetables are the most commonly cultivated foods by both groups (remembering that the category "vegetables" excludes both fruits and rice). Nonetheless, Agtas get a significant amount of rice from Lowlanders as exchange for other products and as payment for work. Rice composes 62.7% of all dishes Agtas obtain from Lowlanders. Not only Lowlanders get a significantly smaller proportion of their dishes from Agtas, but they are also from a different category, mostly composed of fish.

In view of the denomination of "hunters", it is surprising that terrestrial animals do not appear at any point among the most usual foods exchanged and/or shared by the Agtas. Table 2 offers a closer look on the patterns of meat consumption.

Seventy meat dishes were consumed by both groups, from which 35 (50%) were of wild animals hunted locally and 35 were of domestic animals. The consumption of meat was reported by a

Table 2: Comparative patterns of meat acquisition by Agtas and Lowlanders

	<i>Agtas</i>	<i>Lowlanders</i>	<i>Chi-test/ T-test /Mann-Withney U</i>
N (%) of houses where some kind of meat was consumed	30 (26.8%)	17 (19.8%)	$\chi^2=0.250$ $p>0.05$
N (%) of meat dishes consumed	46 (2.65%)	24 (4%)	$t=-0.446$ $p>0.05$
N (mean %) of wild meat of all meat consumed	34 (80.9%)	1 (5.9%)	$z=-5.094$ $p<0.0001$
N (%) dishes got from a member of non-ego group (both wild and non)	4 (9.5%)	0	$z=-1.800$ $p>0.05$
N (%) dishes got from members of ego group (both wild and non)	18 (42.8%)	4 (16%)	$z=-3.119$ $p<0.01$
N (%) dishes by member of the household (hunted wild animals)	21 (50%)	0	$z=-4.737$ $p<0.0001$
N (%) dishes bought (domestic)	3 (7.1%)	20 (90.9%)	$z=-4.306$ $p<0.0001$

similar number of Agta and Lowlander households and composed a similar proportion of the dishes eaten by the two groups. On the other hand, a much higher proportion of the meat consumed by Agtas came from wild animals while Lowlanders ate almost exclusively domestic animals. Accordingly, most of the meat consumed in Agta households was hunted locally while Lowlanders depend on external sources of meat which are acquired in stores. There has been little meat, exchange between Agtas and Lowlanders, but Agtas share significantly more meat among themselves. In summary, there are many significant differences in the origin of terrestrial animals consumed by Agtas and Lowlanders.

A number of tests were made to control results according to the composition of households. A series of Mann-Withney U non-parametric tests was used to control weather exclusive Agta households (N=82) and exclusive Lowlander households (N=78) consumed foods of different origins from interethnic households (N=38), that is, those inhabited by Agta individuals married to Lowlanders. Results are not significant ($p>0.05$) between exclusive Agta and inter-ethnic households which mean they eat foods of very similar origins. However, inter-ethnic households differ from exclusive Lowlander households in that the latter consume more dishes that are bought (49% vs 74%, $z=-5.209$, $p<0.0001$) while the firsts consume more dishes that are given by the family (6.5% vs 3.6%, $z=-2.578$, $p<0.05$), obtained by its own members (19% vs 3.8%, $z=-6.380$, $p<0.0001$), given by Agtas as gifts (3% vs 0.2%, $z=-4.253$, $p<0.0001$), got as payment for work (3% vs 0, $z=-3.026$, $p<0.05$), and got from

Lowlanders (including exchange, payment for work and gifts, 6.5% vs 0.1% $z=-4.009$, $p<0.0001$). There were no significant differences in the origins of food according to the age of the adult members but households where there are three or the more children receive more food gifts from Lowlanders then those with less than two children (6.2% vs 4.2%, $z=-2.284$, $p<0.05$).

DISCUSSION

From the results presented it is clear that Agtas and Lowlanders obtain most of their food from different sources, exploring different modes of production and social relations. Surprisingly, however, one of the subsistence practices which provide Agtas and Lowlanders with a similar proportion of dishes is agriculture. It is important to stress that such a comparison involves the habits of Filipinos who live exclusively in the San Ildefonso peninsula (Lowlanders). Its rough terrain does not favor the wet cultivations of rice, which is mostly practiced in the flat mainland across the Casiguran bay. In fact, the peninsula fits well the concept of a "marginal environment" which for being rejected by colonizing farmers has become the main refuges of hunter-gatherers today (Kormondy and Brown, 1998). In such a situation, Agtas depend on the products of their own cultivation almost as much as do their Lowlanders neighbors. What the data does not show is that the volume and the importance of cultivars produced by Agtas and Lowlanders are different. Lowlanders also produce rice, although in smaller quantities than in the mainland, which is eaten in great quantities in San Ildefonso as in

the whole Philippines. Its production means a lot more independency from the market and indicates the property of better and larger tracts of land.

The differences in the subsistence practices of Lowlanders and Agtas, nonetheless, is not as much related to the practice of agriculture as it is to foraging sharing, and exchange activities. Sharing (when nothing is given in exchange at the same moment, usually with a member of the same ethnic group and/or relative) and exchanging (with immediate payback, usually with member of a different ethnic group) takes place in both groups, but Agtas practice them both more often than Lowlanders. This discrepancy, mainly in relation to exchange with assumes the existence of the "other", is poetically explained by the much larger number of Lowlanders than of Agtas living in the peninsula nowadays. However, this is obviously intensified by important cultural specificities. While each individual Agta is constantly looking for and exploring all possible exchange partners, Lowlanders do not care for it as much. In fact, Table 1 shows that Lowlanders usually give food "gifts" for the Agta, without much worry for an immediate payback. They invest on maintaining this relation of dependence that can be later rewarded in work hours of Agtas in the Lowlander's plantations.

Overall, the practices of sharing and exchanging account for more than 20 % of the dishes consumed in Agta households. Also conforming to theoretical expectations on peasant/foragers relations, Agtas usually provide protein to Lowlanders in exchange of carbohydrates. Although fish composes most of the protein shared and exchanged by the Agta, it is clear that hunting has a relevant significance in their life. If not as a frequently consumed or exchanged food nowadays, wild animals are mostly reserved for sharing practices with other Agtas which, as seen above, is an important characteristic of the foraging mode of production and culture. It is evident that Lowlanders do not have the habit and/or the skills to extract a significant portion of their foods direct from nature as Agtas do. Together, the results obtained provide evidence that the Agta subsistence practices share more characteristics with other societies referred as hunter-gatherers throughout the world than with their peasant neighbors. This is evidence that the existence of modern foragers is a fact rather than an anthropological construction.

It is harder to be so positive on the question

whether, at the moment, the Agta forage as much because they want or because they must. Both peninsular Lowlanders and Agtas depend on rice as staple and none of them can produce it in satisfactory amounts. Lowlanders buy most of the rice they consume and some more extra foods of other kinds. This means that they are engaged in activities that generate money. It was observed that these are mostly commercial fishing, copra (coconut oil) production, and logging. Commercial fishing requires some investment on equipment, at least a motor boat or floaters. The small coastal fishes collected with wood spears by the Agta are mostly for subsistence purposes and results suggest that it is insufficient for maintaining exchanging practices. Both copra production and logging require land property which most Agta families do not recognize. For them, the only way to take part in commercial activities is in the form of cheap work force or even being paid directly with rice. This is not an acceptable occupation for Lowlanders who are clearly in a more advantageous socio-economic situation (supporting demographic and nutritional indicators were collected, but not yet published).

The results presented suggest that when inter-ethnic marriages take place, Lowlanders get access to food sources typically explored by Agtas. Nonetheless, this might merely reflect the diversification in subsistence activities resulting from access to new territories and expanded social relations. It has been hypothesized that access to diverse foraging territories and food sources was one of the criteria Agta groups from Palanan, a few kilometers to the North of Casiguran, used to chose among potential marriageable partners (Peterson, 1979). Therefore, access to new food sources could be also working as a positive stimulus towards the increasing occurrence of inter-ethnic marriages in Casiguran. There are theories (Baley, 1988; Headland, 1986) which point to the competition with peasants either for land or for spouses as responsible for the present existence of foraging societies. The results of this study shown that foraging, sharing, and exchanging with (and today, working for) peasants substitute the use of money. Because of that, socio-economic marginalization and exclusion from commercial activities should be considered as an additional factor accounting for contemporary foraging. The fact is that with the destruction of the forest and the disappearance

of wild animals and vegetables, a relevant part of the Agta culture and subsistence might be no longer sustainable in the future.

CONCLUSION

This study has considered the possibility that "foraging societies" was a concept no longer applicable to living human populations. The comparative descriptions and analyses performed on the origins of dishes consumed in Agta and Lowlander households have contradicted that supposition. These groups' practices related to subsistence reflect most of the theoretical expectations on the characteristics of modern hunter-gatherers as well as on the nature of the Agta's relations with agriculturalists. However, one of the most relevant factors responsible for conserving such a mode of production is the Agta's present socio-economic marginalization in the local commercial activities. Based on the recent changes observed in their environment and in the world in general, speculations concerning their future are not optimistic. Unless the question of indigenous land rights and environmental preservation are seriously taken into consideration, the Agta's only option is forced and deprived integration.

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