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FROM FOREST TO FIELD: A STUDY OF PHILIPPINE NEGRITO
FORAGERS IN TRANSITION

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FROM FOREST TO FIELD: A STUDY OF
PHILIPPINE NEGrito FORAGERS IN TRANSITION

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
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By
Navin K. Rai

Dissertation Committee:
P. Bion Griffin, Chairman
Brian J. Murton
Jacob M. Bilmes
Alice G. Dewey
Richard W. Lieban
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ABSTRACT

The Agta of northeastern Luzon, the most traditional foraging groups of the Philippine Negritos, represent one of the few surviving hunter-gatherer societies in Asia. In the last two centuries, they have experienced a great deal of change. The present anthropological study documents the ethnography of the Agta, and analyzes the conditions, the processes and the consequences of their change.

Borrowing from the general notion of systems perspective, this study attempts a holistic description of the Agta society, and a systemic description of its change. Additionally, knowledge of the indigenous viewpoint is deemed crucial to the understanding and scientific explanation of social processes of the Agta. The field research employed participant observation and interviews in the Agta language which were conducted by the author while travelling for a year (1979-80) with foraging families.

Traditionally speaking, the Agta are tropical rain forest hunters, who lead a forest oriented and socioeconomically egalitarian life. They are nomadic and live in many dispersed local groups. At the same time, through networks of kinship they form larger socially isolated "linguistic" groups. In the past, these groups maintained an independently viable as well as relatively stable system. However, in recent centuries, the Agta forest home has been heavily encroached upon by outside agricultural and mercantile populations; the resulting interactions have precipitated multitude of changes for the Agta, including
an intensive dependence on non-traditional economic strategies of external trade, horticulture, and wage labor. The fragile transition state of the Agta, today characterized by a non-forest orientation, stands in sharp contrast to their earlier stable system and leaves them in a predicament. The continuing environmental degradation of their homeland leaves the Agta with no option except to emphasize the non-foraging way of life, but their increasing socioeconomic subjugation by outsiders as well as the inherent socioeconomic incompatibilities such as non-egalitarianism and settlement permanence make this shift a difficult one.

While the particular aim of the present work is to document the reluctant response of the Agta to a dramatically altered condition, it should also serve as a general descriptive model of systemic transformation for other contemporary hunting and gathering societies.
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NOTE ON ORTHOGRAPHY

Vernacular words, written in italics, refer to terms in the Disabungan Agta dialect unless indicated otherwise by the context. Following the orthography developed by Headland and Headland (1974: xii-xxvii), Agta words are written phonemically, except for the velar nasal which is symbolized as $ng$, and the mid close central vowel (often referred to as the Austronesian 'pepet' vowel), which is symbolized as $â$. Glottal stop, which is predictable before initial vowels and after final vowels of utterances, and between certain vowel sequences, is not symbolized. Words in other, non-Agta, languages are also italicized, with the particular language identified with its initials, viz., "I" for Ilokano, "T" for Tagalog, and "K" for Kalinga.
I. INTRODUCTION
1. THE PEOPLE

There is nothing new in saying that all human populations, from hunter-gatherer to industrial, are in a constant process of change. To understand the adaptation of human societies, this process of change must be analyzed. This anthropological study is an attempt to describe the change among a contemporary hunting and gathering society, the Agta Negritos of the Philippines.

Hunter-gatherer societies of the world today are experiencing radical changes in their systems. These changes are in many ways synoptic of the transformations that all human societies have undergone in the past and today. A study of change among contemporary hunting and gathering populations should thus provide a good beginning point for working toward an understanding of change in all human societies.

Hunter-Gatherers

The hunting and gathering populations continue to be referred to as examples of "primitive" human societies in the literature. Without qualifications, this blanket term is a misnomer; it carries an evolutionary connotation to the laymen. That the hunting and gathering adaptation has been persistently successful is substantiated by archeological studies of prehistoric peoples. Ecologically speaking, a hunting and gathering way of life is merely a strategy to exploit a different niche than that of the so-called "civilized" societies.
While hunter-gatherers may possess a technology that is primitive, they may represent the opposite scale in, say, religion.

In the view of social scientists, the term "primitive" may give a false sense of meaning that hunter-gatherers are simple in every aspect of their adaptation. It is misleading to assume that all contemporary hunter-gatherers have a "simple" socioeconomic organization. For one thing, they do not constitute one single socioeconomic category. There are hunter-gatherers who have more traditional, forest oriented subsistence. Others are semi-sedentary food-collectors and fishermen whose economy is structurally very similar to that of an agricultural population. Then there are those contemporary hunter-gatherers who base their economy on trade of local products with outsiders, and "cash hunters" whose trade is tied to national and international market economies. These economic variations of the hunter-gatherers are paralleled by their equally diverse social organizations.

Hunter-gatherer societies are those whose primary reliance is on hunting, gathering and fishing. They generally derive their sustenance from "broad spectrum" resources (Flannery 1971:55-56), and depend on simple manipulation rather than complex transformation of the natural environment (Harris 1977:14). Hunter-gatherers are energetically simple people, who use mostly "human" energy and harness a low level of energy for direct human utilization. Socio-culturally they tend to be nomadic and egalitarian.

Prehistory tells us that change has characterized of the hunting and gathering way of life since the Pleistocene. While this way of life is rapidly disappearing today, the large scale transformation of hunting and gathering cultures has not yet received its due
attention in the literature (Lee and DeVore 1968). Either such studies have generally been left to prehistoric archeologists to draw analogies with the past (e.g., Hayden 1981), or to nostalgic anthropologists, who reconstruct the past lifeways of modern survivors (e.g., Balikci 1970; Watanabe 1972). Considering that hunter-gatherer studies have already contributed to anthropological theory building (Radcliffe-Brown 1932), and have tremendous potential to do so, more analytical studies should have been done on their own merit. And, considering that the data base of living hunter-gatherers is shrinking at a rapid rate (Lee 1978:1), their study has special urgency.

Hunter-gatherer studies can also provide a number of empirical advantages for the study of change among human societies. For example, the study of change requires a better temporal view, which ethnographies of agricultural or other technologically advanced societies are said generally to lack. While, most contemporary hunter-gatherers have sketchier historical records, their change studies can more directly benefit from another sort of data from prehistoric archeology. Of course, the contemporary hunter-gatherers are not directly comparable to prehistoric ones and thus, there are a number of problems in drawing direct analogies (Binford 1968a:268; see also Gould 1980). But a careful scientific analogy between particular aspects of prehistoric peoples and of contemporary hunter-gatherers can be done (Yellen and Harpending 1972). This advantage provides a greater depth of temporality to the study of contemporary change among hunter-gatherers.

The transformation of hunting and gathering societies today also seems to exemplify the most dramatic case of change among human
societies in at least two respects. First, the hunting and gathering way of life today, if only an adaptation to a different niche, is still radically dissimilar from that of, say, agriculturalists. The socio-economic transformation of prehistoric hunter-gatherers into neolithic agriculturalists has been called a "revolution" (Childe 1951). The contemporary shifts from hunting and gathering to agricultural or industrial adaptations can mean an equally radical departure. Second, hunter-gatherers have lived in relatively isolated frontiers. In the past three centuries and during the historical period, the outsiders have encroached on the hunter-gatherer homeland to exploit various resources. This "frontier process" (Bodley 1975:24) has brought an unsolicited intervention of insurmountable scale. Often these disruptions have changed the hunting and gathering lifeways in a way that has no historical precedent. In short, the hunter-gatherer studies tell not only what happens when change takes place in a human society but also what happens when radical transformation takes place.

The change studies among hunter-gatherers also have some methodological advantages. For example, due to their varying external conditions, the sub-groups among a particular hunting and gathering society can show a continuum of traditional to transitional ways of life. This is relatively rare among technologically more advanced societies. Such a synchronic situation can reflect a sense of diachronic stages of change and provide methodological opportunities to reconstruct the past lifeways of hunter-gatherers.

The hunter-gatherers also live in a system that is, relatively speaking, clearly definable and easily describable. In spite of the external encroachment, they in general have maintained relative isolation from their neighboring socioeconomically similar and
dissimilar populations. Such relatively isolated human communities tend to have more or less defined socio-cultural and linguistic boundaries (see Turnbull 1972:17). While contemporary hunting and gathering populations no longer maintain an economically self-sufficient system, they are in comparison to most agricultural and horticultural societies, less interdependent with outside populations. Because they have less intensive as well as extensive economic ties with outside populations, their economic chain is less "contaminated" (Lee 1969:50). Hunter-gatherers are also generally "ecosystem people" (Dasmann 1974), who tend to live within a single ecosystem, or at the most two or three adjacent ecosystems. In short, it is not difficult to describe the relatively delimited systems of the hunter-gatherers.

*The Agta Negritos*

Continental, peninsular and insular Asia contained numerous hunting and gathering groups until the early decades of this century (see IUAES 1958). There was also a great deal of enthusiasm concerning research on these groups, particularly during the colonial era of Asian history. While other groups also attracted attention, the most notable socio-cultural studies were conducted among the various groups of Negritos (in Spanish 'small black people') of South and Southeast Asia (e.g., Man 1883; Radcliffe-Brown 1932; Schebesta 1927, 1952-57). The end of the colonial period marked the decline in the studies of hunter-gatherers in Asia. The Asian hunter-gatherers as a whole are thus a little studied group today (Heine-Geldern 1957), and consequently, there is a paucity of ethnographic data on these groups (Hutterer 1979:846).
The accelerated intervention by outsiders at the turn of this century was forcing the transformation of hunter-gatherers worldwide (Lee et al. 1968:5). The Asian hunter-gatherers were no exception. A survey of ethnographic literature pertaining to technologically simple societies of Asia indicates that their way of life has been changing, particularly since the 1930's.

The implementation of externally initiated "planned" change among Asian hunter-gatherers also began in the 1930's. Governments, colonial or otherwise, sponsored resettlement projects for these generally nomadic people and, in most cases, vigorously campaigned against the continuation of a hunting and gathering way of life (Harrison 1949; Sinha 1972; Carey 1976). It seems that the rationale for such planned change, generally perceived by the hunter-gatherers themselves as forced, is partly based on the realistic assessment that the isolated frontiers would be ultimately encroached upon by outside populations. Due to what the change agents called the "philanthropic attitude" of the governments concerned, they wanted to replace the hunting and gathering way of life prior to such major disruptions. The government programs are, however, mostly rooted in what Bodley calls "technological ethnocentrism" (1975:10). Describing the hunting and gathering way of life as "wild" and thus inferior (Warren 1964:65), the change agents assume that the only way for these people to become "civilized" is for them to settle down. In tropical and sub-tropical areas, hunter-gatherers were also expected to become agriculturalists. From the change agents' point of view, the increasing trend of settlement permanence and the agricultural way
of life is a positive "development" for these technologically simple people. This unfortunately lingering ethnocentric assumption is the basis for the continued effort of governments to introduce planned change among hunter-gatherers.

Government sponsored projects seem, however, only little more than coincidental in bringing change among hunter-gatherers. Those groups which inhabited geographically isolated regions and were not directly influenced by the government projects, were also changing. Wherever it was feasible, they also followed a general trend of transition away from hunting and gathering and towards horticulture. If externally initiated projects were a factor, it was only in that they accelerated what had been an already ongoing transformation of the hunting and gathering way of life. Today, when there are so few surviving hunter-gatherers in Asia who fit the classical definition (Murdock 1968:13-15), the radical process of their transformation continues.

It is fair to say that the change among Asian hunter-gatherers has received only descriptive treatment in the literature (e.g., Shafer 1940; Harrison 1964; Hilger 1968). We know so little of why and how their traditional way of life was replaced by a transitional way of life. We also know little about what the consequences have been for such hunter-gatherers. In this study, we will attempt to answer these questions for one particular group of Philippine Negritos.

The Philippine Negritos 1 in general represent one of the more traditional hunter-gatherer-horticulturalist populations in Asia.
They have always fascinated missionaries, travelers and colonial administrators and have perhaps one of the longest historical records of Asian hunter-gatherers. There are, however, only two intensive ethnographic studies on the Philippine Negrito groups in the pre-World War Two literature (viz., Reed 1904; Vanoverbergh 1937-38). At the end of World War Two, some more specialized studies describing the Negrito culture and subsistence pattern began to appear (Fox 1953; Garvan 1963).

The Philippine Negritos are found widely scattered through all three major island chains, the Luzon, Bisayan and Mindanao. The ethnogenesis of the group is still being debated. One hypothesis, called the "wave theory," claims that when successive waves of human immigration in prehistoric times populated the Philippine (Kroeber 1928:54), the Negritos were one of the earliest people to enter the islands (see Cotton 1979:134). This hypothesis has however remained unproved due to lack of archeological evidence (Clark 1971:339; Fox 1972:3). On the basis of their phenotypic characteristics and a few magico-religious practices, the Negritos of the Philippines have been categorized as one racial group along with other Asian Negritos, the Andaman Islanders and the Semang of Malaysia (Cooper 1940; Schebesta 1952-57; Maceda 1964). However, recently Solheim has suggested that these different groups of Asian Negritos "evolved locally under similar lowland rain forest ecological conditions" (1981:25). Human geneticists are also finding out that even within the Philippine Negritos, the groups do not show similar genetic markers (Omoto 1981:421). These findings may suggest that the
Negrito groups have had different origins and immigration histories and have remained as semi-isolated human breeding populations (Pascacio et al. 1974:224).

While we assume that the Philippine Negritos were strict hunter-gatherers centuries ago, their trade relations with the neighboring agricultural and horticultural populations are not new. Early Spanish reports claim that barter of wax for tobacco between these groups existed at least as early as 1763 (Rahmann 1963:144). The Negritos were also at times employed by neighboring populations as woodcutters and agricultural wage laborers. They were also taken as household slaves as recently as the 1920's (Larkin 1972:5; see also Worchester 1913). Strained relationships between the Negritos and their neighbors sometimes resulted in inter-ethnic killings or raids. In some areas, the Negritos prohibited the lowlanders from cutting timber, hunting in the forest or fishing in the river, without a "tribute" for such access (Rahmann 1963:144-151).

Today, the Philippine Negritos have become increasingly interdependent with outside populations. As a result of increased interactions with outsider, their age old isolation has been terminated. More recently, mercantile activities such as logging and mining have catastrophically altered the Negrito environment and promoted immigration of outside populations into the Negrito homeland itself. Many Negrito groups have been forced to take up some horticultural activities to supplement their declining wild food resources.
Fox has, rather optimistically, urged the search for some common
cultural and linguistic elements "peculiar" to the scattered Negrito
groups to help define basic elements of an earlier Negrito culture
(1953:173). However, linguistic research in particular Negrito areas
has shown that there is no common linguistic element that is shared
among the Negrito groups, which is distinct from other Philippine
ethnic groups. Further, some Negrito languages share fewer cognates
among themselves than between one of them and a non-Negrito language
of the area (e.g., Headland 1981a:12). Despite decades-long anthropo­
logical research among groups of Philippine Negritos, no substantive
detail of wider, pan-Negrito applicability has been discovered, except
for their traditional hunting and gathering adaptation.

Paradoxically however, change in the cultural and linguistic
elements of the various groups is one such common Negrito phenomenon.
While this ongoing change among the Philippine Negritos has been the
topic of numerous studies (Maceda 1964; Cadelina 1973; Eder 1977a,
1977b), there is yet no comprehensive work to date to study it
holistically. This study is an attempt to look at this change
holistically among the Negritos of northeastern Luzon.

The Negritos living in northeastern Luzon of the Philippines
call themselves Agta. On a general socioeconomic continuum, the
Agta are the most traditional group of the Philippine Negritos and
represent one of the few surviving hunter-gatherer societies in Asia.
They were 'ecosystem' people, who lived as part of the environment
rather than mere exploiters. Technologically simple, the Agta
ancestors derived their sustenance from daily foraging of wild
resources. There is evidence that the Agta lived well below the carrying capacity level of their environment and were self-sufficient. Their persistent adaptation in a tropical environment bears witness to the viability of the traditional Agta way of life. The cultural world of the Agta was also a tested product of knowledge and experiments passed down through generations. Except for a little trade with the neighboring settlers, they were invariably left to themselves in their rather impenetrable home.

The Agta Negritos today speak various languages of the Austronesian sub-family called 'Northern Cordilleran' (Tharp 1974:107). Some linguists have suggested that the Negrito groups such as the Agta originally spoke languages which were not Austronesian. Vanoverbergh has claimed that the original speech of the Negritos of Luzon was irretrievably lost or at least had become a dead language (1937:9-10). Others report that some Negrito languages including those of the Agta still have their own noun markers as well as grammatical particles and pronoun sets and think that these Negrito languages are fully developed; they are "neither more nor less than regular Austronesian languages" (Headland 1975a:48). As with other Philippine minority groups, the Agta languages show heavy lexical borrowing from their neighboring and regional languages.

According to Keesing (1962:334, 361), the Negrito groups like the Agta represent the oldest human stratum among populations of the island of Luzon. They were displaced from their original homeland by "new comers" and took refuge in the foothills. They were
further displaced after the penetration by immigrants early in the Spanish time. The Spanish, who disfavored the Agta for their pagan ways, had encouraged Christianization "to save the lost souls." The Americans tried to rehabilitate them "at a civilized form of rule" (Turnbull 1930:passim). Mercantile operations in this century brought encroachment on the Agta homeland, and encouraged further immigration of outside populations. More recently, Panamin--the quasi-governmental agency--and the military, since the declaration of Philippine martial law in 1972, have attempted to resettle the Agta groups in particular coastal areas. Together, these contacts and encroachments have brought a number of changes for the Agta.

The rationale behind a study of an ongoing change among the Agta of northeastern Luzon is two fold. First, the Agta exist in a rather unique situation. They live in a relatively rugged terrain and have experienced differential isolation from the outside population. Depending on the history of contact and encroachment by the outside population, the Agta groups show spatial variations of their subsistence pattern. Thus, the Agta exhibit a socioeconomic continuum that is somewhat reflective of the one that is found among Philippine Negrito groups as a whole. A synchronic analysis of this continuum can provide some of the answers to the temporal processes of change among the Agta. Without this methodological advantage, a diachronic approach requiring longer field work would have been necessary.

Second, the Agta are one of the more intensively studied Negrito group of the Philippines in recent years. There is a fair amount of comparative literature on various Agta groups. For example,
Bennagen (1976) provides a detailed ethnography of one particular group. An intensive analysis on the nature of interaction between "semi-settled" Agta and their agricultural neighbors has been conducted (Peterson 1978a). A description of the traditional hunting and gathering subsistence pattern of an interior group is also provided (Estioko-Griffin and Griffin 1981b). Linguistic and demographic conditions of one group of Agta have been documented (Vanoverbergh 1937-38; Headland and Headland 1974).
2. THE PERSPECTIVE

Anthropologists seem to be asking three basic questions in their study of change among human societies. First, the primary question is why does a human society change (Steward 1955:5)? Second, how does the change in a human society take place (Barth 1967:661; Flannery 1972:6)? Third, what does change mean to a human society experiencing it? These three questions represent aspects of change, which are often respectively called the conditions, the processes and the consequences, and comprise the main foci of anthropological studies of change.

Theoretical perspective

The idea that the analysis of change among human societies should be done by using a systems framework is becoming popular among anthropologists (Flannery 1968; Rappaport 1968; Jochim 1979). The present study also borrows the general notion of a systems perspective to describe the conditions, processes, and consequences of change among the Agta society.

Anthropologists have long recognized that a culture is an organized system. For example, it was Durkheim (1965, originally 1895) who made the explicit statement that any given aspect of a society is related directly or indirectly to all other aspects. The structural and functional schools of anthropology further elaborated the idea that changes in any institution of necessity lead to changes in other parts of the social system. In the 1930's culture was
popularly conceptualized as an integrated whole (Firth 1936; Evans-Pritchard 1940).

While anthropologists recognized culture as an integrated system, they were generally uninterested in or unaware of the development of formal systems theory (Bohannan 1980:516) even as late as the 1960's. The modern systems perspective was adopted by a number of social scientists (e.g., Boulding 1956) to study social systems. From the systems perspective, a human society is a complex living system (von Bertalanffy 1968:18). While the direct analogy between social and biological systems is debatable (Jochim 1979:92-93), most systems theorists agree with the idea that the biological cell and human social group are, from the systems standpoint, not merely like each other but the rules that apply to one can also apply to another. They work by precisely the same principles of flow—with the minor difference that one is chemical and the other is cultural (Bohannan 1980:516). These developments eventually caught on in anthropology. Today, anthropology stands to benefit from formal systems theory and particularly from its inter-disciplinary integrating potential.

The application of the systems framework, however, faces some legitimate methodological hurdles. Explanations of systems behavior pose tremendous problems of translation into human terms (Jochim 1979:94). There are also logistical-organizational problems. For example, a systems view is against any compartmentalization of components (Anderson 1973:215). On the other hand, the analysis of the systems must begin by identifying the suitable components. That is, while a particular system does not specify its components,
its analysis requires compartmentalization (Thomas, Winterhalder and McRae 1979:23). The identification of components is thus arbitrarily made on the assumption of causality extrinsic to the idea of system (MacCormack 1978). In this study, the systems perspective is simply a conceptual framework or a heuristic strategy used to describe the system. I have compartmentalized the Agta system into two components, the physical and the socio-cultural, and each component is further sub-divided into a number of sub-components.

The systems perspective calls for a holistic analysis to describe a human society adequately. It states that all things have connections with many other things and the significance of any one depends on its relationship with others (von Bertalanffy 1968:38, 54). That is, the various components which comprise the system are interdependent elements of the system. To translate this into the problems of socio-cultural anthropology, the economic organization of a society has particular features because it is interrelated with the kinship, political organization, religion, etc., of that society. For the study of change among the Agta, a holistic orientation should mean a consideration of a multitude of aspects of Agta society. However, a total description of the Agta society is, at least logistically speaking, not possible. Thus, with the holistic emphasis in mind, the components and sub-components most relevant to the study of change among the Agta will be described. There will be little direct analyses of linguistic, political or ideological aspects of the Agta society. On the other hand, other aspects of the Agta society such as the ecosystem, kinship, settlement pattern, technology and social
organization will receive more intensive attention. While this is not a study of cultural ecology or economic anthropology *per se*, the primary themes are changes in the ecosystem and economic structures of the Agta.

Closely linked to holistic thinking is the idea of systemic interrelationships between components (Arensberg 1981:578). A system is not just the sum total of its parts, but is equal to more than those parts. While the components themselves are changing, the interchanges among components may result in further changes in the nature of the components. Through cumulative feedback, these changes will eventually bring important consequences for the system as a whole (Buckley 1968:490). For example, change in the economic organization of a society brings changes in kinship, political organization, etc., and consequently in the society as a whole. Thus, a mere mechanistic description of the totality of parts is incomplete without an organismic analysis of the totality of relations among those parts.

The interrelationships between components can be mutual or unidirectional, linear, non-linear or intermittent, and varying in degrees of causal efficacy and priority (Buckley 1967:41). To understand this multitude of interactions, one must look at the "circularity of relationship" (Clarke 1971:ix). However, a total description of this myriad of intricate and often subtle interrelationships between components is again not feasible. In this study, there is an implicit assumption that components and sub-components are systemically interrelated. It exemplifies the case by taking particular components and sub-components. For example, it will show that the physical and
socio-cultural components maintain systemic interactions. In particular, the interrelationship between ecosystem and economic organization will be detailed. Within the socio-cultural component, the kinship system of the Agta will be shown to have a cross-cutting role affecting their settlement pattern, resource allocation, etc. It is in these changing systemic interrelationships of components and sub-components that we will seek the answers as to why and how change in Agta society takes place.

The systems framework also provides a better perspective for the understanding of stability and change among human societies. In the past, anthropologists have generally emphasized either the stability in a society with little reference to its change or vice versa. Maruyama has suggested that a system tends to preserve or maintain its given form, organization, and state, by a process of "morphostasis." At the same time, the system also undergoes a process of "morphogenesis" whereby it tends to elaborate or change the given form, structure, and state of the system (1963:164). Analysis of both the morphostatic and the morphogenetic aspects of a human society is required to understand the change in that society. In this study, I will first describe the Agta traditional system to emphasize its morphostatic process. I will show that the Agta maintain their traditional state through the check and balance mechanisms of ecosystem, kinship, settlement pattern and social organization. This will be followed by an analysis of the morphogenetic aspect of the Agta system. I will argue that alterations in the pre-existing demographic, ecological, economic, etc., situations bring transformation of the Agta society.
From the systems point of view, a local system is interrelated with a number of other local systems to form a higher order system. By analogy, a local human group is tied to its adjoining local groups. There is import and export of materials and energy, and flow of information between these groups. Thus, the analysis of a local group must be done in its regional context. There is however one problem. Human social systems are open systems, which may not have clearly defined boundaries. In such a situation, an investigator may be forced to delimit a human group arbitrarily prior to documenting the exchanges that take place across the boundaries. Fortunately, it is less arbitrary among hunter-gatherers like the Agta. I will show that the Agta of a regional system are sub-divided into a number of "linguistic" groups. Additionally, the Agta groups maintain a cultural and economic boundary with non-Agta populations. I will analyze the exchanges among the various Agta groups and between Agta and non-Agta groups. I will also argue that the events in the non-Agta system are directly responsible for bringing change among the Agta.

The system of a society can be described differently depending upon whether the observer takes his own perspective or bases his description on the perspective of the people he is studying. The first, "observer's model," is the analytic explanation generally derived from the observer's own knowledge of western science. The second, "insider's model," on the other hand, is based on the categories and relations that the people themselves can see. These two models are constructed by applying two perspectives originally suggested by Pike (1966, 1967).
The observer's model is constructed by using the "etic" approach, which refers to all that is involved in a relatively culture free description of the society. Because the observer uses a descriptive notation derived from comparative study, the etic approach is an important step toward the construction of a model that will have cross-cultural application. Anthropologists have relied heavily on this approach to describe human societies. Its major drawback, however, is that the resulting description may not necessarily coincide with the view of those in the social group concerned.

The "emic" approach is used to construct the insider's model. This approach attempts to construct a group's model of itself. It describes the group and its environment solely from the point of view of the natives (Hardesty 1977:290). While anthropologists were always aware of it (e.g., Malinowski 1922:25), the emic approach was formalized by a relatively recent movement in social science called "ethnoscience." It also has its own problems. For example, there may not be a single overriding model of the culture held by all members of the society. Notwithstanding the problems with each approach, both etic and emic approaches are complimentary. I will use both in an effort to achieve the greatest possible analytic depth.

The state of society changes both because of the way people behave and in spite of how they behave. One of the characteristics of humans is to have some degree of cognitive anticipation (Bennett 1976b:848). The anticipation of native themselves about their future conditions will affect their behavior and to some extent determine the course of events in the future. The conditions, processes and
consequences of change are definitely related to the "scientific" characteristics of the situation. At the same time, they are also invariably related to how people themselves appraise and respond to the situation, which are predicated upon their perception of the situation. In my discussion of various topics throughout this work, I will describe the physical and socio-cultural environments of the Agta from the investigator's point of view and follow this with an attempt to present the description from the participant's perspective. I will also present an appraisal of the alterations of the Agta system from both the observer's and the insider's perspectives.

Field Method

Field work among the Agta Negritos was conducted between June, 1979 and May, 1980. The first month was spent in a preliminary survey of the area. The following six months were devoted to conducting intensive ethnographic research among one particular group of the Agta. The remaining months were spent carrying out comparative research among other Agta groups. Prior to the field work, I studied the trade language of northern Luzon, Ilokano. During the field research, I hired an Agta tutor and used my knowledge of Ilokano to learn the Agta language.

Studying a mobile hunting and gathering society like the Agta requires a different research strategy than, say, that needed to study a settled agricultural group. For example, an Agta camp is located in a small area of the river bank. One can constantly observe the ongoing activities in such a camp without bothering the people. However, the small size of the band is also a source
of problems for the researcher. There are less than ten adults in an Agta band. To have interviewed them all the time would soon have tired them. Added to this are the problems associated with incomplete control of the language. One has to resort to indirect observation to collect data whenever possible.

In my case, the interview technique was employed effectively only as my knowledge of the Agta language improved. Such sessions were deliberately kept unstructured and informants were given the flexibility to choose the directions. Roughly once a week, interviews were conducted in a somewhat structured manner to verify the data collected through indirect observations. Even if the informal interviewing began with one adult male, it often became a group session. Women and children sometimes volunteered to correct the male informants.

Participant observation was another important technique used in the data collection. Living among these numerically small Agta groups, an anthropologist cannot remain marginal. As I was expected to take part in some of the day to day activities, participant observation became rather a normal routine. Some activities, like hunting, which required both energy and skill, were less frequently observed than others.

My typical day in the Agta camp began very early in the morning. As people woke up, I would enquire about their plans for the day. After breakfast, men usually left for the jungle for hunting or fishing. Women also often left for short foraging trips. If I did not join any such activities, I was left behind with the children in the camp. By lunch time, women and some men returned to cook and
feed their children. A few would leave again for another foraging activity to return by early evening. In evenings when they were free, I would talk to them about the days' activities.

Evenings were almost always colorful in the Agta camp. While members, either male or female, cooked, the remaining crowd converged on the hunt of the day or on the consumer goods brought back from nearby agricultural settlements. Discussions ranged from game to camp movement. After the evening meal, the Agta retired to their family lean-tos. While the talk continued across lean-tos, some sang songs till late at night. Nights were usually quiet. In the colder nights, however, individuals would get up periodically to restart their fires. Sometimes dogs fought for space with humans and with other dogs occasionally causing a lean-to to collapse.

My single greatest logistical problem in the field was due to the Agtas' frequent movement of their camps. It seriously limited the amount of food and other research supplies I could have. Obtaining supplies from the town and the neighboring barrio also became a problem, as I could not anticipate camp movements early enough to determine our locations. The problem became more serious during the northeast monsoon season, when we were sometime stranded for days.

In the camp itself, I had some problems. When the Agta break camp, sometimes the band splits into two. I had to decide which to accompany. Agta themselves make these decisions on the basis of their kinship network. Since I had none, I would arbitrarily decide to join one group. Such random affiliations brought into question
my neutrality among the groups. In early period of my field work, there were subtle accusations that I was partial to whichever group I chose to travel with.

Collection of genealogies posed the major delay in the data gathering. Agta do not know their absolute age and sometimes not even their birth places. Among the Agta, personal names seem to represent the soul or the spirit of the bearer. They thus observe numerous naming avoidances. For example, naming of the dead is conspicuously avoided by spouses, children, and even parents of the dead "because his spirit troubles the living." They also do not name certain categories of relatives. Agta hesitate to name parents "because they feel shy" and do not name, infant "because he is woken up." If one names one's close affine, "it causes boils (balse)." Understandably, Agta do not remember the names of dead relatives or the siblings, spouses, etc., of such dead relatives, beyond two to three generations. Serial monogamy, which is very common among the Agta, created complications which were frequently not fully described by my informants. Thus, the collection of genealogies required working and verifying with many informants.

For comparative purposes, a relatively large Agta population inhabiting a relatively vast area has been taken. Methodologically at least, I may have spread myself too thinly. This was done to insure that groups who represent the above mentioned socioeconomic continuum of the Agta be included. In order to handle the ethnographic information of this regional population in a less clumsy way, I have quantified the data as much as possible. Also, whenever
it was possible and desirable, I attempted to quantify the data according to the native categories.
3. THE SETTING

The geographical setting for this research is the province of Isabela, which is made up of the central part of the Cagayan Valley as well as one central section of the Sierra Madre Range. The particular group under detailed study lived within the municipality of San Mariano in the valley watershed of the Sierra Madre Range (see Map 1).

Geographical Orientation

The province of Isabela, the third largest in the country, has 10,761 square kilometers of land area. In 1977, the population of Isabela was estimated to be approximately 766,000. With an approximate population density of seventy-one people per square kilometer, it was the most populous province in northern Luzon. The western half of Isabela reported higher density of population per unit of area than the eastern part. From 1967 to 1977, there was a net immigration of 24,590 (i.e., a positive migration ratio of 14) persons. Average household size in the province was six (PDA 1978:16-18).

Typographically, one-sixth of the province is plains suitable for permanent agriculture. Of the remaining area, approximately one-third is denuded undulating hills and one-half is forest covered mountains and coastal areas.

The province of Isabela experiences a mean monthly temperature of twenty-five degrees Celsius. The range registers lowest in
MAP 1
EASTERN PART OF THE
PROVINCE OF ISABELA
January (15° C) and highest in May (36° C). It is also a region fanned by monsoon. The northeast monsoon brings heavy and continuous rain from September to January. The area is washed by the southwest monsoon, which is particularly persistent in western part of the province, between May and August. In the plains of Isabela, the average yearly rainfall amounts to 2,100 millimeters (PDA 1978:6-9). Although, the amount and intensity of rainfall varies across the northeast and southwest monsoons, all months of the year experience a number of rainy days. Thus, this part of northeastern Luzon in general experiences a less marked "ecological" seasonality than any other area in the Philippines (Coronas 1920; Hernandez 1954; Flores and Balagot 1969). It is also estimated that one-third of the tropical cyclones that pass through the Philippines effect northern Luzon (Flores et al. 1969:173).

Fifty-six percent of all the families in the province claim a landholding of less than three hectares. Further, approximately fifty percent of farm lands are either under part or full tenancy. Perhaps such a high tenancy ratio is due to the fact that large tracts of fertile land in the plains of western Isabela are still parcel land (T: hacienda) owned by private corporations, mainly to grow tobacco.

Isabela, however, is still a grain surplus province. In 1976, the effective crop area devoted to rice (T: palay) production was 171,285 hectares and overall the yield was 2,400 kilograms (48 cavan) per hectare. The following year, corn ranked second to rice, in production and value, with 74,205 hectares of effective crop area
and 950 kilograms of production per hectare. Tobacco, the most important cash crop, came third that year with an average yield of 1,075 kilograms (21.5 quintals) per hectare planted in 12,610 hectares (PDA 1978:55-60).

The western half of the province of Isabela is part of the larger Cagayan Valley. Flanked by major physiographic features of the Central Cordillera Mountain on the west and the Caraballo Mountain on the south, the longitudinal basin of the Cagayan Valley is approximately 7,000 square kilometers. This floor forms part of the Cagayan River drainage, the biggest river basin in the country. This drainage has an area of approximately 25,649 square kilometers and an annual runoff of 53,943 million cubic meters (NWRC 1976:15).

Vast stretches of the Cagayan Valley remained a frontier until the middle of this century. Except towards the mouth of the Cagayan River in the north, the Spanish colonial power failed to penetrate the valley and to subdue the runaway "infidels," the indigenous population who resisted Christianization (Keesing 1962:177). It was only small waves of immigrants, mostly the Ilokano from the west coast of Luzon, who entered the valley in search of new land. Later, during the Philippine monopoly of tobacco trade with Spain (1781-1863), the rich and mineralized soil of the Cagayan Valley attracted more pioneers to grow tobacco (McLennan 1980:112-118). However, the sparsely populated southeastern and southern corners of the valley were not brought under effective control even during the American colonial period early in this century.
Events in the early decades of this century, however, intensified immigration into the Cagayan Valley. For example, the Americans opened the North Luzon Highway during 1920-25, and connected the sparsely populated headwaters of the Cagayan River to the crowded Central Luzon plains. Continued land and population pressures in the plains of Luzon resulted in peasant revolts such as the Huk Rebellion before and after World War Two. A large population, dissident or otherwise, came to the Cagayan Valley to take refuge. Today, the Cagayan Valley population is an ethnic mosaic representative of the entire Philippine population.

The Cagayan Valley, including the slopes that rise from the floor, are becoming devoid of any primary vegetation. The forest, which is found only on the higher elevations of the slopes, is receding every year leaving behind vast stretches of exposed land. Such areas, which are sometimes used as pastures, are burnt annually either deliberately or due to escaped fires, as if to map the man-induced degradation of the ecosystem. While the eroding topsoil of the slopes may have enriched the low lying cultivated areas in the past, today, some low lying areas face the problem of siltation and inundation.

In eastern Isabela, the terrain rises to the saddle of the Sierra Madre Range and falls to the beaches of the Philippine Sea. While the foothills of this range are geologically marine and terrestrial sediments, the Sierra Madre is mainly of volcanic origin and consists of basaltic and diorite rocks and occasionally of limestone formation (Barrera 1969:58; Antonio 1974:2). This
range dominates the topography of the entire north-south axis of eastern Luzon. It has numerous secondary ranges and measures thirty to sixty kilometers in width. The elevation of this range in the province of Isabela varies from as low as one hundred to eighteen hundred meters, in places creating high angles of inclination. The entire length of this range is inhabited by various Negrito groups of eastern Luzon.

Most areas of the Sierra Madre in the province of Isabela are covered with tropical rain forest. This forest has been the source of timber and game since Spanish times (Blair and Robertson 1903-09, 18:98-99). Animal powered logging, often called "carabao logging," exploited the hard wood for house, boat, or furniture construction. Small scale commercial logging, particularly by the Japanese, began in the early decades of this century. Due to the problem of transportation however, they concentrated only in a few coastal areas of northeastern Luzon (Goddard 1930:311). Thus, even in the later decades of this century, rain forest such as the Sierra Madre was described as being 'impenetrable' (see Jurika 1962:51).

Today, the forest area of the Sierra Madre is shrinking. As the international and domestic lumber demand increased in the 1950's, widespread commercial logging began in the area. The opening of highways coupled with access to leftover heavy machinery after World War Two further intensified the logging. Isabela today ranks as one of the top log producing provinces in the country, and the first in Luzon. In 1977, approximately six thousand square kilometers (57% of the total land area) of the province was officially designated
forest land. In 1978, fourteen logging concessions, operating in the province, covered a total forest area of approximately five thousand square kilometers (83% of the total forest area). The official estimation of the total lumber production for that year in the province came to one hundred million board feet (PDA 1978:6, 65). In addition, geologists are finding that the Sierra Madre contains valuable minerals such as copper, nickel and chromite. Following the logging companies, mining companies are entering the area. Because forest must be cleared before mining of such minerals begins, it has intensified further logging.

The valley and coastal watersheds of the Sierra Madre differ in topography. In general, the valley watershed is comparatively broader and gentler in terrain; the rivers are part of the Cagayan River tributary system, thus giving the terrain a somewhat complicated formation. On the coastal side, the rivers release themselves directly into the Philippine Sea; thus the hills run at right angles to the ridge of the Sierra Madre. These topographic differences of the two watersheds, compounded by slight climatic variations, have resulted in somewhat dissimilar forest communities. The valley watershed is also more heavily logged. This is partly due to easy access from the highways. Lumbermen also claim that the forest on the valley watershed produces more export quality logs per unit of forest area than the coastal forest.

The logging trails that criss-cross the valley watershed have provided shuttle transportation between remote places and the highways. On the other hand, the coastal areas, which until the 1920's were considered to be more accessible (by boat) than the valley side, have become remote. Single engine planes that offer services to
particular coastal towns are both erratic and expensive. Motorboats, which frequent these coastal towns to deliver consumer goods and to haul local produce, are dangerous to ride. Hiking across the Sierra Madre is most of the time the only reliable alternative, requiring at the least an arduous two day journey.

Due both to hostile terrain and remoteness, the agricultural population along the approximately two hundred kilometer long coastal area of the province of Isabela is relatively sparse. Except, in the Palanan Bay area, where ecclesiastical groups such as the Franciscans have had missions since the seventeenth century (Keesing 1962:258), the river terraces and plateaus of the coastal watershed of the Sierra Madre in Isabela have only recently been settled. Even today, the immigrant population, which followed the logging and mining entrepreneurs to these coastal areas, pulsates seasonally.

San Mariano, one of the thirty-seven municipalities of the province of Isabela, is perhaps the largest in the country in terms of the total land as well as forest areas. It is located on the valley watershed of the Sierra Madre and has a total land area of approximately fifteen hundred square kilometers. Physiographically, it is divided by the inhabitants into two areas. The northern half, called the "small stream area," is composed of three river valleys with an approximate drainage area of seven hundred square kilometers. To the south of this is the "big stream area," the boundary of which goes beyond the municipality of San Mariano and forms a twenty-five hundred square kilometer drainage area. The river terraces and the rolling hills in between the river valleys form the settlement area of the municipality.
San Mariano is still a frontier in the literal sense. Established as a municipality in 1923, it had a sparse population concentrated in a few barrios in the earlier half of this century. In 1977, there were approximately twenty-seven hundred people, excluding the Agta and other seasonal residents in the municipality. Typical of the province, approximately fifty percent of the permanent residents were Ilokano, followed by Ibanag (36%) (MDS 1979:5-10). The Ilokano is the trade language and Ilokano along with Ibanag control the economy and politics of this primarily Roman Catholic population.

The extent of logging operations in the province is perhaps nowhere greater than in the municipality of San Mariano. While ninety-four percent of the land area in the municipality was classified as jungle in 1979, sixty-three percent of this jungle area was also concessioned out to six logging operations. Ten saw mills, with band mill machines, in the municipality received a total of ninety-eight thousand cubic meters of log (Bureau of Forestry, San Mariano station, 1979). It is estimated that the municipality draws an annual revenue of over a million pesos (7.50 pesos is equivalent to one US $) from the logging industry alone.

The municipal town (T: sentro) of San Mariano itself is connected by a twenty-one kilometer long all season road from the North Luzon Highway. Besides being a market center, it houses the only church in the municipality. During the logging season, people from even remote barrios hitchhike on trucks to attend Sunday morning mass. Sunday is also a market day when consumer goods and local produce are bought and sold. In the afternoon, as the market withers, men throng the cock-fighting arena, billiard hall or movie theatre.
In the northeast monsoon season, when logging activities stop, people from remote barrios have a one day hike along the rivers to get to town. Some resort to dug-out canoes or bamboo rafts to travel. To transport goods, wooden sleds or carts pulled by water buffalo are used. When typhoons hit the area or when rivers are too flooded, travel can become impossible.

The Study Population

Eastern Luzon is the area with the most dense population of Negritos in the Philippines (see Fox and Flory 1974). Schebesta (1952-57) claimed that approximately 8,000 Negritos were concentrated in eastern Luzon. With the exception of accounts that 1,315 Negritos were listed in the Cagayan Valley in the 1939 census (Keesing 1962: 220,264) and the Panamin estimate of approximately eight hundred Agta in Palanan Bay area (Peterson 1978a:114), no recent census to my knowledge, including the 1970, has actually enumerated the Negrito population of northeastern Luzon. Consequently, there is no actual demographic breakdown of the Agta of northeastern Luzon, including Isabela.

My census for the Agta of Isabela shows that there are a total of 1,644 Agta Negritos concentrated in eight municipalities along the Sierra Madre. They were more concentrated in three municipalities of the coastal watershed and one municipality of the valley watershed. Approximately two-thirds (1,203) of the population lived in a relatively narrow belt of the coastal watershed. At the time of the census taking, the Agta of Isabela were inhabiting forty-two of
the numerous river valleys. Eight major rivers carried most of the population, the highest concentration being located in the Palanan river valley. The study of their settlement showed that the population was scattered among eighty camps (see Appendix 1).

There are disparities in the settlement pattern among the Agta groups of two watersheds of the Sierra Madre. In general, the Agta of Isabela live an average of 4.5 kilometers away from the next nearest Agta camp, 6.8 kilometers away from the nearest agricultural settlement, and 8.3 kilometers away from the nearest logging camp. However, the coastal watershed Agta live closest to agricultural settlements (3.8 kilometers) and the valley watershed Agta live farthest from such settlements (13 kilometers). I will show later that these differences in the settlement pattern affect the degree of interaction between the Agta and non-Agta populations.

The Agta of the two watersheds also show differential aptitudes for horticultural activities. At the time of the census, ninety-two percent of the Agta families interviewed claimed to have practised some form of swiddening in that year. However, while ninety-six percent of the Agta families living on the coastal side had practised subsidiary swidden activity, only eighty percent of the families of the valley watershed claimed to have done so.

Notwithstanding the variations found between the populations of the two watersheds, I have chosen the Agta group living in the small stream area of San Mariano on the valley watershed, for detailed ethnographic study. The decision to select this group, which I will call the "Disabungan Agta," is again partly rooted in the pattern of
anthropological research among the Agta Negritos. To date, research on the northeastern Luzon Negritos has been concentrated on the coastal side of the Sierra Madre. A few researchers (e.g., Peterson 1978a: vii) have made visits to the groups living on the valley watershed, but with the exception of Schebesta (1952/57) nothing has been written on the Agta of the valley watershed.

Further, because the valley watershed in general and San Mariano in particular are heavily logged today, they provide a more dramatic situation for the study of change among the Agta. The valley watershed Agta depend more heavily on wild forest resources than their coastal counterparts, since the open sea is inaccessible. Thus, the forest encroachment has had more direct consequences for the subsistence pattern of the valley watershed Agta. In the valley watershed itself, San Mariano is both remote and centrally located.

The "Disabungan" Agta live in three river valleys and at any given time, they form an average of six camps. They number one hundred and thirty-eight people (67 males and 71 females). The Disabungan Agta (henceforth Agta unless otherwise specified) are perhaps the most consistent hunters of the Isabela groups. This group also has the lowest (59%) percentage of households practising shifting cultivation in a given year.
II. THE TRADITIONAL WORLD
4. THE NATURAL ENVIRONMENT

Any description of a human system is valid only in reference to a particular point in time. However, to understand the change among the Agta, the Agta world is divided into traditional and transitional worlds. The "traditional world," the topic of this part of the study, describes those various components and sub-components which existed prior to the introduction of the non-foraging lifeway among the Agta. A substantial part of this traditional world of the Agta is still intact. In general, the description of this part emphasizes the morphostatic aspects of the Agta system. The "transitional world," the topic of the following part, will document the changes in the components and sub-components of the Agta system and thus emphasize its morphogenetic aspect.

Environment

Cultural and human ecologists frequently limit the term 'environment' to mean the natural environment. Suggesting that culture is a tool that man uses to interact with his environment, they define environment as the physical-material surroundings that enter into the relationship with human beings. Human ecologists in particular further argue that the material relations of a human population can be described with little reference to the views of the world entertained by its members (Vayda and Rappaport 1968). Other anthropologists, who have traditionally believed that culture is a coherent
system in its own right and not a mere tool to exploit the physical environment, find this 'habitat' meaning of environment narrow.

The more popular definition of environment in anthropology glosses over the distinction between nature and culture on the thesis that their relationship is very intricate. Moreover, this view claims on the methodological level, that the boundaries between natural and cultural components cannot be clearly delineated. To this view, environment encompasses not only space and habitat but also the socio-cultural milieu and the human groups beyond but within the experiential field (Helm 1962:633). Simply put, this definition of environment includes anything from forest to hormones and technology to beliefs of people. It is this definition that is used here to mean 'environment.'

Although the natural and socio-cultural realms are difficult to distinguish, their existence as separate theoretical entities cannot be argued. These two entities interact at different levels within the Agta system. The analysis of these interactional relationships is important if one is to understand the environment of a society. And, to understand the interrelationships of the sets of environmental components, a systemic conceptualization of the environment is required (Anderson 1973; Ellen 1979).

A systemic description of the environment of a society can be done from either the investigator's or the insider's point of view. Because the investigator and the insider order the importance of the environmental components differently, they differ in their understanding and evaluations of these components (Conklin 1961:27).
Thus, depending upon the perspective, the environment of a society can be described differently (see Fig. 1).

In describing the natural environment, an investigator analyzes the "scientific environment" of the group he is studying in accordance with the tenents of western natural history (Silberbauer 1981:259-260); he describes the hills, forests, rivers, plants, animals, etc., of the groups' ecosystem irrespective of their meaning to the people. He generally assumes that the physical boundary of the groups' environment is also the socio-cultural boundary of the group. He emphasizes those features of the socio-cultural environment that are most salient to him.

The insider, on the other hand, views his environment very differently. While his group occupies a particular tract of land, it may impinge on the neighboring group's area for the exploitation of certain resources. Within the potentially exploitable "operational environment" (Rappaport 1969a:186) of the group, there are only certain tracts, which are regularly exploited. This regularly exploited area, which I call here the "utilized environment," provides most of the material resources for the group. Moreover, many of the natural resources of the utilized environment have little direct relevance to the group. For example, the mineral ore underneath the ground (for which the Agta lack the technology to extract), an edible plant (which is presently unknown to them), or oxygen in the atmosphere mean very little to the group. Further, the physical boundary of their ecosystem may not coincide with the existential boundary of their socio-cultural system. If hostile relations between groups
Fig. 1: Schematic Representation of the Aqta Environment

- Investigator's concept of the Aqta environment
  - Physical environment
  - Socio-cultural environment
- Utilized portion of the physical environment
- Recognized portion of the socio-cultural environment

Insider's concept of the Aqta environment
exist, such boundaries may not meet but create a "no man's land." If there are trophic and non-trophic (such as marriage, information flow, etc.) exchanges across the boundaries, the groups are interconnected. Within a group's socio-cultural world, some of the functions of the socio-cultural components that are pertinent to an outside observer are not "recognized" or at least have very restricted meanings to the group. In short, the insider's view of his environment includes most importantly the utilized part of the physical environment and the recognized part of the socio-cultural environment.

The Utilized Environment

The total area of the operational environment of the Disabungan Agta is approximately six hundred square kilometers. The elevation of this forest area ranges from one hundred to approximately twelve hundred meters. The local topographic relief includes the three river systems of the valley watershed of the Sierra Madre, each having an average annual water runoff of approximately three hundred million cubic meters.

Of the operational environment area, the utilized environment of the Disabungan Agta comprises about forty percent. Hence, the actual utilized environment area is approximately two square kilometers per person. In physiography, the utilized area tends to be lower in elevation (ranging up to 800, and most frequently below 500 meters), and has in general lower degree of inclination. Only two of the three river valley are inhabited on a more or less regular basis and the areas close to these river banks are those most often
exploited. In short, the Agta utilized environment excludes areas which are either of higher elevations and inclinations or located away from the river course.

Most of the utilized area of the Disabungan Agta lies within the lowland tropical rain forest. The biotic communities of such rain forests are known to have a very high diversity of species (Richards 1979:3-4). For example, in the Philippine rain forests, there are approximately sixteen hundred identified genera and over eight thousand identified species (Merrill 1967:61). In northeastern Luzon in particular, the forest is dominated by at least eleven species of dipterocarps. Undergrowth in the second story and the forest floor is represented by various species of palm and rattan as well as other shrubs and vines. This plant community comprises the complex vegetation of the Agta utilized area.

The stability of a rain forest ecosystem like the Disabungan is an obscure subject (see Raven 1981:28). While, the cause and effect relationship between the diversity of species and the stability of the ecosystem is not clear, the traditional ecological "wisdom" holds that the more diverse the community is, the more stable is the ecosystem. In comparing randomly constructed models, Colinvaux suggests that complexity (or diversity) may not lead to stability of the system, including the ecosystem (1978:199-211; see also May 1973). However, most ecologists maintain that all rain forest ecosystems, and particularly those that experience a stable climatic condition, are comparatively stable (Odum 1971:87; Pianka 1978:300; Richards 1979:404). Assuming that this conclusion holds true, the
rain forest of northeastern Luzon, which experiences only minor climatic fluctuations, is stable.

The forest (télon) is the most important life line of the hunting and gathering Agta groups. The diversity and complexity of the forest thus has a strong influence on the Agta traditional world. Due to the high diversity of the rain forest, most plant resources are not clumped together but dispersed throughout the forest. While every unit of land tends to provide almost all necessary resources, it is not a rich ecosystem for particular resources. In addition, the complexity of the forest brings further variability by dictating a somewhat uneven availability of some of the dispersed resources. For example, lowland dipterocarp and montane or mossy forest of higher altitudes differ in their structural composition (Merrill 1945: 83). Even the hill slopes and river terraces have different floristic compositions; the stream vegetation tends to have fewer tall trees (Whitford 1906:414), and more shrubs and herbs.

The Agta have knowledge of, and names for, several hundred of the approximately three thousand plant species in their environment (cf. Headland 1981a:14-17). Of these numerous plant species recognized by the Agta, fewer than three hundred plants have direct economic use or symbolic value to the group. Further, the Agta depend on the regular exploitation of fewer than one hundred plant species and fifty food species.

A folk taxonomic study of the Agta shows that they divide the plant kingdom into three life form categories, namely, 'grass and herbaceous plants' (lamon), 'climbing and trailing plants or vines'
Agta adults generally readily recognize and distinguish the generic and specific levels of those plants which have more direct economic, cultural or symbolic values to humans and food value to game animals. Agta wild plant resources come from all the above three life form levels. For example, Agta exploit a number of "grasses" such as fern (pako 'Anthyrium esculentum'), wild chili (sili 'Capsicum minimum'), elephant grass (bigiw 'Miscanthus sinensis'), etc. They extensively exploit a number of "vines" such as rattan (uway, 'Calamus spp.'), a variety of palm (nënga 'Calamus usitatus'), varieties of wild tuber (e.g., ilus 'Discorea divericata'), and betel leaf (gëwid 'Piper betle'). They also use a number of "trees" such as varieties of tree fruits (e.g., pëlluat 'Nephelium lappaceum'), areca nut (butag 'Areca catechu'), one palm variety (anaw 'Livistina sp.'), wild banana (bigit 'Musa errans') and bamboo (buzo 'Schizostachyum spp.').

The tropical rain forest like that of the Agta is largely a plant biomass. Nonetheless, the high diversity of plant species is expected to have its parallel among animal species too (Pianka 1978:296). However, due to the insular nature of the Philippine Islands, this is not the case, at least not among the higher animals (see Alcala 1976:139), which form the animal resources of the Agta. The inventory of Agta game animals comprises at least six species of mammals, two reptiles and various species of birds.

While we know little about the Agta ethnozoology, some conjectures can be made. Agta distinguish animals from plants on characteristics such as locomotion and volition (see Silberbauer
1981:77). Agta seem to distinguish four life forms for animals, namely, 'walking animals' (hayup), 'crawling animals' (ulag), 'flying animals' (manok) and 'aquatic animals' (ikkan). The "walking animals" include most of the prey species of the Agta such as wild pig ('lèman 'Sus sp.'), deer (ugsa 'Cervus sp.'), monkey (buhog 'Macaca philippinensis'), Philippine palm civet (ales 'Paradoxurus philippinensis'), and civet cat (musang 'Vivera tangaliung'). The "crawling animals" are comprised of python (biklat 'Python reticulatus'), monitor lizard (bûnnëg 'Varanus salvator') and various species of snakes and insects. The "flying animals" include all bird species, including the wild chicken (italon 'Gallus gallus'). "Aquatic animals" are represented by several varieties of fish (e.g., kulaapia 'Tilapia mossambica,' déliag 'Ophiocephalus striatus'), shrimp (udang 'Macrobrachium rosenbergii'), eel (igit 'Anguilla mauritiana'), crocodile (bukahot 'Crocílus porosus'), etc.

The Agta have more elaborate knowledge of the prey species than of others. Agta use single names for single prey species such as pig, deer and monkey as opposed to generic terms used for several species of less important animals. They semantically recognize not only the species but also the sex and age of major game animals. For example, the taxon 'wild pig' of the generic level is sub-categorized taxonomically with at least three specific levels on the basis of sex and age; the male adult (butakal), the female adult (tenid) and the young or young adult (bêhék). The taxa 'deer', 'monkey' and 'wild chicken' are similarly sub-categorized into a number of specific levels (see Headland et al. 1974:29, 106).
Because the Agta heavily depend on the biological world, the biotic component of the environment constitutes a major chunk of their knowledge (e.g., Berlin 1978:9). The Agta also possess a rather intimate knowledge of the abiotic component of their environment. It seems that a large portion of their knowledge of abiotic component is derived from their use of space and perception of meteorological fluctuation.

I have stated above that the Agta environment experiences a little marked "ecological" seasonality. Given this non-seasonal climate, the vegetation of the Agta rain forest fluctuates only slightly. Moreover, the rain forest of the Agta area enjoys a consistently high humidity and temperature range (e.g., Richards 1979:138), which buffers any minor fluctuations in the climate. Thus there is a stable vegetative community across months in a year. It maintains the same balance of species and the overall structure as well as the composition year round. In short, the climate of the Agta rain forest like that of the Disabungan is non-seasonal and the local resources of the Agta fluctuate little in an annual cycle.

While the Agta themselves perceive little fluctuation in their natural resources, they tend to see a "human" seasonality in their climate. They polarize the micro-variations in their climate and thus perceive seasons in their environment.

The "wet" season (amian), as characterized by the Agta themselves, is a relatively short period of the year, when the area experiences continuous but slow rain. Such rains are occasionally preceded by lightning and thunder and can easily develop into a
tropical depression. Particularly in the earlier months of this period there are strong winds or typhoons (bagyo) from the east. More frequently, floods (bihéng) make rivers uncrossable. Even when it is not raining, clouds or fog may cover the sky. If the sky is clear, nights can bring heavy dews. The daily temperature fluctuates considerably; the day can be warm and the night very cold.

The "dry" season (késinag), on the other hand, constitutes the longer period of the year, when it is hot in mid-day time. There are also frequent drizzles and oftentimes heavy but intermittent rain. Short periods of flooding are not uncommon. Towards the end, cyclones and typhoons are expected, which again bring considerable rain.

The "wet" season coincides with the northeast (October-January) monsoon season and the "dry" season with the southwest monsoon season. Thus, while meteorologically speaking, only the intensity of the rainfall varies across "seasons," the Agta themselves contrast the continuous rain of the "wet" season from the intermittent but heavy rain of the "dry" season and see a seasonality in their environment. It is in this context, the terms like "wet," "dry" and "season" are used in the present study.

It is hard even for the Agta to guess when the "season" changes. Agta supplement their assessment of such changes by the flowering or fruiting of particular plants or by birds' (e.g., bélisgogo) song. However vaguely defined, these seasons are also important calendar markers in the Agta life. Residential histories and other events like birth, death, raid or typhoon are recounted in reference to
these seasons. Their perception of climatic fluctuation brings some changes in the settlement pattern of the Agta; they tend to localize and nucleate their camp sites during the wet season. Because of the more frequent floods in this season, the Agta depend more on the forest resources than on outside trade.

The Agta are called upon to make a variety of adjustments within one season. Because, the day to day climatic fluctuations have far reaching consequences on Agta life, they have internalized the techniques of predicting weather. Color, formation and movements of the clouds as well as the direction of the wind are used to forecast rain. The possibility of flood is judged from the duration and intensity of rain in the upriver areas and the variation in muddiness and depth of the river. On the basis of these forecasts, Agta make day to day decisions. For example, the possibility of typhoon or flood prompts camp movement to a more suitable site. Continuous floods affect their fishing which forces them to engage in other foraging activities. Agta use a particular hunting strategy depending on the intensity of rainfall.

In summary, the Agta live in a wide area of a rather stable rain forest. They depend on various plant and animal species for their day to day living. The Agta have learned to evaluate their dynamic environment as a whole. They have knowledge not only of the various components of their environment but also of the inherent systemic interrelationships of these components. They have learned to respond to the real or perceived constraints of their physical environment. Their conscious and unconscious awareness of the limits of both biotic
and abiotic environments allows them to adapt in their tropical environment.
5. THE SOCIAL GROUPINGS

The long-term adaptation of the Agta in their predictable rain forest environment has important repercussions on their socio-cultural environment. In the following pages, I will describe the socio-cultural aspects of the Agta system. The order of the presentation of the socio-cultural components of the Agta here does not necessarily assume a strong causal relationship. If it does, it should be viewed as part of a systemic relationship.

I showed above that the Agta do not recognize and utilize all the animal and plant resources of their environment. Moreover, the Agta exhibit varying dependence on those utilized resources and can order their relative importance. Similarly, the Agta do not recognize all the members of their socio-cultural world equally; they categorize them into various social groupings and interact with them differently. The Agta use two important criteria in their social groupings, namely, kinship and residence.

**Kinship**

To most anthropologists, "kinship" is an inclusive term that refers to the whole conceptual or social field concerning kinship, marriage and descent (Keesing 1975:22). (Descent, which is defined with reference to an ancestor, is either ignored or given little structural importance among the Agta.) Kinship to the Agta is the most important criterion of their cognitive structure. As a major
organizing principle of their socio-cultural world, kinship permeates almost all aspects of their life. Agta say: "a person without a kinsman is like a dead person." Kinship provides principles that relate or oppose individuals, and by putting individuals in exclusive categories, it assigns roles to them. Cumulatively, kinship defines the specific behavior of an individual in relation to another individual of the Agta society.

The kinship system among the Agta is bilateral or cognatic; that is to say they recognize all people related by genealogical ties without particular emphasis on either patrilineal or matrilineal connections (Murdock 1960:2). The cognatic kinship system is a broad inclusive categorization that traces serial filiation from either or both parents. As will be made clear in the following pages, the Agta kin categorization is ego-centric and not ancestor-centric. The range of kin recognition varies from one individual (or sibling set) to another.

Due to the overlapping kin recognition, the Agta society cannot be divided into discrete and absolute units such as clans, moieties, sibs, or lineages. Because of this, some researchers have thought that cognatic societies are disorganized (e.g., Radcliffe-Brown 1952:46), and that their group formation remains in dispute (e.g., Sather 1976:40-41). Individuals in these societies, however, do not see these problems. The individuals are interlockingly interrelated to one another and thus there is social cohesion, continuity and order (Appell 1976:7). Kin categories are well defined, and the Agta readily recognize and divide members of their society into a number of categories (see Fig. 2).
Fig. 2: Diagrammatic Representation of the Aqta Kin Categorization

Linguistic Group

- Kindred
  - Consanguines
  - Pseudo-Consanguines
- Affines
  - Direct Affines
  - Indirect Affines

- Kingsmen

- Non-Kinsmen
The focus for an Agta is him or herself. An ego recognizes both consanguineal and affinal ties. The consanguineal relatives, who are related to him by "birth," are traced through both the father and mother and sons and daughters. They include both lineal (i.e., those related by filiation) and collateral consanguines. Affinal relatives are those related by the "marriage" of ego himself/herself or of his/her lineal consanguines. Any individual who falls within this kin recognition is categorized as "kinsman" and anyone of one's own group, who falls beyond this range is categorized as "non-kinsman." The distinction between kinsmen and non-kinsmen is the most important and readily recognizable one.

The members within this category are primarily recruited by the birth of new consanguines. Secondarily, non-kinsmen become kinsmen by marriage to consanguines of ego. An Agta's kin group is not however, an ever expanding group of people. In reality, the number of kinsmen recognized by an ego remains fairly small. As elder members of the kinsman category die, an Agta tends to forget collateral consanguines linked by ties beyond three ascending generations. Offspring of such collateral consanguines may thus be put into the non-kinsmen category. The death of a mediating consanguine also excludes certain affines from the kinsman category. In short, ego acquires a new set of relationships to a new group of people, and equally leaves out some of the old set of relationships (Schusky 1972:89). In this way, the kinsman category of the Agta remains manageable.

In address, Agta generally use polysemic terms to designate not just one but several structurally related categories of kins. For
example, for all in ego's generation, sibling terms of address are used and all children of these people are addressed as 'child' (anak). Generational terminology is also used for relatives of second ascending and descending generations. By contrast the terms of reference in ego's own, parental and child generations are lineal. In the parental generation, lateral consanguines are differentiated from parents and males from females. In ego's generation, elder siblings are distinguished from younger but no sex discrimination is made and siblings from cousins are distinguished. The relatives of the child generation are distinguished only as lineals and collaterals (see Appendix 4). Only a very few non-kinsmen, who mostly those who belong to the same band (e.g., wife's sister's husband, husband's brother's wife) are addressed by kin terms.

The distinction between kinsmen and non-kinsmen is not only well defined; it is a crucial distinction. It is on this division that the general marriage rules of the Agta are promulgated. The Agta do not have any specific prescriptive or preferential marriage norms, whether in terms of kin category or residence pattern. They simply have a wider definition of incest, which prohibits sexual relation between an ego and any kinsmen consanguineal or affinal. Thus, they are expected to find their marriage mates among Agta who are non-kinsmen. For these purposes, non-kinsmen are preferentially those Agta in the same linguistic group (see below for definition of linguistic group).

The paradox, however, is that while the Agta should marry a non-kinsman, distrust of members of the non-kinsmen category is common and often expressed in dissent. The kinship network is also the
communication network of the Agta. Consciously or unconsciously, the Agta withhold certain kinds of information (e.g., camp location) from members of the non-kinsmen category. Relationships with non-kinsmen are not normally predictable.

Normally, all individuals who are married to ego or his/her consanguines are, by conventional anthropological definition, affines. Agta, however, extend consanguineal kin terms to all affines except ego's spouse and his/her consanguines and affines of ego's children and other consanguines of that generation. When Agta extend a consanguineal kinship term to such affines (see Appendix 4), these affines become "pseudo-consanguines." Because of this, the distinction between consanguinity and affinity among the Agta is somewhat complicated. An ego, in effect, is taking some affines out of the affinal category and putting them into the consanguineal category while such affines remain married to ego's consanguines. Thus affine becomes a restricted category. The expanded consanguineal category (including both consanguines and pseudo-consanguines) is here termed "kindred" (e.g., Mitchell 1963:351; King 1976:126; Appell 1976:124). The restricted category of affinal kinsmen is here called "affines." The distinction between kindred and affines is another important concept of Agta kinship structure and thus deserves further analysis.

Ego's kindred, as defined here, is constrained terminologically and behaviorally to his or her affines. This category is however not a residential or obligatory unit in itself. Further differentiation of kindred members, on the basis of their lineality or collaterality
and the degree of genealogical relationship, specify the obligatory relationships, which can further be situationally selective. The affines, on the other hand, may not have any concurrent genealogical relationship among themselves; they are grouped together by ego because they all have a marital link to ego himself or to his immediate consanguines (viz., siblings, children, siblings' children). Among the Disabungan Agta, four types of affines are recognized in the kin terminology: father- or mother-in law, son- or daughter-in law, brother- or sister-in law and child's spouse's parent (see Appendix 4).

Members of both kindred and affinal categories are kinsmen to ego and thus by rule, he/she cannot marry them. However, Agta sometimes violate the incest rule by marrying a kinsman, and particularly an affine. For example, the majority of cases of polygyny are sororal: a man marrying women who are full or half sisters. There are also a few cases of sister exchange and of a pair of brothers marrying sisters. In one case, a woman has married her deceased daughter's husband. The kindred category remains more difficult to violate. In actuality, there are only a few cases of cousin marriages, and only one case of marriage between an ego and his father's brother's widow. When ego marries a pseudo-consanguines or an affine the former tie is cancelled.

Agta make further distinctions among affines, and observe different behavioral prescriptions. The Agta differentiate behaviorally but not terminologically the affines what could be called "direct" affines and "secondary or indirect" affines. Direct affines are a sibling's spouse and the close consanguines of ego's spouse, while
secondary affines are affines of ego's other close consanguines. An
ego must avoid using the "birth name" (ngahan) of his direct affine
and instead use either a kin term or an "alternate name" (sangay)
usually coined by himself (see also Eder 1975). Further, if ego
is a male, he must maintain a formal respect relationship with his
direct affines irrespective of their age; the female ego among the
Disabungan Agta shows only a minimal respect to her direct affines.
The direct affines do not reciprocate in naming avoidance or respect
relationships to an ego. This asymmetrical relationship is main­
tained to discourage levirate or sororate marriages. Secondary or
indirect affines, on the other hand, are those to whom and by whom
no naming proscription and respect relationship is called for. They
are the least trusted and are avoided as much as possible in social
interaction.

In summary, kinship is an important organizing principle which
not only defines the structural units but also their interrelationships.
Behaviorally speaking, the Agta ego recognizes individuals of five
categories, namely, consanguines, pseudo-consanguines, direct affines,
secondary or indirect affines and non-kinsmen. To the Agta, these
categories are mutually exclusive at any given time. By being a
member of one particular category, the Agta individual in relation
to another individual is expected to have a particular interpersonal
relationship. By defining the structural groups and their given
behavioral correlates, kinship provides the axis and criterion for
social groupings. When such axes cross-cut the boundaries of
residence, there are very important consequences for the Agta way
of life.
Settlement Pattern

Ties of contiguity, like kinship, are central to members of most societies. The precise relationship between kinship and settlement pattern however varies from society to society. Among the Agta, the kinship relationship is the determining factor in their settlement pattern and is reflected in their five levels of socio-residential units: the linguistic group, the local linguistic group, the river valley group, the band and the household.

It has been shown above that, from the point of view of an Agta individual, members of his society fall into discrete categories such as kinsmen and non-kinsmen. However, when multiple members are concerned, these kinship aggregates necessarily and endlessly overlap. That is, all members are, at least indirectly, in a kin of kin relationship. All the members of the Agta society, who belong within the maximal extent of one such interlocking kinship network, form the highest level of the socio-residential unit among the Agta. As will be clear later, this unit is not a "territorial group" that defends its territory or its resources. The members occupy a particular forest area primarily to maintain economic, social and political isolation from their counterparts. Since there is no kinship network between one such group and its neighbors, there is also little communication between them. These groups also show variations in language (see Appendix 3) and in a few other socio-cultural practices. I will call this socio-residential unit of the Agta a "linguistic group" for the sake of brevity.
The area of a particular linguistic group usually stretches on both watershed of the Sierra Madre Range. While extensive kinship, marriage, and other social ties are maintained among members of a linguistic group living across the watershed, the regular economic exchanges are interrupted by the rugged ridge and the greater physical distance involved. Thus the population of a linguistic group is usually divided into two economically independent "local linguistic groups" (see Appendix 2). The local linguistic group is not a unit of exogamy or endogamy, but is simply a more closely related group of people. The interaction within the members of a local linguistic group is also more intensive and the communication more efficient. On certain social occasions such as weddings, kinsmen within a local linguistic group may come together to form a large settlement for a short length of time. The local linguistic groups living in the valley and the coastal watersheds may also differ considerably in their subsistence patterns. They patronize separate dyadic agricultural settlements for purposes of trade. The Disabungan Agta, the group under detailed study, represents one such local linguistic group.

Within one local linguistic area, Agta identify themselves with particular river valleys. The members of the "river valley group" tend to locate their residences within one particular river valley for most of the year. This population is an even more closely interacting group; the members pay frequent visits, and economic exchanges are more common. They may occasionally come together collectively to hunt or fish. They often cross each other's path
in camp movements and alternate their use of the same campsites. Year after year, the members of a river valley group may nucleate in a few particular areas to spend the months of the northeast monsoon season. A river valley group, in fact, occupies and exploits one single utilized environment area and has its own set of dyadic agricultural settlements to trade with. Agta families may leave such a river valley to reside temporarily or permanently elsewhere, but they usually continue to regard this valley as "home."

In Isabela, one river valley group of a local linguistic area contains one to eight "bands." During the "dry season," a band maintains a mean distance of approximately five kilometers from the next nearest band. At the time of the census, a band had a mean population of twenty-one people. Of all the socio-residential units of the Agta, the band is the most readily definable social and physical entity. Although its membership fluctuates due to patterned flux, a band has a core number of households that tend to stay together. Emphasizing the flux, Peterson defines an Agta band as "...any group of persons who are camped together at any given time" and writes that familiarity with the locale rather than kinship relationship is the criterion of band membership (1978a:11). To the Agta, however, almost every aspect of whose socio-cultural world is defined by kinship, band membership is no exception. Because band membership requires a serial or interlocking kindred or affinal relationship (Estioko-Griffin and Griffin 1981a:130; see also Endicott 1979a:170), an Agta band is defined here as a conglomeration of families, who form residential solidarity by activating the kinship
network. The band, by most criteria, is the minimal, economically viable unit. Agta channel their labor together and allocate the resources to members at this level.

The bands occupy a number of suitable campsites for varying lengths of time. In the Disabungan area, campsites are located at elevations ranging from one hundred fifty to four hundred meters. Agta do not identify themselves with particular areas within the river valley or camps, as these are occupied by other members of the river valley population at the same or different times of the year. The valley watershed Agta use two kinds of campsites; namely, river bank and jungle. The coastal Agta also use beaches, particularly near river mouths.

During most months in a year, the valley watershed Agta occupy various campsites along the river and the majority of them at a confluence (pagbigin). When it is too hot, or if work activities require, Agta occupy jungle camps. Sometimes a combination of both the river bank and nearby jungle edge is used. In the non-flood months, when travel is relatively easy, Agta dependence on the outside agricultural population increases and for convenience, Agta prefer to live not very far from an agricultural settlement. But again, intensive economic interaction results in inter-ethnic hostility and Agta respond by moving away from such settlements. Statistically speaking, the Disabungan Agta live thirteen kilometers away from the agricultural settlement areas and five kilometers away from the logging stations, which are another trade nuclei.

At the advent of the typhoon season in August, forest camps are abandoned for fear of falling trees during the rain storms. As soon as the northeast monsoon approaches, the Agta also leave the
river banks and move to higher ground with open spaces. Travel in
general becomes difficult due to flooding. At such times, outside
dependence is unreliable. Agta prefer upriver camps, where relatively
intensive forest dependence is possible. The harvesting of some
cultivated crops in these months supplements the forest produce.
Because all Agta families have swidden fields upriver away from the
agricultural settlements and there are not that many suitable sites
for camps in flooding season, Agta bands of one river valley tend to
nucleate in one particular area. Thus, in the northeast monsoon
season, while the distance between an Agta camp and agricultural
settlement increases, the intercamp distance among the Agta decreases.
As social visits are more intensified, sharing of food and labor
across camps becomes common. These sister bands, which are sometimes
less than a kilometer apart, may merge and form a composite band,
giving an impression that the band size is bigger in the northeast
monsoon season. In short, the economically viable band units become
somewhat intensively interdependent to compensate for their decreased
reliance on outsiders.

Such interdependence and nucleation of Agta bands during the
northeast monsoon season in contrast to their usual dispersion is
not without its cost. Because the larger population is nucleated in
a small area, there is a higher possibility of interaction between
non-kinsmen. Thus, dissent among non-kinsmen becomes common. Agta
find this socially a stressful period. The various bands remain
nucleated for only about two months. As the flooding season subsides,
the Agta disperse and stay in separate areas of the river valley.
An Agta band tends to maintain an optimum number of families. In Isabela, a band on an average is composed of five families, and over fifty percent of the bands were formed by three to five families. In the Disabungan area, Agta live in bands of three to eight families. The family is the simplest socio-residential unit of the Agta. Similar to all higher levels, a family can be described as a social unit (household) and a physical unit (house).

The descriptive foci of a household is primarily one conjugal dyad (i.e., the husband-wife bond). The Agta household is defined as a social grouping characterised by a single residence as well as by links of reproduction. While a household is economically dependent on other households of the band, it maintains its "hearth." While it does not always control the labor of its family members or the resources produced by them, a household functions as a decision unit within the defined limits and options.

Agta households are preferentially and statistically predominantly "nuclear" and monogamous. That is, a typical household consists of one married couple and their unmarried child(ren). In Isabela, fifty-eight percent (N=400) of the households are of this type. A typical household is made up of one couple and two unmarried children. This varies little across linguistic, local linguistic or even camp levels. To put this in the dyadic frame of reference (see Buchler and Selby 1968:29), a typical Agta household is composed of conjugal, parental and sibling dyads.

The second most important household organization is the "non-nuclear" type, where the members possess only a conjugal dyad
(without parental and sibling dyads) or only a paternal or maternal dyad (without conjugal dyad). In extreme cases, a single individual or only two unmarried siblings constitute such a non-nuclear household. This variation represents twenty-eight percent of the Agta families in Isabela.

Some Agta also live in "extended" households. Such a household includes a couple in the parental generation, who, with or without unmarried child(ren), live with one or more married children and their spouses. That is, in addition to the conjugal dyads in a senior generation, there are one or more conjugal dyads in the child generation. Six percent of the Agta household in Isabela fall in this category. The remaining eight percent of the Agta families fall in the category "augmented." Most typically, this consists of a non-nuclear household sharing the hearth and occasionally the house with individuals who are lineal or close collateral kinsmen or a nuclear household of such kinsmen.

Although the overall distribution of the household types fluctuates little at any given time, change in a particular household structure is regularly brought about by events of rites of passage. For example, the death of either husband or wife in a nuclear household changes the structure. In serial monogamy, step siblings become members of one household. In separation or divorce, which requires division of children (and family belongings), a nuclear household splits into two non-nuclear types. Polygyny, while rare (less than 2% of the married couples), can bring similar changes. Widow and widower (belo), who cannot run a separate household, join
close kinsmen; it gives rise to an augmented household. Orphans (golèng), who in the Agta term are without one or both parents, are adopted preferably by their older married siblings, or by their grandparents. This also changes the earlier household composition.

A household usually occupies one house (belay). If the members include many adults or more than one married couple, they possess one or two additional houses. House type, its size and the construction materials are specific to campsites and the time of the year. Along the river banks and beaches and during the "dry" season, Agta live in simple rectangular lean-tos (pinanahang). The frame of the lean-to is made up of two crossed poles, over which six to ten parallel poles are arranged. While fronds of at least seven varieties of palms are used for roofing material, one species (nèngga) in particular which is the most durable, pliable, and fire resistant, is commonly used. After the shade is completed, the lean-to is propped up by a supporting pole. The floor is clear of pebbles and the lean-to becomes ready for occupation.

The Agta lean-to has been called an "architectural wonder" (Bennagen 1969a:51). It can be turned, raised or lowered to avoid sun, rain or wind. While a typical lean-to provides less than two square meters of covered area, the household members and their dogs as well as visiting guests are accommodated. Its poles provide a convenient place to hang food items or other family possessions. Cooking is done by hanging a pot from one of the poles. A lean-to location can be changed every few days, and a lean-to can be transported by one person to another short distance campsite. A new one
can easily be built in three to four manhours. Each Agta family may own three to six such lean-tos, which are scattered along the river valley. Approximately, eighty percent of the year, Agta families live in such lean-tos.

Along a river bank or in a spacious jungle camp, the lean-tos are arranged in a single file facing the same direction. Agta families also place their lean-tos following the kinship network of the band; that is, the closely related families have closely placed lean-tos. A lean-to of a particular family is flanked by the lean-tos of husband's and wife's relatives and so on. In short, the lean-to distribution in a particular camp maps the kinship relation of the Agta band.

In the typhoon season, lean-tos are tied to rocks or stones. When the rain due to the northeast monsoon season becomes more frequent, variations of lean-tos are built. For example, in a type called kubo, two lean-tos are juxtaposed to provide more dry space. Agta may raise one or two such lean-tos on vertical poles to make what is called sahung. Agta also live in relatively large size floored houses to escape insects, snakes, etc. These large houses are sometimes roofed with Imperata and may require a minimum of twenty manhours work. Inspite of their relative permanency, the large houses are haphazardly placed and face various directions. Often too, they are infested with cockroaches and fleas. As soon as the northeast monsoon season ends, Agta abandon these houses and move to river banks and live in regular lean-tos.
Post-Marital Residence

In what way, do the lower levels of socio-residential units tie together to form a higher level unit? More precisely how do households form a band, and bands a river valley population, and so on? The answer lies in the rules and preferences of post-marital residence decisions among the Agta.

Marriage among the Agta is more a complex process than an event. It is generally initiated by the boy himself. By the time he reaches puberty, he dons colorful loincloths and lavishly decorates himself with ornaments of various kinds. He starts visiting nearby camps, or more often, stays with relatives in distant camps to court (mégibêbe) girls. When he grows older, he may join a gang of boys to tour distant camps in search of a prospective marriage partner. Agta report that marriage proposal is made either in flowery language or sometimes in song. Betel nut (émman) is exchanged to indicate the willingness to marry. Agta informants state that fornication can take place at this stage.

In rare instances, the girl might elope (méglépwang) with the boy. In most cases however, a formal marriage proposal is made by the parents or guardians of the boy. A woman, preferably related to both parties, acts as a go-between. If no serious objection from the girl's parents is foreseen, the boy and his kinsmen pay a visit to the girl's camp. In the betrothal palaver (sakad), which is one of the few formal occasions of the Agta, gifts of dried meat, rice, liquour, etc., are made to the kinsmen of the girl. Conversation is full of allegorical euphemisms (Headland 1978:129-130). After this, the marital arrangement is
not usually revokable and the *in uxorem* right of the couple is recognized. Any defaults such as the extra-marital sexual relation or elopement by the girl with another man can be retaliated by murder.

The boy is required to go through a bride service (*serbi*) to complete the process of marriage. While, in some groups of Agta, the bride price can be paid in lieu of bride service, among the Disabungan Agta, bride service is mandatory. Parents or married siblings demand this obligation from the boy. The informants state that ideally the bride service should last "two seasons" (approximately one year). After that while the voluntary service continues, the regular conjugal relationship of the newlyweds marks the end of the mandatory obligation. The bride service period is an apprentice period and is designed for testing the skill of the boy. He is expected to provide food for the girl's family by hunting and fishing and to share the household chores. Some boys run away even though they are jeopardizing their marriage relationships.

These marriage negotiations are sometimes given formal social recognition by celebrating wedding ceremonies (*kesal*), either during or towards the end of the bride service period but never after the birth of the first child. Such solemnizations, where the groom's close kinsmen take the more active role, involve no ritual. Traditionally, these were done by inviting all kinsmen of both groom and bride and feasting them with a thick glutinous porridge made out of the starch of caryota palm (*agél 'Caryota rumphii'*) and meat. These days, the palm starch is replaced by rice. The agricultural neighbors are also invited to organize dance parties.
The marriage process that begins with the courting of the girl or the betrothal ceremony ends only with the fulfillment of the mandatory bride service. Only then is the marital bond considered "permanent." In between these months or years, the couple visit the husband's kinsmen but are proscribed from having long-term residence other than with the wife's kinsmen. Eighty-four percent (N=19) of the couples in Isabela, who were in the bride service period, followed the above jural rule (see also Peterson 1978a:46). Three couples, who were not residing with the wife's kinsmen, had also spent the earlier six months with the girl's kinsmen and there was continuing pressure on them to fulfill the bride service obligation.

In the event that the couple is separated or widowed, they reside with their respective consanguineal kinsmen. In remarriage (i.e., second or third marriage), the residence rule, as in the case of the newlyweds, is jurally given; the couple reside with the new husband's kinsmen. The switch in the residence rule is that the newlyweds live with the wife's kinsmen and those married for the second time live with the husband's kinsmen. This occurs perhaps because there is more social pressure on women than on men to remarry. Thus, the women forego their living with kinsmen and become willing to join the husband's kinsmen.

The residence rules are however not jurally given to Agta couples who have completed their bride service obligations and who are still married to their first spouses. Thus, these couples themselves are called upon to make their post-marital residence decisions.
The non-sedentary Agta families do not usually limit themselves to unilocal residences. Their cognatic social system also does not require adherence to a unilocal rule of residence (see Murdock 1960: 14). Thus, the Agta practise a combination of uxorilocal (residence affiliation with wife's close kinsmen), virilocal (residence affiliation with husband's close kinsmen) and neolocal (residence in bands that will usually contain either husband's or the wife's distant kinsmen) residence affiliations. However, on the assumption that Agta prefer one residential arrangement over others, greater frequency of one type of post-marital residence over others has been reported. Peterson first reported that forty-seven percent (sample size unknown) of the Agta couples in Palanan maintained uxorilocality following the birth of their first child, while thirty-three percent were virilocal and nineteen percent neolocal (1978a:46). In a review of Peterson's report, Headland contradicted Peterson by saying that the Agta of both Palanan and Casiguran tend towards virilocality (1978:132).

It seems that the differences of opinion on the post-marital residence pattern is rooted in a methodological problem. An Agta household has a number of options for residence affiliation. When marriage, remarriage, death, etc., brings changes in the kinship network, individual families are forced to reconsider their options. Such situations can occur many times for the Agta couples. In short, residence affiliation among the Agta is not permanent but situational. Interviewing such households about their post-marital residence can be misleading; they may report their present arrangement without taking their past residence affiliations into consideration, and so on.
In fact, observation of actual residence behavior may not reflect the ideal residence rule. When an Agta camp is composed of both kindred and affine households of ego, which is often the case, the classification of families into particular post-marital residence typologies can become difficult.

The Agta themselves do not see these problems. They consider only kinsmen as potential co-residents, and prefer to use close kinsmen in actual residence affiliation. That is, a particular couple consider the range of options available for long-term residence affiliation and rank order the options to make the decision on residence affiliation. In actuality, an Agta couple trace their respective kinship network outward to find the closest kinsman. The household of a kinsman is evaluated. For example, it is judged as to whether or not it currently maintains a viable family unit. If it fails to meet the criteria, the Agta couple scrutinize the second option and so on. The first kinsman, whom I call here the "sponsor," that meets the criteria is chosen for long-term residence affiliation. The process of such long-term residence decision among the Agta can be illustrated in a flow chart7 (see Fig. 3).

The test of the flow chart was carried out on nineteen Agta women, who were married to their first husbands and whose genealogies and marital as well as residential histories were known. The test was also conducted among six women from the Casiguran area (Headland personal communication). The result shows that twelve of the twenty-five women chose their married sisters as sponsors over their other lineal kinsmen. Eleven women who had no married sisters but had brothers
Fig. 3  Long-Term Residence Choices Among the Ilaabungan Ages Women

1. Are you recently married to your first husband?
   Yes
   No

2. Are you currently married to your first husband?
   Yes
   No
   Yes
   No

3. Are you currently single?
   Yes
   No

4. Do you have a married sister still living with her first husband?
   Yes
   No

5. Does your husband have a married sibling?
   Yes
   No

6. Do you have a currently married parent or brother?
   Yes
   No
and/or parents resided with the husbands' kinsmen. On this limited and accidental sample, the model is ninety-two percent (23/25) predictable. Further, we took the mirror image of the above flow chart and tested it on the residence decision of twenty-nine men. It showed that eight men who had their wives' married sisters as the first potential sponsors resided with these sponsors. Of the sixteen men, who had their own kinsmen as the first choice, thirteen followed the rule. Five, who had their wives' lineal consanguines to choose from, resided with them. Thus, the predictability of the flow chart among men is ninety percent (26/29).

Within a given category of sponsors (e.g., siblings, lineal kinsmen), and Agta couple can have a number of individuals with whom they can share residence. In such cases, more refined preference rules of residence are used. For example, if the choice is among sponsors of different generations, the sponsor of the closer degree of genealogical relation is preferred (viz., ego generation over parent generation over grandparent generation). Among the sponsors of identical generation, other attributes are considered. A female ego prefers a female sponsor over a male sponsor, a full sibling over a half sibling, and an older sibling over a younger sibling. In rare cases, a couple must go beyond their lineal or affinal kinsmen to find a sponsor. In such cases, they exercise their bonds with the collateral kinsmen. These bonds are however not strong and the couple may choose to move among distant relatives to form a neolocal residence.
The residence affiliation among the Agta thus shows an interesting pattern. Agta households not only practise an ambilocal residence over a period of time, they also follow an alternating pattern of residence affiliation. For example, the newlywed couple are uxorilocal. If the wife has a married sister, they continue to be uxorilocal even after the bride service is completed. As the sisters of the wife get old, remarry or die, the couple becomes virilocal. If the husband does not have close lineal consanguines, they opt for uxorilocality, and so on.

The composition of the Agta band is the result of rules and preferences of post-marital residence decisions. Thus, the above presented decision model of Agta residence is reflected in the band composition. Forty-two of the eighty bands in Isabela were analysed. Of these, sixty-four percent of the bands were formed primarily, although not exclusively, around sibling dyads. Parental dyads were predominant in the remaining bands. Of the bands with a majority of sibling dyads, the sister-sister bond was the most common (40%), followed closely by the brother-brother bond (37%). In only fourteen percent of the cases, the brother-sister bond was predominantly used to form a band. Bands with a majority of parental dyads showed that the parent-daughter bonds were used in sixty-seven percent of the cases and the parent-son in thirty-three percent of the cases.

To sum it up, a filiative link is required for a permanent membership of the Agta household. A number of dyadic kinship relationships between and among close kinsmen are required to form a band;
the members of a household use the closest possible dyad to be a member of a band. While such dyadic kinship relationships are most common among members of a band, due to their cognatic kinship system, they also extend beyond the band. A group of bands, which are interconnected by a number of dyads between and among generally distant kinsmen, come together to form a river valley group. A number of river valley groups, which are interconnected by similar but fewer dyadic bonds, form the local linguistic group and ultimately, the linguistic group of the Agta.

The socio-residential groupings of the Agta are primarily an outcome of the kinship network of the group. Thus, one can also say that they are not formed in direct response to their physical environment per se. If these groupings are adaptive responses to the ecosystem, it is only in the sense that they are the most feasible structural arrangements for their given physical environment. While the socio-residential groupings distribute people according to the rules of kinship and post-marital residence, they also indirectly distribute people proportional to the local resources. However, the Agta interact directly with their physical environment through other socio-cultural mechanisms, which are the topics of the following chapter.
6. THE FOREST ORIENTATION

The Agta have always, and rather successfully, lived in the tropical rain forest. The existing and very elaborate Agta knowledge of the forest system has been already described. There are linguistic evidences to support the conclusion that they have always lived in the forest (e.g., Headland 1981a:15-17). Agta folklore also reminds us of their past dependence on the forest; their songs and stories are almost always centered around the forest. Even today, when Agta dependence on the outside world is increasing, their loyalty to a large extent lies to the forest rather than the outside world. Moreover, particular groups of the Agta continue to derive a substantial portion of their livelihood from the forest. The Disabungan Agta in particular derive forty-one percent of the total caloric intake directly from the traditionally foraged foods (see Appendix 10). In short, the Agta were, and to some extent, still remain forest oriented, and their forest orientation is most closely reflected in their exploitative technology and the rules of social organization.

Technology

"Technology" is used here not only in the tool sense but also in the labor sense (Binford 1980:13). That is, it includes both the tool-complex and the know-how as well as the behavior that surrounds it. As one sub-component of the Agta socio-cultural system, the technology is in systemic relationship with all other aspects of the
Agta world, and thus, has a cross-cutting relationship both with the physical and the socio-cultural environments. The traditional technology of the Agta can be described under three modes, namely, hunting, gathering and fishing.

Along with their distinct Negrito features, hunting is the important criterion that distinguishes the Agta from their non-Agta neighbors. I have described above that Agta semantically distinguish the generic and specific levels as well as age of the game animals. These are done only to a limited extent on utilized plants. They possess considerable knowledge of the social organization (e.g., herd size, sex ratio, age structure) of game animals. As we will see later, hunting is the one Agta domain that is the most elaborate and relatively formalized and ritualized. Moreover, the knowledge related to hunting is not limited to particular bands, age sets or by sex. In the Agta rank-ordering of food items, the meat of wild animals falls in the most preferred category.

Hunting among the Agta is not just a symbolically important activity. Agta themselves claim, and their agricultural neighbors concur, that the Agta were and are basically hunters. With the exception only of a few coastal groups who depend on fishing for part of the year, hunting is the most consistent traditional subsistence activity. Thus, it must have provided primary subsistence to most Agta groups in the past and directly or indirectly still provides today. The Disabungan Agta derive twenty-three percent of their caloric intake directly from the consumption of the meat of wild animals. In addition, approximately fifty percent of the
meat of wild animals is traded to acquire domestic cereals, which form part of the staple diet of the Agta. If they consumed all the meat by themselves, the caloric contribution of hunting alone could amount up to fifty percent of the Agta diet. The fact that hunting is also a consistent activity is reflected in the time allocation of the Agta for this activity. In general, the Disabungan Agta spend forty-eight percent of their "working time" in hunting related activities (see Appendix 6).

The hunting grounds of the Agta are generally the high canopy forests along the hillsides and occasionally the river banks. The Disabungan Agta, who occasionally go as high as eight hundred meters, generally frequent forest areas below five hundred meters. The hunting radius of the Agta is not a circle that radiates equidistantly out of their campsite but a rectangle that covers areas upriver from the camp. In most hunting trips, the circuit distance covered by an individual hunter is less than twenty-five kilometers.

The Agta do not observe taboos on killing or eating any wild animals. Thus, their inventory of game animals includes most locally available large terrestrial animals, and comprises six species of mammals, two reptiles and various species of birds. All these prey species are however not equally exploited. Wild pig in particular, which is most abundant in the area, is favored as the most important major game. Deer comes second in the rank order of abundance as well as of the prey species. During an observation period of sixty-four days, sixty percent (N=35) of the major game killed by a band of Disabungan Agta were wild pigs as opposed to twenty-six percent deer.
In the random encounter by the anthropologist of the major game killed, sixty-six percent (N=44) were again wild pigs. Among the secondary game animals, equally desired but rare is the python. It is also the only non-human predator in the forest that competes with humans for large game. Other animals that are killed whenever encountered are monkey, monitor lizard and wild chicken. Agta also claim occasionally to hunt fruit bat (payak 'Pteropus vampyrus'), Philippine palm civet, and civet cat. Young mammals are captured alive and kept as pets. Birds are sometimes hunted and their eggs are collected. While the game animals and mammals in particular are affected by temporary fluctuations in their food supply and by weather conditions (e.g., Diong 1973:149), the ratio of their exploitation by the Agta varies little across months of a year.

Traditionally speaking, the Agta hunt these game animals with bow (busog) and arrow (pama). The shaft of the bow is made from varieties of palm (Livistina spp.) on which string of either local material (e.g., dapping, kahawad) or nylon is fastened. This simple type bow can be made in less than two mandays.

The kinds of arrows, which are made by the Agta through 'hot smithing,' are, however, many and some of them game specific. On the basis of their construction and general function, arrows can be divided into one component, two component and multiple component types (see Griffin and Estioko-Griffin 1978:39). The single component arrow (e.g., ebog, bigis) has a shaft made of elephant grass. Its anterior end is sharpened and its posterior end fletched with the
feathers of birds, particularly the rufous hornbill (*kalaw 'Buceros hydrocorax*'). Such a single component arrow is used to kill small game such as the wild chicken. The two component arrow has a single piece metal tip attached permanently to its shaft. Depending on the style of the metal tip, the Agta name many kinds of two component arrows (e.g., *pangal, pilsok, gungot*), which are further sub-specifically recognized. These two component arrows are made in less than one manday and used to kill large and small game animals. The multiple component arrows usually have detachable metal heads. While some are barbless (e.g., *baag, sagud, kanamagan*), most of them have a varying number of metal barbs (e.g., *gahaygay, sahaysay, sabilhit*). These multiple component arrows are effective to hunt the major game of the Agta. They require two to three mandays' work, and are a prized possession among Agta males.

According to the Agta informants, the introduction of the shotgun took place approximately three generations ago. During World War Two, Agta acquired many more guns from defeated Japanese soldiers. In the 1960's, the bow and arrow were already being replaced by the shotgun. In 1972, when martial law was declared in the Philippines and possession of firearms was made illegal, the Agta went back to their use of bow and arrow. Today, while the possession of firearms is still illegal, the Agta are slowly acquiring them through the military. The only problem is that shotgun shells are scarce and expensive. Often, Agta resort to repacking the used shell with match heads and scrap lead. While the Agta themselves realize that the shotgun has greater range than
the bow and arrow, they themselves point out certain other advantages of bow and arrow over shotgun. The bow and arrow allow the hunter to shoot successively, a feat not possible with the shotgun. However, the shotgun has become a prestige possession particularly among young men and is slowly replacing the bow and arrow complex.

The only animal energy Agta have traditionally used comes from hunting dogs. In the Disabungan area, Agta own approximately three dogs per family. While dogs are not trained nor are they regularly fed, they are considered valuable possessions among the Agta. They are most helpful in locating and cornering game and in driving the farrowing sows and their litters out the nest. Good hunting dogs go out on their own and drive the game back into the camp.

The limited inventory of the hunting tools and their relative simplicity, which in themselves contribute a check and balance on the depletion ratio of major game animals, is compensated for by the amazingly varied hunting strategies of the Agta. During rainy days, Agta use a 'searching' (puhab) strategy in and around the visitation area of game animals. Immediately after the downpour, when fresh footprints are visible, a 'trailing' (tikêd) strategy is used. However, in the daytime when it is not raining, these strategies are not effective; the hunter's noise and smell drives the game away before he can approach. Thus, Agta use three other hunting strategies. The first, called 'ambushing' (sanêb), is done by waiting on the side of a trail that is used by game animals. The second strategy, which is particularly used to kill wild pigs, is 'hiding' (hos) and is done by waiting in or near fruit trees visited.
by the game. The third strategy is the 'cornering' (sagide) of game
by dogs and humans.

These hunting strategies either singly or in combination are used
in conjunction with various other hunting techniques. Popular hunting
techniques of the Agta can be distinguished as either collective and
individual.

The Agta used a number of 'collective' hunting techniques in the
past. One that is still popular is called manganop. It uses the
cornering strategy, involves up to twenty people and is done only when
it is not raining. In this technique, dogs are sent to scout the
forest slopes. A specific kind of barking of the dogs alerts people.
Women and children take positions to help dogs corner the game. As
they chase the game toward the hunters, the latter stalk the game.
Such expeditions require a great deal of running and have to be well
co-ordinated by making particular sounds and non-verbal signs. Agta
knowledge of the social organization and behavior of their game
animals help anticipate many things. For example, they know that the
wild pig runs away from the river while it is under pressure and deer
the opposite. They know that pigs tend to be gregarious. The stag
is a loner and the protective doe is almost always followed by fawns
or young male adults. Their familiarity with locale and well deve-
loped sense of direction in this otherwise uninterrupted rain forest
often make such hunting trips successful. During the sixty-four
days of observation, twenty-seven percent (N=51) of the hunting trips
used this collective technique and of them, forty percent were
successful (see Appendix 7). The kill in such collective hunting is individually claimed by the person who first stalks it, or the owner of the dog that first bites it.

'Individual' hunting techniques differ from collective ones in that the hunters are mostly adult males. These techniques also do not make use of the hunting dogs. In the most popular individual hunting technique, called *mangaliduk*, one to three adults leave camp to hunt individually in adjacent forest areas. They use searching, trailing, ambushing and hiding strategies depending on the weather conditions. As soon as they spot game, they tiptoe with their eyes fixed on the game. When they find the game within the range of bow and arrow or shotgun, they stalk it. The Disabungan Agta were using this technique in fifty-nine percent of the hunting expeditions and the majority (57%) of such individual hunting trips were successful.

Since World War Two, when flashlights became available to the Agta, 'night light hunting' (*maglente*) has become a popular dry month hunting activity. Immediately before or after the new moon period, Agta hunt with a flashlight strapped to their foreheads. Once a nocturnal animal is spotted, light is fixed on it. While the animal gazes at the light, the hunter aims and shoots. This technique is also an effective way to kill fruit bats. The Disabungan Agta were fielding such night light hunting parties once per every eight (14%) hunting expeditions.

Small and large game also are killed by using various traps. For example, pig and deer are caught by using spear traps (viz. *bilatik, takdik, kalawat*). Trapping is however most popularly done for
secondary game. Python are caught by tying one end of a rattan reed
to a tree and another end into a loop to be placed around the mouth
of the hole where the python dwells. As the python is teased by
throwing rocks, it comes out to get caught in the loop trap. Simple
snares (sékwat) are placed on trails to catch wild cats and chickens.
Once an animal is caught, the supporting pole of the snare jerks to
strangle it. Various other cage traps (salakumba), rattan loops
(bélaybay) or lasso-type ropes (biklog) are used for wild chickens
and birds. A sticky latex is placed at the end of a pole to catch
perching birds. Recently, rubber sling shots are also becoming
popular in bird hunting.

The Agta insure a regular return by frequent hunting. In the
sixty-four days of observation of one band of Disabungan Agta, at
least one individual went out to hunt every day over a forty-one
day period (33%). While the average band population was thirty-
four individuals during the observation period, Agta fielded four
people (11%) on an average hunting day. The hunting parties were
most commonly formed around siblings, brothers-in-law, father-son
and husband-wife relationships. Agta also prefer to hunt in small
parties to lessen noise problems. Thus, while the size of hunting
parties varied from one to twelve individuals, sixty-seven percent
of the hunting parties were composed of less than four individuals.
Two person parties, which was also the mode, were most successful
in securing game and claimed thirty-six percent of all game killed
by the band in that period (see Appendix 7). Individuals too varied
in their frequency of participation in hunting as well as in their
success rate. Five adult males repeatedly hunted and the majority of the kills were made by them. Of them, one hunter in particular secured twenty-three percent of the total kill. While the most successful hunter brought back three game animals per every seven hunting trips he made, another male consistently failed to secure any even on his eleventh trip.

The duration of the Agta hunting trips similarly varies. In a hunting expedition to the distant forest (called magisan), the hunting party departs from the camp with supplies of tobacco, salt, matches, etc., and lives in shelters for up to eight days to hunt. Agta prefer to go out in the morning and return to the camp by late evening. Such trips (called megilekeb) are fielded in the peripheries of the camp site and aimed at game which come out late in the day. Statistically speaking, a typical trip of the Agta hunter lasts a little more than a single day. The band members as a whole were also killing two game animals in every three days. Each game animal killed took an average of one hundred and nine manhours of work. In terms of meat return, one kilogram of meat was acquired in every five manhours of hunting. If the labor input of only successful hunters are accounted, one game animal required only thirty-six manhours of hunting and two kilograms of meat was acquired in just three manhours of work.

In addition to these numerous strategies, techniques and conformities, Agta also resort to various types of rituals to assure their luck in hunting. For example, if a hunter consistently fails to kill a game animal, he goes through a ritual to restore his luck
in hunting. In the most common ritual (called magilgil), an individual, usually a female, chews betel nut and spits over the head, body and upper arms or the hapless hunter. Various plants (e.g., Imperata, wild sugar cane, elephant grass) also are believed to enhance the skill of the hunter. Thus in a ritual (called maghotong), the unsuccessful hunter collects these plants, burns them in fire and inhales the smoke. Similarly, if the hunting dogs fail to corner game or to trek down wounded animals, they are made to smell (magsuub) either the burnt excreta of game animals or burnt clothes "to sharpen their senses."

The Agta also observe a number of forms of hunting etiquette. For example, it is taboo for the hunter himself to carry undressed game into the camp. He has to enter the camp as unceremoniously as he left. He carries his hunting tool in his right hand or on his shoulder to indicate that he was successful. As soon as he is sighted, another individual goes out to bring back (magsubul) the undressed game. It is considered impolite to talk to the hunter about the game at this time. As the hunter rests, his close male relative dresses the game. In the case of wild pig, the skin of the forehead is taken out to be worn as an arm band by the hunter or his close relatives. The hunter may save the jaw bone (sélang) of the game. Defecating and urinating on hunting tools are avoided all the time as these are also believed to cause bad luck in hunting.

These elaborate hunting techniques provide the major subsistence for the Agta. Such hunting emphasis of the Agta of the tropical rain forest however may come as something of a surprise to anthropologists.
(Griffin et al. 1978:43). Most technologically primitive hunter-gatherers of the equatorial zone including the Asian Negritos, show more reliance on plant food than on animal food. In fact, according to Lee (1968:42), the majority of foragers outside the arctic and sub-artic region depend on gathered food more heavily than meat.

One might argue that the anomaly case of the Agta is due to recent de-emphasis on gathering. There is in fact some evidence that gathering among the Agta has been down-played by some recent changes. For example, the Agta dependence on outside carbohydrate has more direct consequences on gathering than on hunting. That is, outside carbohydrate replaces the wild gathered plants and not the meat.

Gathering of wild foods also becomes redundant with the increasing horticultural activity of the Agta. Further, wild plant foods are the most seriously affected resources in the recent environmental change. But there is compelling evidence to suggest that gathering among the Agta did not play more than a subsidiary role even in the remote past. The tropical rain forest of the Agta provides few plant resources for their direct consumption as many plants are toxic to humans (and to animals; see Bryant 1981). More specifically, the high diversity rain forest vegetation is relatively poor in particular carbohydrate foods on which Agta could have regularly depended. As we will see shortly, the inventory of Agta plant food is rather small to convince us that they could have lived historically by emphasizing gathering alone. Even in relative terms, the technology related to Agta gathering is much cruder than that of hunting. Agta informants
themselves believe that their forefathers relied on gathering only subsidiarily.

Gathering among the Agta is also not always a purposive activity like hunting but more of an opportunistic activity. Generally, it is either done on an encounter basis or practised in conjunction with other activities. Because plant resources are more concentrated there, Agta usually gather along the low canopy stream vegetation. As the second most important traditional subsistence activity, the gathering activity takes up ten percent of the working time of the Disabungan Agta. Of this time, two-thirds is spent in the collection of wild starch alone. In terms of caloric input, the Disabungan Agta derive sixteen percent of their total intake from gathered resources. A casual gathering party is often composed of less than three individuals. A typical trip lasts on an average of less than two hours and covers a circuit distance of less than three kilometers.

Today, the Agta depend on varieties of wild tubers for most of their uncultivated source of carbohydrate. These tubers are gathered all year around but the highest return per unit of labor is gained between August and October. Thus just before the northeast monsoon begins, Agta rather intensively dig (magkai) these wild yams. There are at least six varieties of edible tubers identified by the Agta on the basis of vines and leaves, shallowness of roots, and taste. Agta are also well aware of their distribution. The most common and thus commonly exploited yam is ilus, which is deep-rooted and found only along levelled terraces of certain rivers. A split bamboo (sugsug) or an old knife (guho) is used in digging this yam. In an
observation of thirty-two mandays, Agta women were gathering one kilogram of yam per manhour of work. Other varieties are less common but are sought for their particular tastes. They include bitter yam (segday), sticky yam (balo) and a yam also eaten by wild pigs (baay 'Pueraria sp.'). One variety of yam, (ube 'Discorea alata') is shallow-rooted and can also be domesticated. Most of the latter varieties of wild tuber occur only in higher elevations. Agta state that whenever they get "tired of eating rice," they camp upriver to subsist on these wild roots.

The other plant food that is consistently mentioned in the Agta folklore is the caryota palm. Its symbolic significance among the Agta is suggested by its indispensable place in the traditional wedding feast. It was also considered an ideal gift while visiting kinsmen at distant camps.

According to the Agta informants, the caryota palm reaches flowering age in three to four years. The following year is the most ideal time to pulp (magagél) it, although it can be done with decreasing return for a few more years. There is no particular month or season to gather this resource. The pulping of this food is an extremely laborious job. The processing requires continuous soaking and rinsing with water. The pith has to be removed by pounding with a wooden mallet-like tool (pasok), especially designed for this purpose. Approximately twenty manhours of work are required to acquire one kilogram of such starch. Today, it is gathered only during the peak northeast monsoon season, when the Agta reliance on trade is at its minimum.
Several varieties of wild fruits are opportunistically collected. Most common of them are guava, wild banana, wild citrus, *pęluat* (*Nepheleum lappaceum*), and various palm (e.g., *bisal*, *sahed*) and rattan (e.g., *sahetsahet*) fruits. Wild vegetables are occasionally collected and they include fern, bitter melon (*parya 'Momordica charantia'*), chili and the young shoots of the upper part of several species of palm (e.g., *sakon*) and rattan. Agta also collect honey from three kinds of honey bees (*giyaw*, *pitukan*, *palêg*), which are found either inside tree trunks or hanging on tree branches. Agta find honey bee-hives by observing the flight of bees (*magtalduk*). Honey can be collected all year around but the period immediately after the maximum flowering season (March to May) is the most productive.

The degree of reliance of the Agta on hunting and gathering is little affected by the minor climatic fluctuations of their environment. Only a minimal readjustment among strategies, techniques and resource types is required. However, the northeast monsoon season in general has an impact on the Agta exploitation of aquatic resources. Because of the continuous rain, floods are common in this season. In addition, the diurnal temperature varies so that the early morning and late evening are cold. Thus, Agta prefer to fish only infrequently. It is in this sense that fishing to the Agta is a "seasonal" economic pursuit.

Of the number of fresh water fauna in the rivers of the valley watershed of the Sierra Madre, the most preferred and sought after is the eel. In these rivers, Agta also exploit the seven most common
species of fish. In the order of their importance in exploitation, they are kulapia, pelêng, délq, buhase, banug, mudi and ludung. In addition, a single variety of river shrimp, crab and aquatic frog as well as three varieties of fresh water shellfish (pisepis, guhong, sukkul) are collected. Agta also claim occasionally to kill and eat crocodiles which infest their fishing ponds.

The fishing gear of the Agta is composed of a few simple tools. The most basic one is an iron rod (bakal) with a sharpened tip. A rubber band is fastened to its posterior end, which ejects the iron rod to shoot in a sling shot fashion. Sometimes the rod is mounted on a gun-like wooden body to trigger it. A miniature barbed arrow (bêtik) is attached by a string to the rod to kill eel or large fish. Hunting bow and arrow are used to fish by standing on the banks of large rivers or the edges of open sea during low tides. Agta say that their deep pond and open sea fishing have been greatly aided by the introduction of fishing goggles by the Japanese early in this century. These days, such goggles are made by a few skilled Agta. Many Agta groups, particularly those who do not have ready access to reef or lagoon environment, do not use fishnets or hook and lines.

The short list of fishing tools is again compensated for by the varying strategies and techniques of fishing (see Bennagen 1976: 12-13). Particular Agta informants claim that the aquatic fauna can be categorized into those that can "smell" humans (e.g., banug, buhase, ludung) and others that cannot. Eel in particular is said not only to be sensitive to smell but also to have the power to
"hear" human voices. Agta claim that on the basis of these beliefs, the appropriate technique of fishing is determined.

The most common technique of Agta fishing is 'pond fishing' (maglédép). An individual or a small number of people wear fishing goggles and dive in ponds to shoot fish with the iron sling shot. They chew tobacco "to heat the body" prior to diving if the water is cold. This technique is most effective in killing small fish and those that cannot smell human odor. 'Shallow fishing' (magpelleng), on the other hand is done by standing in shallow water and dipping one's head in water to shoot fish. 'Bait fishing' is done by inserting bait impaled on a wooden stick inside rock shelters. 'Arrow fishing' (mabettik), which requires diving in the pond and shooting the fish with a miniature arrow tip, is effective in killing eel and other large fish. There are also two variations of night fishing. The first technique is 'light fishing' (magsulo), where Agta dive into the ponds with goggles and flashlights strapped to their foreheads. To kill fish which are sensitive to human odor, Agta use another technique (called magmiluk). During the full moon period, or with flashlight, Agta roast small fish and put them in water. Fish and eel are attracted to the bait and can be easily shot with the iron rod without getting into the water.

Less often Agta participate in collective fishing. Three techniques in particular are employed. 'Poison fishing' (magtube) uses the croton oil plant (Croton tigillum) and other plants (e.g., sagisa, mubli, tayadan) as poison. The bark of these plants is pounded and soaked in two to three subsequent places in streams and
small rivers. These poisons effectively kill some fish and stun others. Today commercial poison, particularly sodium cyanide balls, are also used to drug the fish. The second technique of collective fishing is 'rattan fishing' (magahet). A long rattan frame strung with stone weights is carried along the river to drive the fish. People wait at specific locations to shoot the fish. The third collective technique (called magkalweng) is done by diverting the stream or part of the river. Fish in this shallow water are caught with bare hands or shot.

In spite of these numerous techniques, river fishing is only a tertiary economic activity among the valley watershed Agta groups. The Disabungan Agta, who have no ready access to open sea, devote only four percent of their working time to river fishing. The man-hour return of fish is equally insignificant. An observation among one band showed that Agta spend on an average four manhours of work to procure one kilogram of aquatic protein. For the same group, fishing provided only two percent of their total caloric intake (see Appendix 10). The Agta of the coastal watershed however devote more time and get a better return in fishing. They fish more varieties of fresh water and marine resources including lobster, sea turtle and octopus.

The Old Rules

The subsistence technology of the Agta is a rather effective means to exploit the locally available resources. Nonetheless, the Agta individuals or families can experience fluctuations in the
procurement of particular kinds or amounts of resources they regularly depend on. This creates short-term uncertainties for the Agta over their day to day living even in their rather predictable ecosystem. Such uncertainties are negotiated by the Agta with a flexible social organization (often called the "old rules"). This aspect of socio-cultural organization regulates the system by specific mechanisms (Steward 1938), which in turn are enforced with norms, prescriptions, rules and sanctions. In particular, there are three such adaptive mechanisms among the Agta, namely, the division of labor, sharing, and flux.

The sexual division of labor among the Agta is flexible and non-prohibitive. There is no work activity which physically requires exclusion of one sex. While usually only men make bows and arrows and usually only women build lean-tos, these activities can be participated in by either sex. Further, the "man the hunter, women the gatherer" myth so popularly believed among hunter-gatherer specialists, does not literally apply to the Agta. Women among two linguistic groups of Agta in Isabela are successful bow and arrow hunters of the Agta major game (Estioko-Griffin and Griffin 1981a: 128). Among the Disabungan Agta, while women only occasionally hunt with bow and arrow, their participation in hunting is very common. Women without males accompanying them sometimes hunt pig or deer with dogs and machetes. Statistically speaking, there are fourteen women, mostly married, in every one hundred participants of hunting activity (see Appendix 7) and women spend one-third of foraging time in hunting related activities (see Appendix 6). Men
similarly participate in various gathering activities. Whatever differences are seen in the male-female roles, it is in the degree of participation in specific activities. For example, while males in general spend three-fourths of their working time in hunting only, females spend only eight percent of their working time in this activity. In terms of total manhour input, men work an average of 4.5 hours every day, whereas women work only 1.6 hours (see Appendix 5).

There is also no age specific activity among the Agta. The degree of participation by an individual in specific activities however varies slightly depending on the age and marital status of the individual. Among a band of Disabungan Agta, married adults in general work three hours every day, while unmarried young adults (age 9 and above) work only two and one-half hours. Among men, married adults put in a maximum (5.1) hours per day, while boys spend less than three (2.7) hours. In the case of females, it is the reverse. While married women devote the least time (1.2 hours) to working, young unmarried girls work twice (2.4 hours) that amount of time (see Appendix 5). Paradoxically however, married women, who work the fewest hours, also in the long run carry out the most diversified activities such as gathering, hunting, household chores, house construction and trade. Married men, who devote the maximum hours every day, do so mostly in a few activities. This is perhaps an indication that the more specialized the role an individual wants to play, the more manhour input is required from him. The less specialized an individual remains either in his skills or participation of activities, the less effort is required from him. In short, the flexible division of labor,
of the Agta is a response to make efficient use of human skill and energy and to offset the other limits such as technology imposed by the system.

Perhaps a better strategy to counteract the short-term uncertainties of day to day living is the storing of food surfeit for future consumption. Unfortunately, the pragmatics of storing food also requires specific prerequisites. For example, storing of food is feasible only in certain climatic conditions. The environment should also provide an abundance of resources, so the surfeit can be stored.

For the Agta, the high humidity and temperature of their tropical equatorial environment are counter to conditions required in long-term storing of food. Moreover, in terms of general resource availability, there are no marked seasonal pulses in abundance of resources. Cumulatively, it is an imperative for the Agta to depend on day to day foraging; they must forage the desirable resources that are least distant from their camp on any day and every day.

The Agta have however other socio-cultural mechanisms to help solve their problem of uncertainty in resource procurement. One is the strategy of resource allocation called "sharing." Found in varying degrees in all technologically simple societies, sharing is the popular means to allocate resources in all hunting and gathering societies. Sahlins, who coined the term "generalized reciprocity" for sharing, characterizes it as transactions that are putatively altruistic, transactions on the line of assistance given and if possible and necessary, assistance returned (1965:147). That is,
sharing is altruistic and based on generosity and other moral sanctions.

Sharing (bahagi) among the Agta is an economic exchange of procured resources as well as the labor that is employed to acquire those resources. The unit of this economic exchange is the household rather than the individual; irrespective of family size, and the food situation, each household gets a share of certain food. Sharing can involve simultaneous exchanging of same food between households. It is also a social exchange among the Agta. It generally follows the idiom of kinship (e.g., Service 1966:17) and residence and is altruistic in the sense that the return is not expected by a specific time or in a specific form. It is informal; no one asks for or rejects a share, nor are they openly thankful for it.

Peterson (1978a:18, 39, 84, 102) writes that sharing among the Agta is regulated by ritual (sorcery?). Agta informants however deny that there are jural or ritual sanctions in their practice of sharing. What is seen is that those households who fail to reciprocate, say, due to sickness, privately express their "shame" (sanike). Those who deliberately violate the rules of sharing are privately criticized and occasionally retaliated against by withholding certain resources in future sharing.

The practice of food sharing among the Agta is also determined by the type of item to be shared. I mentioned above that the meat of wild animals is the most preferred food of the Agta. This is followed by aquatic protein and finally by plant foods in that order. Given this general framework, the higher the ranking of the food
item, the more frequent is its sharing. With the exception of birds, the meat of all game is religiously shared (e.g., Woodburn 1980:801). As soon as the game is quartered, the hunter (and his wife) set aside a portion to trade and the remaining portion is meticulously hand weighed to insure equal share. Eel and fish are shared but not equally. Gathered foods are shared only among families who are present at the time of distribution. Vegetables are consumed by individual families. Other items are shared with individuals of particular age groups and those who are present at the time of consumption.

The sharing of labor is casual. There is no concept of wage or exchange labor in the traditional Agta system. While the demand or labor generally remains low, co-operation among peer groups is most common. Otherwise, all available members, irrespective of their sex, age or family association, participate in a given activity. Tools such as bow and arrow, shotgun, and hunting dog, are shared with the prior permission of the owner. Clothes and utensils as well as collected firewood are also similarly shared.

The channel of extra-household sharing of the above items is the kinship network. The rule is that the closer the kinship relationship between families, the more frequent and more intense is the sharing. For example, fish and plant foods are more frequently shared among close kinsmen than among distant kinsmen. Close lineal kinsmen share even the cooked food either by group cooking, by dishing out a plateful, by coming together to eat or by moving members between kitchens. However, as all families of a band are at least in a serially related
kin of kin relation, ultimately foods, particularly those of the higher categories, are equally distributed among families. Appendix 11 reflects this fact as all four families of a Disabungan Agta band have similar energy intakes.

Residence which is dictated by the kinship network, is another factor that affects the food sharing among the Agta. As a general rule, sharing within a camp is more intense than between camps, and most often only the food of higher rank is shared between camps. For example, if two camps are contiguously located in one area, meat is divided by camps (tolbék) irrespective of band size. While scarce goods such as salt, tobacco and rice also are shared on request, fish and vegetables are not shared. Outside of such sharing, there is no other formal or measured reciprocity among the Agta bands.

Through such intensive and extensive sharing, the Agta maintain a regular distribution of food resources between and among individuals. In other words, the sharing of food produces a "latent cache," which can be activated according to the needs and supplies of involved parties (Nietschmann 1973:211). Thus, sharing among the Agta is a built-in mechanism to offset the short-term fluctuations of particular food resources (see also Weissner 1977:11-12).

The practice of sharing also has other functions. For example, Lee suggests that sharing among foragers is a mechanism for meeting the physiological needs of individual members (1969:74). Peterson has restated this for the Agta by saying that sharing provides access to a variety of diets (1978a:83). I tentatively add that sharing is also, perhaps, an adaptive mechanism to insure efficient consumption.
and thus, metabolism of food items. Without the practice of sharing, individual families among the foraging Agta would end up with an erratic surfeit of certain food items and a scarcity of other items. Considering that Agta cannot effectively store these surfeits, they would have to consume large quantities at a time. Other consequences aside, such single large consumption of food would result in a regular 'physiological waste' as part of the amount consumed is not metabolized (McArthur 1974:114). Through sharing, such surfeits get distributed among families and bands and the physiological waste is checked. This hypothesis also gets further support from the fact that meat is an item that is in frequent surfeit among hunter-gatherers and an item most regularly shared. It is recognized that protein, the main source of which is meat, in excess of what the body can use must be catabolized (Maynard and Loosli 1962:118). Moreover, the protein containing essential amino-acids in the proper complements must be taken via food each day to provide the materials for human protein synthesis (Milton 1981:534-535). The sharing of meat assures a small but regular intake of protein by individuals and is thus physiologically more efficient.

While they may be aware of some of the above listed functions, the Agta do not practise sharing for those specific reasons. To them, sharing is merely an exchange involving closely related (or residing) families and an occasion to meet (or create) social obligation. If it does contribute to the social cohesion of the group, Agta seem to give credit to the kinship network rather than to the sharing of foods *per se*. For the Agta themselves, sharing is not seen as privilege and it gives no power or prestige (cf. Ingold 1980:79).
Sharing among the Agta is dictated by their kinship network and residence pattern. It is also favored by their tropical environment and their foraging subsistence. In varying degrees, these four factors also play determining roles in another aspect of flexible social organization, namely "flux." Flux is defined here, after Turnbull (1968:132), as frequent shifts of camp sites and the changeover of families. The somewhat predictable and thus patterned flux of the Agta is described here under camp movement and fluid band composition.

"Camp movement" is the collective move of a band to a new area. In sharing, resources are "moved" between people; in camp movement, it is people who move between resources (Cashdan 1980:718). Thus, the nature of the distribution of resources influences the camp movement. I mentioned above that the resources of the tropical rain forest ecosystem of the Agta are not clumped but ubiquitously scattered. In such an ecosystem, every unit of land tends to provide almost all necessary resources. But the resources themselves quickly become scarcer within a few weeks of exploitation, and have to be acquired by making extended trips. To lower the energy cost, Agta bands move to another area, which again provides all the necessary resources. Such a strategy of moving bands between resources is called by Binford a "mapping on" strategy (1980:12, 14). It is for this reason that the tropical rain forest hunter-gatherers are characterized by a high mobility compared to the technologically identical societies of, say, arid latitudes. In short, for the hunting and gathering societies of tropical zones, camp movement is a cultural mechanism to exploit the permissiveness of their physical environment (Turnbull 1968:137).
In addition to the frequency, another important dimension of camp movement is the distance involved in such movement. The ethnographic data indicates that the rain forest hunter-gatherers, while maintaining high residence mobility, can afford to have shorter inter-camp distances as well as the annual circuit distances than, say, the desert groups (see Binford 1980:7). Thus the increased frequency of the residential moves is balanced by a decrease in both inter-camp and annual circuit distances.

With the exception of two months during the peak northeast monsoon season, when bands tend to remain in one particular area, camp movement among the Agta is frequent. For example, one band of Disabungan Agta were observed making twenty residential moves during one annual cycle. While the length of stay in one campsite varied from less than a week to two months (in northeast monsoon season), on an average the band moved every eighteen days. Thus, in Murdock's system of classification, the Agta can be categorized as a "fully migratory" type (1967:159).

Discussions pertaining to Agta camp movement (kobu) are even more frequent than the moves. One couple initiates the discussion by passing the word to others informally. Informally again, the couples that like the idea support it by pointing to the disadvantages of their present campsite and idealizing the proposed campsite. The indication that camp movement is crucial for gathering and to some extent for fishing as well as for trade comes from the fact that the arguments for or against such moves revolve around these topics. Perhaps partly because hunting must depend on mobile animals, it is not an important
consideration. Thus, while both men and women freely voice their opinion on residence change, it is women who carry out the most gathering have the final say. The fact that some members argue against such moves also indicates that Agta usually move long before the resources run out. Frequent camp movements are thus parts of a mechanism to check the over-exploitation or depletion of resources.

Unless the residential move is culturally prescribed (e.g., death of band member), the decision for such a move is rarely unanimous. Although the confusion continues for a period of time, the majority decision wins ultimately. Once the decision to move camp is finalized, the day or time of the projected move is another confusing aspect Agta must deal with. While Agta have few belongings to transport, the argument over who will carry them can delay the move. Still resentful of the decision, some members complain about rain or sun and delay the move. It may take hours to several days to make the final move. Occasionally, the decision is reversed at the final moment or even after some families have already left for the new camp. The travel is leisurely unless a game animal is encountered to induce everyone to go on a hunting spree. Frequent stops are made to chew betel nut, fish, gather or cook and even to take a nap. Once the destination is reached, the families either claim their old lean-tos or build new ones.

While, the precise reasons and schedules of Agta camp movement are dependent on multivariate factors, the sites and thus the distances involved in such moves are predictable to the Agta themselves. As mentioned above the Agta reuse only a limited number of campsites.
Each such site can be scrutinized depending on the other determining factors (e.g., trade, weather). The trails between such campsites are given and agreed upon. Statistically speaking, among a band of Disabungan Agta the mean distance travelled in such move is 5.3 kilometers and it varies from two to eight kilometers. The total annual circuit distance covered in residential movements is one hundred and seven kilometers.

The residential mobility of the Agta is primarily a response to their ecological circumstances. More specifically, it is that part of the old rules where the underlying consideration is economic adaptation. Such economic considerations are however only peripheral in other aspects of Agta flux. For example, between and during the collective camp movement, Agta experience what anthropologists studying hunter-gatherers call "fluid band composition" (see Turnbull 1965; Lee 1972b; Woodburn 1968a; Silberbauer 1972). Fluid band composition of the Agta is defined here as the changeover of residences by individual families.

The Agta prefer to maintain an optimum band size of three to five families for socio-economic (e.g., kinship, sharing) reasons. However, intermittent temporary fluctuations in band size do occur. For example, Agta families change their residence temporarily; an Agta household may decide to leave the wife's kinsmen and reside temporarily with the husband's kinsmen. A family visits a distant camp to seek shamanistic services. A new marital alliance or death of a member may bring changes in the kinship network and thus changes in the residences. A few ceremonial occasions may call for temporary fusion of a number of bands.
During the course of six months, one band of Disabungan Agta were observed to vary from two to seventeen families. However, these fluctuations are always temporary in nature. Any such significant deviation from the modal band size triggers the process of either fusion (pisan) or fission (hisalay) of families so the ideal band size is attained. Once this is achieved, Agta tend to discourage band fluidity. In short, the band fluidity of the Agta is minimal and the Agta remain a low valency society.

The preceding analysis suggests that the major function of Agta band fluidity is to reconcile social obligations. This view is contrary to the suggestion that it is an Agta mechanism to distribute individual members relative to resources (Peterson 1978a:21). In substance, this analysis is also in contrast with the idea that fluid band composition is a major conflict resolving mechanism among hunter-gatherers (see Lee and DeVore 1968:9, 156; for similar argument on the Agta, see Peterson 1978a:74). Turnbull, who claims that the function of fluid band composition is political adaptation, puts it more succinctly when he says that the processes of fission and fusion follows "lines of dissent rather than those of descent" (1968:137). For the Agta, I will argue that their band fluidity follows precisely the line of kinship.

The egalitarian character of the Agta economy is facilitative rather than competitive (see Silberbauer 1981:249); the members of the society do not have to compete over resources. The close kinsmen in particular share whatever resources are available. Given these conditions, there is an atmosphere of non-competition among close
kinsmen. Dissent between and among them, whenever it arises, is minor and easily forgiven or forgotten. While kin-dependent Agta would prefer to live only with close kinsmen, due to other constraints (e.g., to maintain an ideal band size), a band can be composed of members some of whom are distant kinsmen or non-kinsmen. Such close residence with distrusted non-kinsmen is at the least uncomfortable. Non-kinsmen consciously or unconsciously "pick a fight" with one another. Thus, dissent among the Agta is more frequent as the distance in kinship relationship increases. Such dissent creates factions along the line of kinship and ultimately fission of the band along the line of kinship. It is also for these reasons that the Agta themselves can predict the lines of fission and fusion. In short, the fluid band composition of the Agta is related to the association of kinsmen with non-kinsmen rather than to dissent per se.

In summary, the Agta traditionally depend on hunting, gathering and fishing of locally available resources. The Agta practise diverse strategies and techniques to compensate for their relatively simple tool complex. To further offset the limits of technology, which can bring day to day uncertainties of resource procurement, the Agta have socio-cultural mechanisms such as sharing to allocate important resources as well as labor. They have flexible division of labor to insure efficient use of human energy. Through mobility, they exploit the ubiquitously distributed resources. Taken together, these economic activities and socio-cultural mechanisms of the Agta provide a viable subsistence among the traditionally forest oriented Agta.

Because the allocation of resources and redistribution of people
follow the lines of Agta kinship, they also serve a function in the social cohesion of the group.
7. THE SOCIAL CIRCUMSCRIPTION

In the above discussion of the relation between physical and socio-cultural environments, I noted that their boundaries for particular societies do not necessarily coincide. For the Agta, I showed that a local linguistic group occupies a physically circumscribed area and maintains an economically independent unit but is only a part of the larger social unit, the linguistic group. At the linguistic group level, the members maintain not only economic but also social, political and linguistic isolation from their counterparts. This chapter is designed to answer why an economically independent local linguistic group must socially become part of the larger linguistic group, and why a linguistic group must maintain socio-political isolation from its neighboring groups.

Local Linguistic Group

The local linguistic groups maintain economic independence as a result of both compulsion and choice. The compulsion as mentioned above is that the rugged ridge of the Sierra Madre and the greater physical distance involved interrupts any regular economic exchanges between local linguistic groups. The choice is that they do not have to have economic exchanges across their boundaries precisely because every local linguistic area is, ecologically speaking, identical in the traditional resources of the Agta. These two reasons aside, there are no cultural or other sanctions prohibiting
the local linguistic groups from entering economic exchanges. In fact, any Agta individual, family or bana is free to take up residence anywhere within the linguistic area and exploit resources from any area if they wish to.

While the members of a local linguistic group can and do maintain their economic autonomy from their counterparts indefinitely, their social network must always extend beyond the boundary of the local linguistic group. This is primarily because the population size of a local linguistic group is usually small. Of these, most members are directly related to one another. The wider incest rule of the Agta proscribes many of these directly related individuals from entering any matrimonial relationship with one another. Thus, while some individuals can marry within the local linguistic area, many others must seek marriage partners from outside the local linguistic area. Consequently, the kinship network cross-cuts the boundaries of local linguistic groups and forms a bridge between such groups. The other social exchanges such as visits, information sharing and shamanistic services follow and bring the two local linguistic groups into a larger social unit. Without assuming that these social exchanges are prerequisites, the members of one such linguistic group share common cultural features including the language.

Such a description of a local linguistic group is, however, in sharp contradiction with one earlier published report. Based on research on a local linguistic group of what I call "Palanan-Divilacan Linguistic Group," J. Peterson writes,
The Agta recognize three territories within Palanan...
While all share resources in common, each is characterized by variation in the availability of these resources. The areal variation in the resources affects Agta subsistence within each territory, [and] relations among Agta in different territories....(1978a:6).

...territories are clearly bounded and rules governing access to resources within a territory are widely accepted. ...territorial rights are preserved by threat of death to violators...Should trespass occur, any individual from that territory may kill the trespasser...(ibid.:25).

...the three territories seasonally experience differential resource potential...the Agta meet daily fluctuations in food supply by maintaining flexibility in economic behavior. ...This economic adaptation, however, does not necessarily assure survival during seasonal fluctuations of food supply, catastrophic occurrences such as typhoon or other events which might affect food supply over longer periods of time (ibid.:45).

...much of the flexibility of Agta resource exploitation hinges on successful marriages, especially territorially exogamous marriages (ibid.:14).

In the following pages, I will argue that Agta do not see themselves as owning or controlling their resources. There is neither areal nor seasonal variation of resources. Territorial exogamy described by Peterson (1978a) is only an arrangement of regular marriage relationship among members of a linguistic group. Only at a higher level, do the members of one linguistic group keep visible social distance vis-à-vis members of other linguistic groups for non-economic and non-ecological reasons.

Territoriality, in the sense that this term is conventionally understood, means territorial ownership and control. A "territory," in biological sciences, is "an exclusive domain maintained and defended by members of their own species" (Ardrey 1977:110). Territoriality is a behavior pattern which results in interspecific
competition for space (Odum 1975:129). Earlier ethnographies reported that similar behavior was found among hunting and gathering societies. For example, Radcliffe-Brown (1931) wrote that patriclans among the Australian aborigines owned a defined territory that included a number of totemic sites. In his later study of the group, Radcliffe-Brown elaborated his claim by saying that known boundaries defined each patriclan's territory and the patriclan exercised exclusive right to the natural resources of its territory (1952:33-34). While certain inalienable rights of a patriclan to a specified piece of land is agreed upon, recent studies deny any restrictive use of particular territory among the Australian aborigines; they seem neither to have exclusively occupied a territory nor defended it (Hiatt 1968:101). In generalizing the hunter-gatherer literature, Lee and DeVore write that they are not corporations of persons, who are bound together by the necessity of maintaining property such as corporate land (1968:8-9). Woodburn claims that among all hunter-gatherers, territories, if defined at all, do not substantially constrain individual choice of residence or use of resources (1980:795). For particular desert hunter-gatherers, Silberbauer writes that a militantly territorial band would be an ecological luxury that they can ill-afford (1981:185-187). In short, the accumulated evidence hints that the rigid concept of territoriality among hunter-gatherers is a fallacy (N. Peterson 1979:111, 125).

Let us examine the Agta case. Due to their cognatic kinship system, the Agta do not form corporate groups that can exercise communal rights over persons and property (see Murdock 1960:4).
They thus lack any stipulations regarding land and resource ownership. Further, a group may take the trouble to become territorial if the territory is of survival value (Mayr in Ardrey 1977:110). This is based on the assumption that territorial behavior can be expected when the costs of exclusive use and defense of an area are outweighed by the benefits gained from this pattern of resource utilization (Dyson-Hudson and Smith 1978:23). The Agta however do not experience a scarcity of resources either due to regional variation or localization of such resources across areas. The "three territories" of the Agta claimed by Peterson (1978a) are actually part of a single continuous rain forest chain interrupted only by rivers. Because all three areas are located within a small perimeter of the Palanan Bay area of coastal watershed, they experience a very similar diversity in plant and animal species. All three areas have access to varying lengths of estuarine, lagoon, reef or open sea areas and thus there need not be constraints for marine resource exploitation. Finally, whatever minor variations in resources exist between areas, similar variations also exist within each area. In short, there is no spatial variations of resources in these three areas that might warrant territorial behavior from Agta groups.

Interwoven with the argument of areal variation is Peterson's suggestion that her "three territories" also experience seasonal variations in resources. I have stated above that this part of northeastern Luzon has no marked "ecological" seasonality\(^{10}\) (see also W. Peterson 1981:59, n. 2). Further, climate in general and such non-seasonal conditions in particular play only a marginal
role in the control of local rain forest vegetation (Wernstedt and Spencer 1967:62). Consequently, as opposed to Peterson's claim, there is little seasonal fluctuation of the traditional Agta resources, and Agta do not experience seasonal stress and scarcity in forest food resources. Finally, if there is minor seasonal variation in resources, it is prorated in the three adjacently located areas.

The tropical environment of the Agta is not like the arid environment, where the possibility of extreme conditions prevails (see Silberbauer 1981:288-289). Peterson however mentions the possibility of "natural catastrophe" in the Agta area that can bring long-term fluctuations in natural resources (1978a:passim). The only natural catastrophe in this area is typhoons, which can bring a temporary effect in the Agta exploitation of wild resources. Since there is no Agta traditional resource that is destroyed by such typhoons, Agta carry out their regular foraging as soon as the wind drops. Because the path of a typhoon is wide enough to affect all three areas equally, Agta would find no insurance in the resources of another territory. Similar to other hunter-gatherer groups (see Dunn 1968:223; Eder 1977b: 19; Endicott 1979a:187), there is no available evidence that Agta in the past experienced famine and starvation. In short, Agta experience no long-term natural catastrophies, which might bring fluctuations and lasting worries to them.

Given the absence of any significant spatio-temporal variations of resources, Agta themselves do not see any distinct divisions or territories to defend or encroach upon. In fact, they live in interlocking settlement chains within the linguistic area. Consequently, the Agta
of the Palanan Bay area do not recognize any "territories" (Headland 1978:128-129). Therefore, what Peterson calls "territories" are at best etic divisions, which Agta themselves find arbitrary.

Following the thesis that Agta face regional, seasonal and long-term fluctuations in resources, Peterson forwards the idea that they must have access to extra-territorial resources to assure their survival. According to her, this is achieved by a conscious practice of territorial exogamy; that is, parents encourage or even dictate the marriage of their children with individuals from another territory in order to gain access to resources there. Headland (1978:129-133) has questioned most of the ethnographic data presented by Peterson. For example, while Peterson asserts that access to resources is explicitly discussed during matrimonial arrangements, Headland claims that this is never the case. Circumcision, which according to Peterson is performed by a father to obligate and dictate his son's marriage, is always done without the knowledge and participation of the father. I have hinted above that marriage among the Agta, instead of being planned, is very much an individual arrangement in the sense that as long as the individual abides by the incest rule, he or she is free to marry any person from anywhere, including one's own camp. In other words, it is kinship and not the access right to extra-territorial resources that determines the marriage arrangement. Because close residence also often means close kinship ties, one is normally required to marry an individual from a distant camp. Thus, what Peterson calls territorial exogamy is simply the inevitable marital arrangement of the Agta groups.
To summarize, the Agta area does not exhibit marked spatio-temporal variation in resources. The members of a local linguistic group do not see themselves as having a defined boundary or territory in relation to the members of another local linguistic group. If they do conventionally tend to inhabit a particular area within the local linguistic area, they do not hold any exclusive ownership to the tract of land. This informal confinement of members in a particular locale has nothing to do with territoriality or social competition, but with the nature of kinship networks and with the fact that they can afford to do so economically. In short, the circumscription of the Agta within a local linguistic area is less of an imperative and more of luxury. Because there are no defined or defended boundaries between local linguistic groups, they come together to form a larger social unit, the linguistic group.

Linguistic Group

A local linguistic group cannot become a unit of endogamy because of its small population size. However, when two such local linguistic groups come together to form a larger linguistic group, the population size is large enough to allow endogamy. That is, most members find their marriage partners from within their own linguistic area. Due to the endogamy of a linguistic group, the kinship network connects only the members of a linguistic group and excludes all members of adjoining linguistic groups. Consequently, there are no trophic and non-trophic exchanges between members of different linguistic groups. For example, there is no
trade or other material exchange. There is no information flow; an Agta band living at one end of the linguistic area can have information about another related band who live three days walk away, but not of bands of another linguistic group who may live only a few hours walk away. The absence of any trophic and non-trophic exchanges across linguistic groups results in minimal interaction between members of different linguistic groups. Thus, a linguistic group occupies a separate area of the forest chain and remains isolated from other similar groups.

There are four such Agta linguistic groups in Isabela. As each linguistic group usually inhabits a forest chain that extends from the Cagayan Valley to the coast of the Philippine Sea, the linguistic groups occupy successive and roughly rectangular areas along the north-south axis of the Sierra Madre Range (see Map 2). The Disabungan-Dipagsénghan linguistic group, of which the Disabungan Agta are part, live in three municipalities of the southern half of the province. Numbering three hundred seventy-seven people, they represent the second largest Agta group in Isabela with their heavy concentration (63.4%) on the interior slopes of the coastal watershed. The second linguistic group, the Ilagin-Dikaméy, live in an area to the south of the Disabungan-Dipagsénghan linguistic group. Concentrated in two municipalities, this is the linguistic group in Isabela which occupies a large chunk of the valley watershed but has no access to the coast of the Philippine Sea. Today, this group also represents the smallest linguistic group (149 people) in Isabela. To the north of the Disabungan-Dipagsénghan Agta area, live the
MAP 2
LINGUISTIC DIVISIONS
OF THE AGTA OF
ISABELA
largest (856 people) linguistic group, the Palanan-Divilacan. While the majority (91%) live and occupy almost three fifths of the coastal watershed area of Isabela, the remaining population lives in a narrow corridor in the valley watershed. The northernmost linguistic group in Isabela, the Maconacon-Abuan, inhabit areas both within and beyond the provincial boundary. Excluding members who live outside the provincial boundary, this group numbers two hundred sixty-two people and represents the third largest Agta population in the province (see Appendix 2). On the basis of a tentative analysis, these four linguistic groups in Isabela show sixty to eighty-seven percent shared vocabularies with one another (see Appendix 3).

Why must these linguistic groups maintain visible social distance from one another? The answer has already been partly provided. There is no kinship relationship between members of different linguistic groups. Thus, members of another linguistic group are non-kinsmen. Non-kinsmen particularly from another linguistic group are distrusted and perceived as violence-prone individuals. In Silberbauer's term, they fall beyond the "safety threshold" (1981:62-63). A relationship with such people is believed to contain unforeseen threat and danger.

Such a negative perception of members of another linguistic group is not totally an unfounded paranoia, but deeply rooted in the long history of cross-linguistic killing. Organized warfare in the sense of socially sanctioned and bilaterally agreed upon armed combat did not exist among the Agta. The cross-linguistic killing was carried out in punitive raids (ngayaw). It was a unilaterally initiated surprise attack on a band of another linguistic group.
According to Agta informants, the raiding was carried out as a long distance expedition. The raiding party was often composed of closely related able-bodied male adults and the size of a party varied from five to ten individuals. The northeast monsoon season was usually avoided as cross-country travel was difficult. The most ideal raiding season was from March to May, when continuous rain is not expected and the abundance of honey solved the food problem. Traditionally, bow and arrow were used in raiding. A particular group allegedly used poison arrows.

For strategic reasons, the raiders preferred to attack on nights between the new moon to full moon period. They approached the enemy camp by moon light and waited for the right time to attack. As soon as a designated person from the raiding party signalled by making a grunting sound, others tiptoed to get closer to the camp. They toppled the lean-tos to trap sleeping people and killed unsparingly or wounded as many people as they could. If they had time, they gruesomely disfigured bodies. The successful raiding party collected utensils, knives, blankets, bows and arrows, etc. and burnt lean-tos.

Analysing the details, it seems that Agta bands experienced either serious threat or actual attack every three to four years. The victims were most often children who panicked, or old people who could not take cover. Casualties were often limited to injuries. The possibility of raiding was always there. Agta bands from different linguistic groups remained as potential enemies. Since there was no truce, Agta always lived with suspicion about outsiders. It seems that the only defense the Agta had was to live in a sizable band and
to be elusive by moving their camp (*maghenhen*) when such threats occurred.

The widespread acquisition of shotguns by all Agta groups during World War Two brought an interesting turn in the history of raiding. In the beginning, the raiding was intensified; one band of Disabungan Agta was raided twice in the same year by two different groups. As the casualties rose, not only among people who were attacked, but also among the attackers, for retribution was easy, groups were deterred from frequent raiding. Sporadically however, it continued even until the 1970's. Following the declaration of martial law, when the military confiscated all firearms and bows and arrows, the Agta seriously feared that raiding would resume. While the allegations continue, the active practice of raiding however seems to have ended among the Isabela Agta. Nonetheless its long history has left a lasting impression in the minds of the Agta.

The Agta linguistic groups also keep their social distance from one another by stereotyping other groups and by ethnocentrically contrasting them with their own. The members of one's own linguistic group are considered "real" Agta. Others are considered "deviants" and called either "wild" or, if obviously not wild, "settled" Agta.

The so-called "settled" Agta groups are ridiculed by their neighbors for being servants to outside agricultural population. They are thus said to devote little time to hunting, fishing or to the collection of wild foods but live by scrounging around agricultural settlements for food. Notwithstanding that all Agta love to drink, the "settled" Agta are considered alcoholics and even compulsive
gamblers. They also are accused of allowing illicit sexual liaison between their women and outsiders and thus giving birth to hybred (mestiço) children. In short, such groups are said to have lost their pride as well as their shame.

Those group of Agta, who usually fall in the category of "settled," themselves admit that they are changing. However, they deny most of the above accusations. They are not yet settled. Their forest orientation is decreasing but they still depend on wild resources and possess the skill to exploit them. They are less successful only because wild game and resources are less abundant where they live. Sporadically, women from these group have married outsiders but widespread illicit sexual relation is emphatically denied.

The outside agricultural people also distinguish the "settled" Agta from others. Because these groups live in and around coastal areas, they are called "Dumagat," the literal meaning of which is "people of the sea" (Bennagen 1969a:5). But among the Isabela Agta, who traditionally did not have any maritime technology, the word "Dumagat" remains very much an outside term. The Agta either do not use it or at least do not see its semantic distinction from the word "Agta."

The term used by the Agta themselves to describe the less acculturated neighboring Agta groups is "ebukid" (see Estioko and Griffin 1975:237). This word carried at least three components of meanings. Denotatively, it means "people from the mountain" or groups living in the interior and thus away from agricultural settlements. Because of their distance from agricultural settlements, they
have a less intensive interaction with non-Agta population and have tended to remain more traditional. Due to this, the connotative meaning of the word "ebukid" is "people who are traditional." Agta merge these two levels of meanings (i.e., from the mountain and traditional) and bring out the third generalized meaning component, the "wild," which has a pejorative connotation.

In general, Agta describe their "wild" neighbors as those who subsist on wild roots and meat. They are ridiculed for practising traditional Agta customs such as teeth filing, scarring of the body and shaving the pig tail area. Boys do not want to marry girls from such wild groups, because they are said to demand long and difficult bride service. These wild groups are said to run away from the sight of outsiders for they are afraid. They are stereotyped as still wearing bark cloth, moving their flimsy lean-tos frequently to be elusive and having 'silent barter' with outsiders to get their occasional supply of domestic cereals.

Today, however, there are no such wild groups except in the minds of the Agta. Some bands do live away from the agricultural settlements and retain some of the traditional customs. But otherwise, there is very little truth in these stereotyped descriptions. Although particular families in a band do not practise cultivation in a given year, all Agta bands in Isabela today practise some form of cultivation. Most group trade regularly with outsiders and depend on an outside supply of domestic cereals. Thus, except for arrogance and ethnocentrism, there is no basis to any accusation of wildness. To us, however, the myth very succinctly summarizes the existing social
relations among Agta linguistic groups in Isabela, and provides an answer as to why they maintain social, economic and political isolation from one another.

One way the Agta linguistic groups can break their social barriers is through cross-linguistic marriages. While they must have occurred only rarely in the past, today inter-linguistic marriages do take place particularly where remarriage of a widow is concerned. Of the twenty-nine currently married couples in the Disabungan area, five cases involved such cross-linguistic marriages and three of them were widow remarriages. Among the Casiguran Agta, the spouses of seven percent (N=127) of the ever married adults came from another linguistic area (Headland field notes). The Ilagin-Dikamey group, which is the smallest in Isabela, is said to be the most aggressive group to enter cross-linguistic marriages. Such inter-linguistic marriages connect the kinship networks of two or more linguistic groups and help neutralize some of the open hostility. But again, these marriages entail other problems. For example, linguistic groups may differ in their rules of bride service (and bride price). Such genuine misunderstandings surface in renewed distrust between members of different linguistic groups. Because a strong undercurrent of distrust prevails between linguistic groups, only those people who are related to both sides and those escorted by them travel across linguistic areas. Communication between linguistic groups is slow. Thus the fragile alliances due to cross-linguistic marriages remain partial and the linguistic groups continue to maintain social distance from one another.
To conclude the analysis of the Agta traditional world, it might be said that the relationship between their rain forest natural environment and somewhat structured social groupings defined by kinship and residence pattern are mediated by their versatile technology and flexible social consideration. While local linguistic groups lead an economically independent and viable life, due to their social exchanges with the other local linguistic group, they come to form a larger social unit, the linguistic group. Linguistic groups themselves however maintain social, economic and political isolation from one another. Such independent linguistic groups living in adjacent areas of a single forest chain loosely represent the larger regional population of the Agta. In addition to the fact that the traditional way of Agta life is certainly viable, it is distinctly dominated by three characteristics, namely, the forest orientation in their permissive environment, their socioeconomic egalitarianism and mobility.
III. THE TRANSITIONAL WORLD
8. THE ALTERATIONS

The preceding part of this study basically emphasized the morphostatic aspects of the Agta system. It analyzed how the intricate and cross-cutting relationships of the natural and socio-cultural environments of the traditional Agta system act as checks and balances to provide a stable and viable way of life. This part, titled the "transitional world," emphasizes the morphogenetic processes. It analyzes the factors and processes that elaborate or change the traditional form, structure and organization of the Agta system.

From the systems perspective, many factors are seen to play varying roles in initiating and determining change in a human society. Thus, the complex process of change can be completely explained only by analyzing all aspects of the society under question. The only problem is that it becomes cumbersome to list all factors that are responsible for bringing change in that society. We have then, as W. Peterson suggests, to focus only on those aspects which have been most radically "altered" (1981:52) and determine how these altered conditions are responsible for bringing about the change in that human society. Here then, I will first analyze the particular altered conditions in the internal Agta system and then describe the effects of the external systems which have determined the change among the Agta.
Internal Conditions

One of the most frequently reported alterations among technologically simple societies is their internal population growth. Further, Boserup (1965) has suggested that population growth can be treated as an independent variable, which determines change in a human society. For the purposes of this study, I will take the population growth and change as co-variables and attempt to determine whether or not the Agta population growth in the past is related in any way to the process of their change.

There is little historical demographic data on the Agta groups. Knowledge of their present demographic condition also is sketchy at best and any attempt to expand it faces a number of problems (see Howell 1976, 1980; Harpending 1976; Neel and Chagnon 1968). For various reasons, the Agta informants cannot provide us with reasonable data to analyze their genealogical demography. In addition to the fact that Agta lack knowledge of their absolute age, they show limited knowledge of relative age with respect to all non-kinsmen. Should a rank-ordering of members on the basis of their relative age be achieved, the application of the social triangulation technique\(^\text{12}\) to estimate their absolute ages is equally difficult; Agta have experienced few "known" historical events to recall in relation to their births. Past Agta population trend must be thus described indirectly by analyzing their population control mechanisms.

The Agta have few if any cultural means of controlling their fertility. Agta have conflicting views regarding which days following menstruation should be avoided to prevent conception and claim not to
practise periodic abstinence from coitus. Agta girls marry and seem to become sexually active fairly early, at least by eighteen years of age, and thus they do not postpone marriage, which could have controlled fertility. Few women remain unmarried, and most widows or divorcees, particularly of the reproductive age, remain single for only a short time. Venereal diseases, which can cause pathological sterility, are uncommon. Agta themselves claim that they have knowledge of herbal contraceptives, but their effectiveness in preventing pregnancies, causing abortions or sterility could not be ascertained.

In the absence of any effective cultural restraints on the Agta fertility behavior, one would have expected a very high fertility rate and a low birth spacing. However, this usually is not the case. An analysis of reproductive histories of nine Agta women from Casiguran (age ranging from 20 to 49) shows that the average birth interval between the preceding live child and the succeeding one is three years (J. Headland field notes; for a comparable figure see Lee 1979: 321). This is an indication that the Agta may have non-cultural mechanisms which control their fertility. Tentatively, there are two physiological mechanisms that can affect their fecundity, namely, their relative lack of body fat and the practice of prolonged breast-feeding.

The diet of hunter-gatherers tends to supply needed nutrients before the level of needed calories are reached, which results frequently in well-nourished but slender people (Howell 1980:192). Their high protein - low carbohydrate diet is also less congenial
frisch's (1974) "critical fatness hypothesis" suggests that low weight and slenderness among women can either prevent or delay pregnancies. thus, howell argues that the low fertility achieved among hunter-gatherers is perhaps due to the failure of some women, some of the time, to maintain critical fatness levels. most agta women, who weigh an average of eighty-five pounds (see appendix 8), are slender. if the critical fatness hypothesis is true, this is one mechanism that may play a role in population control of the agta.

there is also the suggestion that prolonged breast feeding delays pregnancy and thus results in low fertility. lactation suppresses or delays the return of ovulation during the postpartum period (nag 1980:573). it thus can lengthen the average birth interval greatly among women of hunting and gathering societies, who breast-feed at high volume over long periods of time (howell 1980:191). the agta women always try to breast-feed their children for two to three years, and often wean them only a few months prior to the birth of the next born. if prolonged lactation does indeed inhibit conception, this is an important physiological mechanism for population control among the agta. these factors, individually or combined, seem to keep fertility low today and the available evidence allows us to surmise that the agta had a similarly low fertility rate even in the past.

the mortality rate among the agta is also determined by only a few factors. it is almost certain that the agta groups did not practise infanticide. other 'social mortality' such as cannibalism,
human sacrifice or gerontocide, were similarly absent. Most Agta
groups were not affected by the headhunting practices of their non-
Agta neighbors. Suicide is rare today and there is no reason to
believe that it was common in the past. Agta suffer only a few
occupational hazards and there are few animals in these island
forests that prey upon man. While several individuals claim to have
been attacked or bitten by large pythons, death from a python attack
is rare. There are no reliable reports of Agta deaths from poisonous
centipedes or snakes. Sharks pose a threat during fishing in the
open sea and crocodiles in rivers but the incidents are few. Other
accidents such as falling from a rock or tree during foraging trips
have taken even fewer lives. Thus the overall fatality rate remains
low. In fact, the only causes of violent death of the Agta in the
past were inter-linguistic raid and Agta-outsider vengeance killing;
these were also however responsible for only a few Agta deaths.
Today, a few deaths occur due to homicide and among women due to
birth complications.

Nomadic hunter-gatherers living at a relatively low population
density are said to be rarely exposed to epidemic diseases (Dunn
1968:223). However, following contact with outsiders, many hunter-
gatherers have suffered from epidemic diseases. Among the Philippine
groups, the Batak (see Warren 1964:5-6) and the Zambales Negritos
(Blair and Robertson 1903-09, 42:234; Garvan 1963:28) also occasionally
suffered from localized attacks of smallpox and cholera. The Agta of
northeastern Luzon, most of whom came into close contact with outsiders
only in this century, did not however seem to have suffered from major
epidemic diseases. In recent years, localized cholera epidemics killed
a few people in particular areas (e.g., Palanan, Casiguran). Thus,
the primary past and present causes of mortality would seem to be a
few common diseases.

A complex rain forest ecosystem such as that of the Agta can be
expected to contain diverse species of parasitic and infectious
organisms with an equally diverse number of potential vectors as well
as intermediate and alternative hosts (Dunn 1968:226). However, the
local epidemiological history suggests that Agta themselves suffered
from only a few diseases. Malaria was not prevalent as the Agta
lived away from open agricultural fields (e.g., Harrison et al. 1977:
233). Tuberculosis similarly remained unknown until recent times.
The present population structure indicates that Agta do not suffer
from sex-biased morbidity factors; the sex ratio remains the same
across local and regional populations. It thus seems that the Agta
suffered only from certain gastro-intestinal, pulmonary and a few
other contagious diseases. These diseases kill more children than
adults. In an actual survey, forty-eight percent of Agta children
in Casiguran and forty-three percent in Palanan died before reaching
puberty (Headland 1981a:12). Of the pre-puberty deaths, interviews
with Agta and my own observations suggest that infant morbidity
takes the major share.

In summary, the demographic conditions of the Agta today are
characterized both by low fertility and mortality rates. There is
no indication that the demographic conditions of the past two
centuries, when the Agta started changing, were different (cf. Howell 1980:186). If these conditions are assumed, the Agta population trend was either fairly stable or rising only slowly. This population trend thus could not have produced population levels capable of creating internal pressure sufficient for the Agta to initiate change. In short, the alteration in the demographic condition was perhaps relatively small and the evidence we have is not such as to permit us the confident conclusion that population pressure was a major factor in bringing about change. At most, the internal population pressure brought about marginal alterations in other aspects of the Agta system and thus acted only as one of the many variables to bring change to the Agta.

Population pressure is often calculated as a generalized ratio of man-to-land. Such a ratio is a meaningless indicator of population conditions within an area because there are differences in natural conditions within parts of a given locality or among localities. While the modern hunter-gatherers occupy a per capita land area of anywhere from two to two hundred fifty square kilometers (Lee et al. 1968:11), there still are areas which despite high density have abundant resources (e.g., Shuttles 1968:56). Thus, to determine whether or not a group is actually experiencing population pressure, we need a better index.

One such index popularly used in the anthropological literature is the "carrying capacity" of the ecosystem. From this view, a group is said to be experiencing population pressure when their given environment is over exploited and thus adversely affected. However,
the precisely quantification of the carrying capacity of a particular ecosystem is a methodological nightmare (Odum 1975:12; Brush 1975). For example, for a human society, it is not the availability of resources, but their availability in culturally determined proportions that should dictate the level of carrying capacity of an area (Jochim 1976). A group exploits a given area only when a nexus of resources are available; absence or scarcity of one single important resource can limit its overall utilization. The nature of settlement or mobility patterns of the group can make an impact on the level of maximum sustainability of the area. The levels of technology and the pattern of labor mobilization of the given group determine their capacity to exploit resources. Finally, the determination of a culturally sensitive carrying capacity involves taking into consideration some of the unquantifiable variables; it is not only the availability of resources in the ecosystem but also the level of availability that is perceived as adequate by the group for their livelihood which may determine the actual level of carrying capacity.

Thus, for our purposes, I will test the simple hypothesis that the Agta lived well below the carrying capacity of their environment and did not experience resource stress. I will analyze the present ratio of Agta to their traditional resources and by factor extrapolation, show that the situation was similar in the past.

It was mentioned above that the Agta do not experience fluctuations in the availability of their traditional resources. The relatively non-seasonal flowering and fruiting conditions as well as interdigitation of plant species allow for the continuous
exploitation of plant foods. Moreover, the high canopy forest areas, which comprises most of the rain forest, generally remains outside the gathering radius for plant foods of the Agta. This area need not be exploited because the Agta do not experience any scarcity of wild plant resources. If and when Agta choose to exploit the plant resources of the high canopy forest area, they can easily derive a sufficient amount of plant foods there to meet their carbohydrate requirement. In the past, when the Agta ecosystem was much less degraded, no scarcity of plant resources should have been experienced.

For the Agta who largely depend on hunting practices in their wild resource exploitation, the human to animal ratio is much more relevant than the ratio of Agta to plants. With the exception of large pythons, the Agta do not have to compete with other animal predators. In the Agta rain forest there is also little niche competition among animal themselves. For example, the two major game animals on which the Agta primarily depend have differential sources of food bases. The wild pig is an omnivorous animal but prefers food low in cellulose (e.g., nuts, fruits, tubers). Deer, on the other hand, have a diet which consists mainly of cellulose (e.g., grasses, leaves) and tend to feed in areas other than those preferred by the pigs. Agta claim that a thick undergrowth with large tall trees is frequented by deer whereas pig is more abundant in forest areas having sparse undergrowth (Estioko and Griffin 1975: 241).

The absence of inter-species predation and competition should mean abundance of these few game species. This is the case in
particular Agta areas in Isabela today, and seems to have been the case in all Agta areas in the past. Spanish reports from other areas of the Philippines indicate an abundance of pig, deer and wild (feral?) carabao (Blair and Robertson 1903-09 6:205, 21:197, 47:294-295). In addition to the oral histories, travellers of the Agta area in this century also attest to the abundance of pig and deer (Goddard 1930: 330). These game animals provide the Agta with a major part of their subsistence today and should similarly have provided for them in the past. Moreover, besides the terrestrial game animals, the Agta had access to relatively rich aquatic faunal resources in the past to offset the short-term scarcities in the common game animals. They thus should have maintained a sustainable relationship with their environment without exerting a stress on the resources.

A number of socio-cultural elements also contribute to sustainability as well as higher productivity per area within the Agta ecosystem. Because the Agta observe no food taboos either in relation to wild food species or in relation to particular times of the year, all the culturally known resources were and continue to be exploited. Furthermore as mentioned above that the high mobility of the Agta results in less stress on resource locales and on individual food species. Thus, regeneration and growth of the food species are favored.

The preceding analysis of man-to-resource ratio indicates that the Agta did not experience resource stress. But one may argue that the Agta could have perceived that the slowly rising internal population could in future exert pressure, and anticipating a potential
resource stress situation, could have sought changes in their system (Birdsell 1957:54; Lee et al. 1968:11). However in actuality, in areas which are not affected by outside encroachment, the Agta find traditional resources plentiful even today. In such areas, Agta claim one can depend on traditional resources alone if one chooses. This was definitely the case in the past. Thus, in conclusion, I suggest that any internal population growth and any associated resource stress perhaps accounted for at most only minor alterations in the traditional Agta system. These two factors do not seem sufficient for initiating major changes and, thus can have played only a peripheral role in the systemic causation of Agta change.

External Conditions

In the absence of any substantial internal alterations to account for the changes that have taken place among the Agta, we must seek the answer in external systems. The following is a description of the external systems, the alterations within them and their role in bringing change among the Agta.

There is some circumstantial evidence to support the supposition that even in the remote past, the Agta did not live in total socio-cultural isolation from the adjoining agricultural and horticultural populations (see W. Peterson 1981:54). However, the relationship was not more than marginal. The Agta continued to maintain their relative isolation throughout prehistorical and earlier historical times (Keesing 1962:361). The rugged terrain of their homeland inhibited large scale immigration of outside agricultural peoples who preferred flatland valley or coastal areas. Whenever Agta were confronted by
their politically stronger and militarily better organized neighbors, they managed to escape subjugation by retreating into the interior forest. Their hunting and gathering way of life was distinct from that of their neighbors. This subsistence specialization further contributed to their isolation from outsiders by taking them out of any direct competition over particular land area or resources. The Agta also remained unaffected by the widespread Spanish colonization. This relative isolation of the Agta was however soon to end. The systems external to the Agta were to experience major upheavals which would eventually come to disrupt the Agta traditional system in an unprecedented way.

The literature pertaining to Asian hunter-gatherers indicates that these technologically primitive people experienced intensive contact with outside agricultural and mercantile populations two centuries ago (e.g., Dahmen 1908; Hazewinkel 1935; Aiyappan 1948; Needham 1954; Watanabe 1968; Sinha 1972; Gardner 1972). In this literature and other reports (e.g., Bennett 1969; Guenther 1976) it is strongly suggested that the contact of hunter-gatherers with outsiders initiated the process of displacement and encroachment on the hunter-gatherers.

There seem to be a number of reasons why hunter-gatherer area is easily encroached on. Hunter-gatherers are usually slow to react to outside incursion; they tend to think that their resources are basically unlimited and that the outsiders are not interested in them. The hunter-gatherers live in relatively large tracts of land as opposed to, say, sedentary agricultural people, who live in rather crowded areas. There is a cultural misunderstanding among agricultural
people who think that the hunter-gatherer area is underexploited and a *territorium nullis*—unoccupied and legally free for the taking (Bodley 1975:63). In their exploitation of the land resource of the hunter-gatherer area, the agricultural population do not realize that they are displacing the hunter-gatherers. While the universality of the above cases can be debated, the history of contact and encroachment on the Agta certainly followed the above scenario. Today, the population density of non-Agta populations in Isabela is many times higher than that of the Agta. For example, particular agricultural areas like San Mariano have a population density seventy-two times higher. While the Disabungan Agta can have access to a per capita forest area of four square kilometers, the adjoining agricultural people have eighteen persons per square kilometer.

Traditionally speaking, a few adjoining non-Agta populations comprised the "external" population for the Agta groups. Since the beginning of this century particularly, the Agta experienced increasing contact with additional immigrant populations who were in many ways different from the earlier indigenous agricultural and horticultural populations. These "alien" populations have brought a different economic emphasis which is not only displacing the traditional Agta economy but also the indigenous local economy. Because these non-Agta populations, indigenous and immigrant, have their own distinct languages and cultures, the ethnic mosaic has become more complex. There is a tendency toward pluralism and these groups maintain social distance among themselves as much as possible. Due to historical and other reasons, which will be described shortly, these different non-Agta groups vary markedly in their interaction with the Agta groups.
The Agta themselves perceive this difference between and among the non-Agta populations and distinguish among them.

The human (\textit{tolay}_1) taxonomy of the Agta has both generic and specific levels (see also Schebesta 1952/57:99). Generically, Agta distinguish humans on the basis of phenotypic features. All black people such as Agta, other Negrito people and American blacks are classified under the taxon "agta," and all non-black people under "tolay_2." The "tolay_2" genera is sub-classified under three specific level groups. The first, called "ogdin" among the Disabungan Agta, are the upland swiddeners who historically had the most intensive interaction with the Agta. The connotative meaning of this term is the non-Christian indigenous minority groups. The second group, called "pote" by the Disabungan Agta (pute, ogdin among other linguistic groups of Isabela Agta; literally meaning 'white') is used to denote the adjoining Christian population who have been permanent residents in the area for at least some decades. The third specific level is "tolay_3;" it includes groups of outsiders who are temporary residents of the area and connotatively, those who do not speak the local trade language (e.g., logging personnel). For the sake of brevity I have used the term "outsiders" to include all the non-Agta populations of Isabela. I will specify their distinctions only when they are pertinent for the discussion.

On the valley watershed of the Sierra Madre in the province of Isabela, the areas immediately outside the Agta homeland are occupied by a horticultural group, locally called "Kalinga" ("Ogdin" to the Agta). These Kalinga are a small population of subsistence swiddeners
traditionally inhabiting a few frontier municipalities of Isabela. In the past, they used to practise what Conklin calls the "integral system" of shifting cultivation (1957:3). They cleared gardens in areas of relatively pre-climax vegetation and maintained a swidden cycle of a one year planting and fairly long fallow phase. Their established horticultural practices provided a viable subsistence at their relatively low population density. Due to the encroachment of other agricultural groups into their area, they responded by encroaching on the forest area of the Agta. Today as the encroachment and the displacement continue, the Kalinga are economically as distressed as the Agta and are following on the heels of the Agta to stay away from the expanding outside populations. Forgetting that the Kalinga are indigenous swiddeners of the area, they are considered by the government to be 'illegal forest squatters' (T: kaingero). The lack of political power and an ignorance of legal knowledge of land tenure among the Kalinga have contributed to their systematic dislocation by the permanent field agricultural populations in the area. For the moment, they are remaining shifting cultivators and part-time foragers. They tend to maintain social distance from all Christian populations and are still generally animists.

Both Agta and Kalinga informants agree that in the past the Disabungan Agta traded most regularly with the Kalinga. Occasionally, inter-ethnic raids and killing occurred and less frequently it continues even today. After such a confrontation the "elders" came together to feast on a specially prepared rice cake cooked in pig fat (K: kinalikob) and settled their animosities. Today, while Agta trade with the Kalinga only minimally, they maintain other socio-cultural exchanges.
While intermarriages are still rare, social visits are very frequent. Agta frequently consult Kalinga shamans. Kalinga families are seen camping for short periods with Agta bands. Occasionally, they form collective hunting parties. While there is no overt alliance, the Agta and the Kalinga try to maintain amiable relations as much as possible in the face of outside threat to both groups.

Below the upland home of the Kalinga, the valley floor was originally inhabited by a number of "cultural minorities" such as the Ibanag, the Itawi, and the Yogad (see Castillet 1960). These groups came under Spanish colonization pressure in the nineteenth century, and after they were Christianized, they became loyal tenants of the local Spanish tobacco companies. Following the land tenancy problems due to the exploitation of these local tobacco companies, many groups of cultural minorities fled the lowlands. At the same time the large scale outside immigration that was taking place in the Cagayan Valley also started displacing these Christian minorities from their flood plain home. Consequently, they were forced to take refuge in the upland areas and to displace both horticultural Kalinga and hunting and gathering Agta. While they were traditionally permanent field agriculturalists, they became part-time swiddeners in the upland areas; they opened forest areas to practise supplementary swiddening and to plant crops such as banana and other fruit trees.

These Christian cultural minorities differ linguistically from one another and they maintain social distance among themselves and from the Agta, the horticultural non-Christian groups and the immigrant Christian populations. According to informants, the Agta in
the past traded only occasionally with these Christian minorities for cereals, tobacco and salt. Today however, the Disabungan Agta bands prefer to trade more regularly with these groups.

By the end of the last century, the Ilokano immigrants were already outnumbering the indigenous populations in particular valley bottom areas (McLennan 1980:112). Their rather aggressive economic strategies and relatively sophisticated technologies for wet rice cultivation helped them to occupy the alluvial river terraces of the valley (Lewis 1971). By the 1920's, the alluvial areas of the Cagayan Valley were becoming saturated. Thus, as more immigration continued, the recent immigrants were forced to occupy the less favorable terrain of the uplands. Some immigrated directly into the frontier areas and encroached on the areas of the Agta and others. As the upland areas have fewer river terraces for permanent agriculture, the Ilokano immigrants became in part what Conklin calls "incipient swiddeners" without any prior knowledge of shifting cultivation (1957:3).

The Agta of northeastern Luzon in general and the Disabungan Agta in particular have had only peripheral contact with the Ilokano. Even today, the social interaction between the Agta and the Ilokano immigrants has remained marginal. In spite of living adjacent to each other for three decades, the Agta-Ilokano trade is irregular and the cultural misunderstandings pervasive. The Agta do not appreciate the thriftiness and industriousness of the Ilokano. They remain suspicious of Ilokano intentions to aggressively homestead in the Agta forest area. The Ilokano informants similarly find the Agta life "without motivation and incentive." They try to avoid extending
any credit to the Agta because they find the Agta forgetfulness of any commitments unforgivable.

In summary, the Agta of the valley watershed had been involved in a peripheral trade relation with a relatively small indigenous population. Following the large scale immigration of outside populations into the Cagayan Valley, the indigenous Christian population was displaced from the valley bottom. As they were forced to relocate themselves in the upland areas, they themselves set the displacement cycle in motion; they displaced the upland horticulturalists, who in turn encroached on the Agta home area. As the Cagayan Valley floor became saturated, the recent immigrants came directly to the frontiers. The continued pressure on these frontiers has resulted in rampant encroachment on the Agta areas. This cumulative pressure on the Agta environment in a relatively short span of time amounted to major alterations in the Agta system and necessitated certain adjustments among the Agta of the valley watershed.

Particular areas of the coastal watershed experienced similarly high immigration of outsiders (see Headland 1981a:3-4). However, the watershed in general experienced an immigration of relatively lesser intensity. Thus, most of the Agta groups living in the valley watershed, who were experiencing intense outside pressure, probably could have taken refuge on the coastal watershed. However, there were a number of other factors that inhibited such a population movement by the Agta. For example, most Agta groups wanted to continue their trade relation with outsiders, however the agricultural settlements, which were concentrated in only a few pockets, were accessible only
to adjacent Agta linguistic groups. There was already a relatively dense population among those Agta groups and immigration by others would have further increased their population density. These were also the very areas where agricultural populations were encroaching on the Agta. The more rugged coastal terrain restricted the number of river terraces suitable for agricultural purposes. As the agricultural population grew, they encroached on remote river valleys, which were originally Agta areas. In short, the Agta of both the valley and coastal watershed of Isabela felt pressure from all fronts. These outside pressures hastened the change among the Agta (Bennagen 1977a:22; Esticko-Griffin and Griffin 1981b:61).

The earlier trend of external encroachment on the Agta area and displacement of the Agta population continued in the first half of this century. The systematic agricultural expansion was slowly turning the low lying Agta forest home into cultivated land. The Agta were reluctantly accepting the expansion of the agricultural population as an inevitable phenomenon and were adjusting to it by taking refuge upriver. Along with the shrinking forest area, the Agta traditional world was changing.

These impacts were however, relatively minor ones in comparison with what was to come in the following decades. With the beginning of large scale mercantile activities in the 1950's, the Agta came under even more intense outside pressure. The encroachment and exploitation of Agta forest by the large scale logging and mining mercantile activities were also radically different from the earlier agricultural expansion. For example, the earlier agricultural
expansion was areally restricted and affect low lying river terraces, the mercantile activities concentrated on the high canopy interior forest. While the Agta could escape the earlier agricultural expansion by retreating into the interior areas, the mercantile activities in the heart of the Agta forest home engulfed them.

For a number of reasons, the Agta themselves underestimate the impact of logging and mining activities in their forest home and do not really resent this form of encroachment. For example, the logging and mining companies are interested in resources (e.g., dipterocarp trees, mineral ores) with which the Agta themselves are not directly concerned; in a way the Agta are not in direct competition with mercantile companies. The mercantile population inside the forest become new trade partners for the Agta and mercantile stations, new trade nuclei. They occasionally provide employment for the Agta and transportation to and from agricultural settlements or nearby towns. Besides, these mercantile groups pretend to be philanthropic to the Agta in order to avoid direct confrontation (e.g., Rice and Tima 1973:6-7). It may be that all these immediate "benefits" make the indirect threat to Agta resources less visible.

Agta are however well aware of one of the effects of these mercantile activities in their area; the increased immigration of outside population. The mercantile industries with their need for skilled manpower, available only from outside, has intensified the immigration process since the 1950's. A 1979 survey of San Mariano Municipality shows that of the 4,210 families permanently residing in the municipality, thirty-nine percent of the families claimed to
have come recently to this area from outside the municipality and approximately fifty percent of these immigrant families from outside the province of Isabela (MDS 1979:6, 12). Such new immigrants and the mercantile companies have established many frontier settlements and even a few towns.

The mercantile population remains seasonally idle as the logging and mining operations stop during the northeast monsoon season. Making use of heavy machinery and logistical support from the companies, this mercantile population cut vast forest areas for garden clearing and homesteading. They recruit their kinsmen and influence them to immigrate to these frontiers. Perhaps as a natural response to living for generations in densely populated areas, the "empty" lands seem endless and they thus in turn invite more of their kinsmen to the frontiers. Despite antagonisms among the immigrants, they are united in their desire to exploit the forest and feel morally justified in doing so. Moreover, the likelihood of eviction by the government decreases as the number of settlers in the area grows.

In recent years, the largest wave of immigration to the frontiers of the Sierra Madre is composed of "uplanders" from the Central Cordillera, Luzon. The tribal groups such as the Ifugao, the Kalinga, and the Tinguians had lived in the congested upland areas for centuries. Following serious land and population pressures, these groups are leaving their homeland for the frontiers of the Sierra Madre in search for a new life. These uplanders show an interesting pattern in their encroachment on the Agta forest. Unlike the earlier immigrants, who encroached on the forest land from its fringes, these new immigrants
have pioneered directly into the middle of the forest, colonized the forest valleys and expanded from there. By taking over the arable land even in the remote Agta areas, these homesteaders have created colonies of agricultural people in the center of Agta homeland.

These uplanders have also come in relatively large installments. Once settled, the communities protect themselves vigorously against outside incursion (see Dozier 1967) and maintain the most marked socioeconomic isolation from the neighbors. While in the early years of their immigration, they faced a number of economic hardships, today they have become economically very successful. The established groups practise dry field and irrigated rice cultivation through terracing. Because of their economic success, many more people who had originally stayed behind are also immigrating into the Agta area. The Agta call these immigrants from the uplands "Igorot." The Agta intensely fear these polytheist groups (see Barton 1946:209), particularly for their alleged power of witchcraft and sorcery. They also claim that the Igorot are even thriftier than the Ilokano and so do not make regular trade contacts. Relations between the Agta and Igorot are thus very peripheral.

There are only a few factors that have controlled the further large scale immigration into the Agta area. The relative remoteness and insufficient infrastructure of the Sierra Madre area discourage the potential immigrants, who are used to a life in or near towns. The remoteness of the area means less access to public education. Families in outlying settlements either leave children behind in the places of origin or send them to distant municipal towns to go to
school. There are also fewer social welfare and health benefits available in these areas. Immigrant families must maintain social contact with kinsmen in their places of origin for such things as access to marriage partners. Additionally, frontiers such as the Sierra Madre have a reputation of being the "place of the outlaws" (McLennan 1980:153-156). Recently, since martial law was declared in the Philippines, the Sierra Madre has been considered a communist insurgency area. At times, the local populations were and are being evacuated and relocated or resettled by the military. When the military-insurgent confrontation was at its height in the last decade, many weary immigrants left their land and crops and returned to their places of origin.

In summary, while the Agta were experiencing only minor alterations in their traditional system, the external agricultural and mercantile encroachment acted as a catalyst to bring about a number of alterations to the Agta environment. The net immigration of the outside population raised the population density of the area many fold. The chain of events of immigration, encroachment, land expansion and colonization affected the original ratio of the Agta to their resources. As it will be made clear later, the outside population temporarily raised the carrying capacity of the Agta environment by providing new economic avenues and technologies to exploit the previously untapped resources. However, these new economic enterprises themselves brought further alterations in the Agta system. In short, the alterations brought about by internal and external conditions as well as the systemic interrelationships of the internal and external systems required that the Agta change from a traditional to a transitional world.
9. THE ECONOMIC TRANSITION

The alternations in the previous conditions of the Agta traditional system have been responsible for bringing about transformations in both natural and socio-cultural aspects. The traditional economy of the Agta is most visibly affected and thus, the economic transition is in many ways the most preeminent. To begin with, following the external encroachment, the Agta forest home is shrinking and their physical resources are getting relatively depleted. As if to compensate for this loss, Agta have become economically interdependent on external populations. The outside populations are today a very important part of the Agta environment (Peterson 1978a:64, 89, 90).

The evidence pertaining to the Agta of northeastern Luzon strongly supports the idea that the interdependence of the Agta with the outside populations has intensified in the last two centuries (e.g., Garvan 1963). Because such an intensified interdependence is primarily a culmination of local historical processes, we must ask when did the interaction between the Agta and the outside population begin? In answering this question, we will also answer why such an interdependence developed in the first place and why it was deemed necessary by those responsible for the interaction. This chapter is designed to describe the Agta economic transition by juxtaposing the probable historical sequences of the local as well as regional situations. Any subsistence strategy which was not part of the traditional
The economy of the Agta but which was developed in conjunction with the outside populations is called here the "non-foraging" strategy. In the Agta economic transition, there are three such subsistence strategies. Following their general order of economic importance to the Agta they are; trade, horticulture and wage labor.

Trade

There is no exchange of any goods among Agta linguistic groups in Isabela, except perhaps the cash purchase of a few non-traditional items such as fishing goggles. The term "trade" or "exchange" is thus used here to denote the inter-ethnic economic transactions of the Agta with the non-Agta populations and which involves the exchanges of wild forest, riverine and marine products for non-traditional items. The practice of trade in general is the most important subsistence strategy of the Agta today. The items exchanged include both food and non-food items and the Agta trade both with the adjoining but economically dissimilar subsistence groups and with other groups with primarily mercantile practices.

The barter trade in various wild products seems to be a rather old practice among the hunter-gatherers of Asia (Dunn 1975:99; Morris 1977:228). While the wild products may have been different across regions of Asia and across the centuries, the trade among hunter-gatherers in the Philippines has also some antiquity; since the tenth or twelfth century, the coastal populations entered the exchange of commercially valuable forest products with populations of hunter-gatherers (and horticulturalists) inhabiting the uplands and interior portion of the island (Hutterer 1977:192).
Assuming that Hutterer's (1977) general model of the upland-coastal exchange holds true for northeastern Luzon, where the Agta were the predominant "uplanders" (Keesing 1962:passim), we can surmise that the Agta had entered into Pre-Hispanic trade with coastal dwellers. They must have long needed to trade for salt (only a few Agta today know how to extract salt from sea water) as well as possibly metal. By Spanish times, particular Philippine Negrito groups were bartering beeswax (which was used to stiffen thread for the Hispanic looms) against tobacco (Rahmann 1963:144). This circumstantial evidence allows us to assume rather confidently that some degree of trade relation between the Agta and their horticultural and agricultural neighbors must be at least three centuries old.

Sometime between the seventeenth and nineteenth centuries, many of the Agta groups seem to have started living in relatively closer proximity to the upland horticulturalists and perhaps even to agriculturalists, who occupied coastal areas (Keesing 1962:258) and valley bottoms. The list of barter items as well as the volume of trade expanded. One of the items for which the Agta bartered their forest products was domestic cereals. The clearest documentation of the Agta trade for cereals comes from two sources early in this century (Segovia 1969:105, originally published in 1902; Philippine Commission 1908:334). The increasing trade relations between the Agta and their neighbors in the 1920's and 1930's are also documented (Vanoverbergh 1937/38:70-71; Schebesta 1952/57:60, 65).

The Agta trade (paltit) of wild products for imported items has increased many fold today. In particular areas, the trade between
Agta and their adjoining neighbors has become institutionalized and is done predominantly through formal trade partnership. From the perspective of Agta groups who have entered it, the trade partnership (*ibay*; also *ahibay*, *aribay*, *alibay*) is a very important one. It demands a commitment to regular exchange, and allows extension of credit, and it commits the partners to other economic transactions as needed (Peterson 1978a:80). This formal trade partnership is established between a married Agta adult (male or female) and a married male from the neighboring agricultural group (Estioko-Griffin et al. 1981a:134).

A number of recent researchers among the Agta have documented in detail the institution of trade partnership (Estioko and Griffin 1975: 241; Estioko-Griffin et al. 1981b:65-66; Headland 1975b:250-251). Peterson (1978a, 1978b) has thoroughly analyzed this exchange and its wider socioeconomic and ecological ramifications. These descriptions hold true for certain groups and are analytically useful. However, without qualifications, the literature may also improperly lead us to a number of implicit assumptions. For example, one might be led to think that the institution of trade partnership is universal among Agta groups. One can also think that since it is a formalized practice, the trade partnership must be an old tradition among the Agta and today it must perhaps be the only form of economic transaction engaged in by the Agta.

The practice of a formal trade partnership between the Agta and their agricultural neighbors is however a rather localized phenomenon. It has been reported only from particular coastal areas of eastern Luzon. In other areas of the coastal watershed and all areas of the
valley watershed, this institution is not formally recognized by the
Agta themselves and/or by their agricultural counterparts; there are
no regular trade partnerships nor commitment to long-term economic
transactions with specified outside individuals.

The regular trade partnership is not only a localized phenomenon
but it is also probably a relatively recent development. Traditionally
speaking, there are a number of factors that militate against any long-
term trade partnership between an Agta individual and an outsider.
Frequent mobility of the Agta results in irregular economic trans-
actions with specified outsiders. Because Agta intensely distrust
any person who is not a kinsman, an attitude of such suspicion often-
times causes the relationship to end in misunderstanding. Frequent
inter-ethnic hostility regularly interrupts the exchange. I venture
to suggest that only following a long and irregular trade relationship
between the Agta and their neighbors, was the trade partnership form-
alized in those particular areas, and this institution is at most only
as old as the beginning of this century.

Among Agta groups who practise formal trade partnerships, the
relationship is rarely a permanent and stable one. In many cases the
agreement is not well understood by the parties involved. There is
no recognizable social event (e.g., gift giving) to initiate the
trade partnership and there is uncertainty concerning its termination.
Agta seem often in doubt as to whether or not a particular trade
partnership is current.

Because the trade partnership is fragile and temporary, Agta
trade a good volume with members who are not formal trade partners.
For example, Agta frequently trade the meat of wild animals with individuals other than their trade partners. As we will see shortly, Agta sell tree resin, commercial shellfish, etc., to particular contractors. These trade relationships outside the formal trade partnership provide for the bulk of Agta needs and deemphasize the importance of trade partnerships considerably (see Peterson 1978a for opposite view). Thus, the trade through the medium of formal trade partnership generally comprises only part of the Agta total trade.

The overall trade relationship between the Agta and the outsiders with or without the formal trade partnership has been considerably modified in recent decades. While in the last century, Agta were engaged in barter trade of relatively few forest products for equally few outside commodities (salt, tobacco, cereals, etc.), the monetized trade of today has come to include a myriad of other wild products and numerous consumer goods.

The most regular, and for most groups the largest by volume, trade item of the Agta of Isabela is still wild and aquatic animal protein. Generally speaking, the Agta of the valley watershed trade terrestrial animal protein and those of the coastal watershed trade aquatic protein. The neighboring agricultural populations of the respective watersheds attest to this pattern when they stereotype those Agta of the valley watershed as primarily hunters and those of the coastal watershed as fishermen. Of the various game animals and aquatic fauna that are exploited by the Agta, only a few are traded. Only the meat of wild pig and deer is traded and usually only eel, octopus, and lobster, and the larger varieties of fish are exchanged.
Agta themselves claim that the animal protein is their primary trade item primarily for two reasons. First, it enjoys a ready and always reliable market as opposed to other local forest products. The adjoining agricultural populations raise few domestic animals and some of these are not regularly used as a source of animal protein. In the barrio of Del Pilar, San Mariano, with which Agta trade, the agricultural families keep on average two chickens (or ducks) per household and one pig and one dog per every two households (MDS 1979:31). Agta cannot meet the demand of these agricultural populations, and now there is additional demand from the mercantile populations who are always eager to trade for the meat of wild animals. Second, animal protein is the wild product which generally has the highest market value. Agta clearly see these advantages and prefer to depend on the trade of animal protein.

Calorically speaking, the high market value of animal protein means a high energy return in exchange. For example, one kilogram of meat sells for ten pesos, which can buy ten kilograms of corn or five kilograms of rice. When one kilogram of meat (3,070 kcal./pig or 920 kcal./deer) is exchanged for cereals (18,100 kcal./rice or 38,600 kcal./corn; see Appendix 9), the caloric return in exchange is in a ratio of 1:6 (pig:rice) and 1:41 (deer:corn). The trade of animal protein is thus energetically efficient when compared to other subsistence strategies. For example, Agta take less than three adult manhours to acquire one kilogram of meat, which when traded returns 18,100 kcal. of rice or 38,600 kcal. of corn. If Agta were to choose to dig the most common wild root in its most abundant season for the
same three hours, they would procure approximately three kilograms of wild root (2,900 kcal.). The return from digging wild roots would be six times lower than the rice or fourteen times lower than the corn that could be obtained by trading meat.

It has been suggested that the regular Agta trade of animal protein is also due to their protein surfeit and the absence of storage technology. Peterson writes that "...even a single boar... represents a protein surfeit for a camp group, and the usual kill exceeds this amount" (1977b:69). I have argued above that such a surfeit of animal protein does not occur due to the Agta practice of sharing. The data from the Disabungan River, which is perhaps one of the most lucrative hunting areas of the Isabela Agta and the group the most consistent hunters, also substantiate my argument that Agta do not experience protein surfeit. In a total of sixty-four day's observation across a three month period, one band of Disabungan Agta (21 people) were acquiring one major game animal (pig or deer) every two days. One animal weighed a maximum of forty kilograms while the average kill weighed twenty-two kilograms (see Appendix 7). This daily procurement should represent the maximum for all Isabela bands. When the meat is shared, one individual should get a maximum of one-half of one kilogram a day. While one-fourth to one-third of a kilogram of meat may supply an individual's daily protein requirement (see Appendix 9), which is approximately thirty grams (see McArthur 1974:114), my observation of the Agta food consumption is that an adult can and does on occasion consume one kilogram of meat. Thus, there is no protein surfeit from the point
of view of the Agta. One may argue that the procurement of game animals is not evenly spaced across days and months and that it might bring erratic surfeits. During the northeast monsoon season, hunting is better (and the trade is minimal), but Agta do not report any surfeit of animal protein. A combination of hunting and fishing could have brought surfeit. However, hunting and fishing are rather exclusive subsistence strategies. For example, fishing cannot be done during the northeast monsoon season when hunting is better. Fishing alone in the lucrative coastal areas may bring an occasional surfeit but it is also seriously limited by the existing technology.

Another line of evidence that the Agta trade of animal protein is not determined by the surfeit is that the amount of meat of wild animals to be traded is culturally predetermined. Agta never sell the whole pig or deer no matter how many game animals are killed on a particular day, unless it was killed close to the agricultural settlements and thus far away from the Agta camp. When trade is to be done, Agta scrupulously set aside particular parts of game (which may vary as the quartering of game varies among linguistic groups) for trade. Among the Disabungan Agta, only the two third hindquarters (pukél), the two forequarters (sehaph) and the lower portion of the back (sepang) are traded in the case of wild pig. In the case of deer, in addition to the above parts, the head (buntok) and the neck (lêyas) are also traded. Any excessive trade of meat outside the culturally predetermined parts is considered stingy behavior and can cause dissent particularly among non-kinsmen.
The difference in the traded parts by types of game animals is perhaps related to the food preferences of the two populations involved in trade. While Agta universally find the taste of wild pig savory, the non-Agta people of the Disabunga area consider deer a delicacy and prefer it over wild pig. Due to this preference and consequently due to the trade of predetermined parts (and because only the deer is usually sold undressed), the percentage of a particular kind of game traded varies. During an observation of sixty-four days, the Disabungan Agta were trading on the average only forty-two percent of the wild pig as opposed to seventy-five percent of the deer. By gross weight of the two primary kinds of game animals, the Agta band was trading on an average day 6.2 kilograms of meat (3.4 kg. of pig and 2.8 kg. of deer) and consuming 5.6 kilograms of meat (4.7 kg. of pig and 0.9 kg. of deer) (see Appendix 7). Of course, the traded parts of the game were always composed of higher quality meat and the consumed parts comprised a high percentage of bone and internal organs which were considered less desirable by the Agta themselves.

If Agta trade cannot be explained on the basis of animal protein surfeit, it must be explained by other factors. The Agta themselves claim that the volume and frequency of their animal protein trade is primarily determined by the fact that they have developed a taste for and dependence on the outside cereals and their overall deficit of these domestic carbohydrates (see also Peterson 1977b:69). Evidence for the hypothesis that a deficit of domestic cereals (and retrospectively not their surfeit of animal protein) determines their
trade of animal protein is that Agta do little trading of animal protein when they are intensively digging wild yams in a particular season or when they are harvesting their own crops. Additionally, Agta frequently borrow cereals to be paid for later in meat or fish and thus there is always an outstanding deficit. Agta actually consume far less in amount (0.25 kg. of meat of primary game per person per day) than they would want to and of the less desirable parts; it has to be supplemented by even less desirable secondary game or fish. Thus Agta are regularly sacrificing more desirable animal protein to offset the deficit of domestic cereals. The above description should apply to all Agta groups and particularly those who live in the coastal areas. In coastal areas, hunting is less lucrative and the exchange rate for animal protein is approximately fifty percent lower than in the valley watershed. In these areas, the Agta must trade more of the animal protein to receive a lesser amount of outside cereals and thus must continue to suffer a higher deficit in domestic carbohydrates. This was probably the case in the past as well. While the Agta were less dependent on outside carbohydrates, the exchange rate for their animal protein was also much lower. For example, in the Disabungan area, the exchange rate in the 1960's was approximately eight times lower than today's rate; one hind- or forequarter of a pig (approximately 4.00 kg.) was bartered against one ganta (about 2.2 kg.) of rice. Agta had to trade more frequently and in larger volume to meet what was then a relatively small domestic carbohydrate deficit.
A particular tree resin, popularly known as "Manila copal" (saleng 'Agathis philippinensis'), is the most important non-faunal forest product of the Agta. Among particular groups of Asian hunter-gatherers, the trading of tree resin was practised prehistorically (e.g., Morris 1977:235) and today it has become an important source of livelihood (e.g., Eder 1978). The available oral history of the Agta area also suggests that the trade of copal resin has been going on at least since the early decades of this century. For particular linguistic groups, the collection and trade of copal resin has become an important activity. According to Agta informants, this tree resin can be collected year round; Agta however do not usually collect it during the northeast monsoon season as it takes longer to dry. To tap the sap, the tree bark is cut and the sap allowed to bleed out. The resin is allowed to dry for one to three months. One person can collect one sack (approximately 40.00 kg.) of dried resin per day, which has a market value of forty pesos in Isabela. It is sold to contractors specifically designated by the government.

Agta also collect and exchange varieties of rattan with the adjoining agricultural populations; three ten-meter long pieces or rattan sell for one peso. Two species of bamboo, which Agta occasionally trade, sell for ten pesos per twenty-five poles (six meters long). Some Agta groups (viz., Dikamey and Maconacon) also occasionally barter mats and containers made from varieties of screw pines. Again occasionally, the Isabela Agta trade honey, panicles of tiger grass (boyboy 'Thysanolaena maxima'), for broom making and shingles of nipa palm (sèpsèp 'Nipa fruiticosa') as thatch material. One of the most
recent occupations is that of a particular group of coastal Agta (Palanan) who practise commercial shell fishing. They collect two varieties of shellfish (*samong* and *lbarang*), eat the meat and trade the sea shells. The local trade intermediary, who supplies the Manila tourist market, pays four to fifteen pesos per kilogram of sea shell. Agta also occasionally collect medicinal herbs at the request of outsiders, who may reciprocate with gifts of food items. Most of the secondary trade items of the Agta are collected and traded to acquire domestic cereals, other consumer goods, often for payment of debt incurred in an earlier exchange.

Trade as the most important transitional economic strategy of the Agta brings in a large amount of outside cereals and other food items. Today, particular groups of Agta may go for days without a substantial intake of foraged food such as meat and fish but there are comparatively fewer days without the consumption of the outside food items which are mostly obtained in trade. In the overall ranking of the Agta food items today, cereals (particularly rice) may rank as high as wild animal protein, if not higher, and definitely higher than fish. Thus, the total caloric contribution of trade to the Agta diet today is very high. The Disabungan Agta derive fifty-five percent of their total caloric intake through the food items obtained in trade. Of the non-forest food items, those obtained in trade alone comprise ninety-two percent of the caloric contribution to the Disabungan Agta diet (see Appendix 10). During an observation period of work activity, the Disabungan Agta males were devoting fifteen percent of their working time in trade-related activities and females
were devoting thirty-three percent of higher working time in this activity (see Appendix 6). In terms of caloric expenditure, these males and females were spending eighteen and twenty-four percents respectively of their total caloric output for work in trade-related activities (see also Appendix 12).

The Agta trade of forest products for outside foods and consumer goods has brought a number of economic and other transformations to the Agta traditional system. It played a major role in leading the Agta to become interdependent with the outside population. As we will see later, the nature and intensity of Agta-outside interactions during the trade transactions in many ways determined the course of the present Agta transition.

**Horticulture**

The second important non-foraging subsistence strategy for most groups of Isabela Agta is the practice of horticulture. "Horticulture" is defined here as the planting of a few domestic crops in relatively small gardens by the technique of shifting cultivation.

While the Philippine Negritos were stereotyped by missionaries and colonial administrators as "people without cultivation" even at the beginning of this century (e.g., Borrows 1908:45-46), Fox has suggested that the cultivation of certain indigenous plants must have been practised by these groups for three to four thousand years (1953:247). On the basis of historical and ecological evidence, Brosius has argued that the Negritos of Zambales had become consistent swiddeners during the Spanish time and possibly even prior to it (1981:94, 124). By the nineteenth century, groups in Central Luzon were
practising a rather systematic horticulture (McLennan 1980:150). This sketchy evidence indicates that some groups of Philippine Negritos have been practising some degree of horticulture for at least two centuries.

The specific history of horticultural practices among the Agta of northeastern Luzon is vague. Agta folklore lacks reference to any cultivation (Headland 1975b:294) or cultivated plants. Oral history from particular Agta groups also suggests that the practice of horticulture is perhaps a recent development. However, one particular report on the Agta early in this century mentions that a coastal group of Agta (Palanan) were planting yam (*ube* 'Discorea alata'), taro (*bihut* 'Colocasia spp.'), sweet potato (*aamote* 'Ipomoea batatas') and corn (Worchester 1912:841). By the 1930's, other groups of Agta were planting a number of fruits and vegetables in addition to the above mentioned root crops and cereals. On this evidence and by inference from other Philippine Negrito groups, it can be surmised that the Agta may have been practising some degree of horticulture for the past two centuries.

It is a well known fact that the neighboring agricultural populations have always persuaded hunter-gatherers to begin cultivation (see Sinha 1972:338). The Philippine Negritos (Garvan 1963:75; Maceda 1974:7), including the Agta (Nicolaisen 1974/75:405; Estioko-Griffin et al. 1981b:61; Headland 1981a:7) were no exception. As interaction between Agta and outsiders increased in the early decades of this century, the horticultural activity among the Agta seems to have become extensive by the 1940's; all middle aged informants from
most groups of Isabela Agta claim that their parents were practicing some gardening during World War Two. In this sense, horticulture is a relatively recent non-foraging strategy of the Agta in comparison to their practice of trade.

The Agta swiddens (sikaw) are usually located along the river terraces and adjacent slopes. Depending upon the typographic conditions of the river valley and the size of Agta population in the area, the Agta gardens have a tendency to nucleate at a few spots, usually close to the campsites. It appears that such a clustering of gardens in specific parts of the river valley occurs because the closely related kinsmen of a band prefer to clear adjacent gardens in an area separate from the gardens of more distant kinsmen of another band, and whenever the land conditions allow it, closely related families within a band seem to locate their individual gardens adjacent to one another in the cultivated area. This is a reduplication of the pattern of Agta lean-to locations in a camp, where closely related kinsmen place their lean-tos adjacent to one another. The pattern of swidden distribution changes only when the band changes its membership due to marriage, divorce or death of members and recruitment of new members.

The horticultural calendar of the Agta roughly follows that of the adjoining horticultural and agricultural populations (see also Estioko-Griffin et al. 1981b:59). If the families in a band decide to cultivate in a given year, the preparation for garden clearing begins at the end of the northeast monsoon season. The Agta system of land use for horticulture is a "long fallow" cycle (Boserup 1965:
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...as much as possible they select a previously cleared area but one that has lain fallow for a number of years. Agta claim to prefer bush over secondary forest, and secondary forest over primary forest or Imperata grassland. In February-March, the first stage of garden clearing begins by cutting the underbrush and small trees with machetes; collective labor of adult males and occasionally females is used. In the second stage, adult males cut down the big trees with steel axes. Trees with canopies are always cut down, while palm, wild fruit trees and commercially valuable hardwoods may be saved. The clearing is allowed to dry for some months; since this area has a number of rainy or cloudy days even after the northeast monsoon is over, burning is difficult. The felled vegetation is set afire in April-May, and any remaining may be gathered into piles and burnt.

A particular Agta garden may be planted with only a few crops at a time. However, as Agta practise some intercropping, the list of cultivated plants in one Agta garden can be long. The most commonly planted crops are sweet potato, cassava, corn, upland rice, yam and taro. A number of vegetables such as squash, snake gourd, eggplant, garlic and ginger are also planted in small quantities. Occasionally Agta gardens are spotted with papaya, coconut, jackfruit banana and sugar cane. Tobacco, which Agta must regularly trade in, is said to do poorly in swiddens and thus is rarely planted.

The Agta do not own any draft animals. Some families are seen borrowing the services of an agricultural neighbor and/or his draft animal, but in general they do not use any animal energy in their gardening. Their "non-hoe cultivation" (Boserup 1965:23) is also...
done with few tools. The swiddening families plant their crops with a wooden dibble stick (ésad). Agta borrow seeds from their agricultural neighbors to plant the "rainy season" crops during the months of June-July. Collective labor is summoned particularly to plant upland rice, which is done in teams, one person poking holes in the ground, approximately one foot apart and the one dropping five to six seeds in each hole without covering it with earth. The remaining or adjacent clearings are planted with sweet potato and vegetables in May. Vegetables are picked throughout the year, and rice is harvested in October-November with a special sickle (arakém). This is followed by the harvest of sweet potato up until January. The area is partially cleared for the planting of "dry season" crops. The first planting of cassava and second planting of sweet potato of the horticultural year are done in December-January. Corn is planted in April-May and harvested in the following July and August. Sweet potato is harvested from May to August and cassava from October to December to supplement the intervening periods. Partly because the rainy season and dry season croppings overlap and partly because Agta think the gardens are less productive in the second year of cultivation, they move to an adjacent patch to clear gardens for the next horticultural year.

In spite of the rather complicated horticultural calendar that they try to follow, the Agta swiddening in general remains desultory. Agta families who practise horticulture claim an average of approximately one hectare of swidden land. In a given year, these families clear only a portion of the total swidden (approximately one fourth of a hectare) to plant all their crops. Agta
gardens are isolated patches in the middle of the primary forest. A complex ecosystem with high species diversity, the tropical forest of the Agta area has evolved to a point where the indigenous plants have established ecological relationships with one another. While it has been suggested that horticulture maintains the general structure of the pre-existing ecosystem (Geertz 1963:16), swidden patches are "synthetic ecosystems," which have very different species diversity from the natural ones (Brosius 1981:166-167). Thus, swiddening in the middle of primary forest are far more susceptible to diseases, insects and nutritional disorders (Olsen, Clark and Bennett 1981:380). Further, the gardening techniques of the Agta generally remain haphazard. The block of time they are willing to be present in the swidden field is kept minimal so as not to disrupt their foraging activities. Because of the Agta's mobility, frequent absence from their respective gardens makes it difficult to follow a horticultural calendar. Thus, the unsystematic clearing, burning and planting and the lack of weeding, fencing and guarding result in poor crop production. In the months of August and September (which are not peak horticultural months), a band of Disabungan Agta (who are probably the least horticulturally oriented) spent as little as one percent of their total working time in visiting and working in their gardens (see Appendix 6). An observation showed that a garden plot of a hectare produces approximately one thousand kilograms of upland rice. This production is thirty-eight percent lower than the average production of upland rice (1,600 kg./hec.) of the adjoining Isabela swiddens (PDA 1978:55).
There are other factors which keep the horticultural contribution to the Agta diet low. Perhaps typical of foragers-turned-horticulturists, the Agta apply the foraging technique in harvesting crops; they usually harvest their cultivated crops in portions that are required for the day. Moreover, even if there are a number of gardens ready to be harvested, Agta families tend to "eat" one garden at a time and move to the next in succession. Due to these factors, destruction of harvest-ready crops by rain, wind and animal (particularly birds and insects) molestation is high. Further, irrespective of whether or not they have contributed labor to clearing or planting the swidden, a number of other families may join the cultivator's band in harvesting the crop and sharing the produce. Because of the sharing of cultivated crops with families who may not own gardens, in a given year, the per capita caloric intake from Agta cultivation is low. During the month of October, the Disabungan Agta were deriving only approximately four percent of their total caloric intake from their horticulture (see Appendix 10). Of the non-forest food times, the produce of horticulture comprised a total of eight percent to the Agta caloric intake. My estimate is that even among the most cultivation-oriented bands of Isabela Agta, the caloric contribution of their horticulture may not exceed twenty percent of their total caloric intake.

While horticulture plays only a subsidiary economic role, it has made a number of kinds of impacts on the traditional Agta system. It has changed the pre-existing relation of the Agta to their physical environment. The practice of horticulture has also caused the Agta to reformulate a number of their earlier socio-cultural rules.
Intensification of Agta horticulture, which is encouraged by the adjoining non-Agta population for various reasons, creates ideal condition for further irreversible changes of the Agta system.

Wage Labor

The third, and generally speaking least important non-foraging economic activity of the Isabela Agta today is the practice of wage labor. "Wage labor" in the sense it is used here encompasses any non-trade activity that Agta pursue at the request of outsiders for a predetermined economic return.

The practice of wage labor (upa) is an interesting development among the Agta. I mentioned above that there is no exchange or wage labor in the traditional Agta system. Agta have no word for 'helper' or 'slave' and the word with closest meaning one can translate as 'friend' (aghum). Agta males, who are reluctant to carry their own loads, tend to avoid any situation where they are called upon to help carry somebody else's load. It seems that wage labor activity developed after the Agta-outside relationship was intensified and the Agta came under outside pressure to take up this activity. In other cases, they were ultimately drawn into the practice of wage labor when the local opportunities opened up and in some cases they were pushed into it. It is thus a subsidiary or even occasional occupation, which was developed by particular groups of the Agta in relatively recent times.

Early in this century, certain Agta groups from particular coastal areas started hiring themselves out as porters (cargador) or guides to their neighbors. The coastal settlements around Palanan
and Casiguran Bay had to depend on overland access to the Cagayan Valley. Agta living close to these settlements hauled both goods and people and acted as guides across the forested Sierra Madre ridge. According to informants, Agta were paid ten pesos for this four days trip. Today, while these coastal areas are becoming more accessible by sea as well as by air, particular groups continue to pursue portering. Agta load carriers, mostly males and occasionally females, carry approximately twenty kilogram loads of mats, hats, or chickens out of Palanan and bring an equal weight of outside commodities such as tobacco and cloth into Palanan. They also herd carabao out of Palanan to other coastal areas or into the Cagayan Valley. In addition to meals, the Agta carrier is paid thirty pesos for the trip. It will be recalled that these coastal areas were also the only areas where the formal Agta-outsiders trade partnership developed, and continues today. Thus, it seems that the Agta practice of portering must have developed along with or after the formal trade partnerships were established. The other Agta groups, who live away from the coastal settlements and/or who do not have any formal trade partnership with outsiders, do not practise this form of wage labor.

Another form of wage labor in which Isabela Agta have participated since World War Two is agricultural labor. Again this is more popular among the coastal groups than those of the valley watershed, who practise it only sporadically. Among the coastal groups, a few Agta bands, who live close to the agricultural settlements, depend more heavily on agricultural labor (Estioko-Griffin et al. 1981b:66; Headland 1981b:4; W. Peterson 1981:48-49). Others engage in this
activity only during the harvest season. As the harvest season approaches, Agta families or sometimes bands live close to the agricultural settlements and help harvest the crops. The wage is usually paid in kind. Depending on the area and the availability of labor, Agta are paid from one-fifth to one-sixth of the day's harvest. Judging from the volume of grain Agta bring back into the camp, they derive considerable income from this activity for a particular harvest season.

Resident labor in an agricultural household by an Agta individual and occasionally by a family has perhaps been practised since the beginning of this century (see Worchester 1913:88) and sporadically it is practised today by all groups of Isabela Agta. Orphans, particularly females, and occasionally the families of widows leave their Agta bands to reside permanently in agricultural households to help in domestic and agricultural works. Rarely, an Agta family may take up residence on the edge of an agricultural field. They help guard the crops or coconut grove and receive a small share of harvest or receive a patch of field to plant their own crops as payment for their services. Such individuals or families continue to pay visits to their relatives in the Agta camp and occasionally join the foraging activities.

More recently, Agta have been given sporadic employment at the local logging and mining companies. The mercantile populations incorrectly believe that Agta bands are ruled by territorial leaders, who can mobilize the groups to disrupt the logging and mining operations in the area. Thus, they maintain good public relations with those they believe to be the leaders by hiring them to work as guides,
scouts or guards. During the logging or mining season, this form of employment pays fifty pesos per month and occasional gifts of liquor, cigarettes, canned goods, etc. If the employment is on a daily basis, Agta earn as much as five pesos per day. Even more recently, the immigrant homesteaders have taken to hiring Agta on a contract basis to clear forest for swidden or agricultural land, paying three to four hundred pesos to cut down a hectare of forest.

Agta do not always like the constraints imposed by these wage labor practices, which sometimes require them to live alone, with non-kinsmen or with outsiders. It is also considered a menial job with which many traditional Agta individuals prefer not to associate. However, wage labor is becoming an economic opportunity Agta cannot ignore. For groups who intensively practise it, it has become the basic strategy for coping with their changing economics. In differing degrees, it has already brought a number of unprecedented changes to all Agta groups. For families and bands involved in wage labor, it has restricted their practice of frequent mobility and exploitation of traditional resources. It is making Agta not just interdependent with the outsiders but dependent on them.

In summary, the Agta groups of Isabela have today incorporated three non-foraging economic strategies, namely, trade, horticulture and wage labor. Due to differential historical and demographic factors, Agta groups differ in their practice of these three strategies. In general however, trade is the most important non-foraging activity followed by horticulture and wage labor in that order. These three strategies have either individually or in combination brought about
the economic transition among the Agta. In simple terms, Agta have de-emphasized their reliance on the traditional economic strategies and resource bases. In most cases, the Agta are no longer economically self-sufficient and in fact are heavily dependent on the outside sources. The incorporation of these new economic strategies has brought parallel changes in other socio-cultural realms. Viewed from the systems perspective, the traditional Agta system has undergone an overall transformation.
10. THE CONSEQUENCES

The external encroachment on the Agta area as well as the intensive interaction between the Agta and non-Agta populations have resulted in a number of specific consequences for the traditional Agta system. Furthermore, these consequences themselves are acting as "stressors" to cause aggravating problems for the Agta. The consequences are particularly visible in the degradation of the Agta ecosystem and the associated economic problems as well as the economic and socio-symbolic subordination of the Agta to the outsiders.

Ecological Degradation

The stability of the complex ecosystemic communities of the Agta rain forest has been emphasized above. Until the beginning of this century, only the small Agta population inhabited these forests and their impact on the ecosystem was minimal (e.g., Rambo 1979:63, 64). While the outsiders exploited particular game, animal products (viz., deer antler, beeswax) and a few other forest products, this exploitation was peripheral and selective. These small scale interventions may have acted in a small way as modifiers of the inter-specific competition (Grime 1979:41) and thus may have brought small qualitative changes in the rain forest ecosystem. Otherwise, the Agta rain forest ecosystem had retained much of its original stability (e.g., Slatyer 1977:6).

The large scale exogenous intervention in this century has however brought both qualitative and quantitative changes to the ecosystem (e.g.,
Raven 1981:28). The tropical ecosystem like that of the Agta area is primarily maintained and supported by the stable vegetative structure of the primary forest. The greatest external force that directly exploits this primary forest is the mercantile group. To understand the impact of mercantile activities in the Agta area, we must analyze the frequency, the intensity and the area involved in these perturbations (Slatyer 1977:12).

The logging activities in Isabela generally follow a selective technique; they exploit only particular trees of certain diameter. There are two views on the merits of selective logging vis-à-vis other techniques. One view is that the technique of selective logging only depletes forests of certain species and sizes of trees but ecologically it will not constitute a major disturbance of the forest system (see UNESCO/UNEP/FAO 1978:219). That is, selective logging may not bring a marked amount of vegetative succession as the gap left by the exploited trees is quickly filled by trees of the same type as the surrounding adults (Slatyer 1977:13). Another view is that areas of primary forest subjected to selective exploitation become "depleted forest" as the gaps left by the removal of timber are colonized by secondary forest species. Thus, the forest community comes to consist of a patchwork of primary and secondary forest of very irregular structure (Richards 1979:379).

Empirical studies tend to support the view that large scale selective logging brings marked vegetative succession. In the Philippines, Brown and Mathews found numerical differences in the number of tree seedlings before and after cutting the timber and suggest that the sudden exposure to full sunlight due to selective logging results in
the death of the great majority of young trees with poorly developed crowns (1914:536; see also Serevo 1949:373). Selective logging also brings mechanical damage to the forest. The cutting of trees with large crowns results in the breaking and killing of a large proportion of smaller surrounding ones and thus the severity of damage by logging is correlated with the number of trees felled in the area (UNESCO et al. 1978:458). Mechanization in logging brings similar damage. The procedure known as skidding, which was used in the past, brings damage to seedlings and young trees (Tagudar and Quintana 1957). The use of other heavy machinery today such as the bulldozer also leads to damage, the killing of seedlings and compacting of the soil of the forest floor (UNESCO et al. 1978:459). The trail construction for the logging operation has a similar effect on the primary forest as it creates linear disturbances all over the area. All these factors thus contribute to the perturbation of the forest area.

The aftermath of the perturbation of the tropical rain forest like that found in the Agta area is rather obvious. The areally extensive and the intense degree of destruction of the original structure of the vegetative community initiates and enhances the succession of vegetation (Farnworth and Golley 1974:118). Forests are efficient water reservoirs in times of heavy rainfall. By retaining a large volume of water and releasing it gradually, they protect the area from floods and landslides. Removing this check increases the rate of vegetation destruction. The primary forest plant community lives on meager soil nutrients which are hoarded and maintained by the rapid recycling of dead organisms. This retrieval system is lost if the complex processes of weathering, leaching of nutrients and other biological activity (e.g., organic decomposition,
nitrogen fixation) cannot take place (Colinvaux 1978:76; Olsen et al. 1981:378). These can bring about significant changes in the tropical forest vegetation, and when it is severe, the original natural system can be completely lost (Slatyer 1977:6). This trend is clearly visible in the rain forest home of the Agta. The terrain of the Agta area, with its relatively high inclination, and heavy monsoon precipitation further contributes to the irreversible ecological destruction of the area.

If the impact of mercantile operations has not yet resulted in the serious degradation of the Agta ecosystem, the areal expansion of the agricultural populations is completing the process. Given the high immigration ratio, the continuing encroachment by the agricultural population is inevitable. While the low lying river terraces continue to carry the majority of the agricultural populations, the land and population pressures are mounting there. To escape these pressures, the agricultural populations are encroaching upon the terraces further upriver and as the river terraces run out they encroach on the forest slopes. Presently, the most preferred area in which to claim new land is forest area that has been logged and abandoned by the mercantile companies. It is preferred because the big trees have been felled and removed from the area and relatively little initial labor investment is required to begin cultivating it. Often new agricultural activities are established to claim and appropriate such logged over areas.

Relatively speaking, tropical uplands like the Agta area are less amenable to permanent agriculture. Agricultural activity involves maintaining low plant diversity. As rain forests have a tendency towards high species diversity, permanent agriculture requires a large input in
the form of mechanical and chemical work (Odum 1975:52). In the Sierra Madre, the clay loam type volcanic soil is very prone to soil erosion and lateralization. In the absence of terraced agriculture, proper technology and fertilizers, these uplands become less productive and hence attractive to people who have the option of encroaching on the adjoining forest. If and when permanent agriculture is established, the ecological cost is great. The direct human intervention in the tropical forest for agricultural development has taken place only at the expense of the forest itself (UNESCO et al. 1978:447).

The uplands of the Agta area could have sustained an established horticultural practice, but the rampant agricultural expansion is threatening the continued practice of swiddening by indigenous horticultural groups such as the Kalinga. Encircled by the agricultural groups, the indigenous horticultural groups are shortening the cycle of shifting cultivation and thus destroying the ecological balance of the area. Alternatively, they are attempting to change their swiddens into permanent dry field bringing drastic ecological changes to the area (see Wallace 1970b:75-76). Adding to this problem is the fact that the immigrant agriculturalists, who are learning to become partial system swiddeners, do not know how to maintain a sustainable cycle in their practice of shifting cultivation. These partial swiddeners destroy more of the primary forest in the area (e.g., Conklin 1957:155). Thus, the land expansion, be it for permanent agriculture or horticulture, is bringing devastating ecological consequences to the Agta area.

The tropical rain forest plant communities are considered to be highly resilient in their natural state. However, when the disturbance
is severe, its complete recovery is impossible (Colinvaux 1978:208; Dasmann, Milton and Freeman 1973:48, 58). The trend in the affected Afta area also indicates that the local forests do not recover from such disturbances. The abandoned clearings are first invaded by a number of pan-tropical grasses. If they are not continuously burnt, a heterogeneous tangle of small trees, shrubs and laines are said to grow. However, most areas are burnt every few years by escaped fires. The continuous burning of the area establishes three grasses in particular. Most pervasive of them is the Imperata, which takes over both hill slopes and water clogged areas. The second is 'wild sugarcane' ('Saccharum spontaneum'), which grows along water courses. Elephant grass ('Miscanthus sinensis') is the third grass which occurs in groves in certain areas. Once established, colonies of such grasses shade out all sun loving seedlings. This way, once deforested, the primary forest ultimately becomes grassland. Grassland areas require higher labor investment for reclaiming and have very depleted soils. People must find land in the primary forest to balance their cultivated area. Bare rolling hills are left behind covered only with grass.

In summary, the large scale encroachment of the outside population is bringing both qualitative and quantitative changes to the Agta rain forest. Changes in the structure of climax primary forest vegetation is resulting in changes of the intricate interrelationships of various species. The earlier relatively stable ecosystem is becoming increasingly fragile. The primary forest to which Agta have traditionally adapted is becoming replaced by grassland, which is useless to the Agta. This is resulting in the diminution of the Agta area.
Economic Consequences

The Agta of Isabela have had a large per capita amount of forest land and for most groups, it is still large enough to allow them to partially continue their traditional mode of life. However, the continuing trend of encroachment, degradation of the ecosystem and diminution of the area brings economic worry to most Agta, most of whom still have opted to emphasize the traditional economic system. The intensive interaction of the Agta with the outside population is leading to competition between the two groups over the same resources and resulting in an asymmetrical economic position for the Agta. In the following pages, I will describe the three negative economic consequences that the Agta are facing today, namely, the relative depletion of their traditional resources, the "niche sharing" with outsiders, and the economic subjugation of the Agta by outsiders.

Large scale mercantile activities such as logging and the collection of particular forest products exert a strong selective pressure on particular plant species. This changes the original structure of the forest and inadvertently affects the plant resources of the Agta. It will be recalled that the Agta primarily gather plant resources from the stream vegetation area. The stream vegetation is also the area that is being most seriously affected by floodings and landslides. Agricultural and horticultural expansions along the river terraces similarly affect Agta plant resources. For example, one variety of wild yam (*ilus*), which was said to have been abundant along the river terraces and on which particular Agta groups depend seasonally today, has been seriously affected by flooding of river terraces or burning of the area for horticultural activity.
Animal resources of the Agta also are being similarly affected by the mercantile activities and the expansion of the outside population (see Alcala 1976:152-158). The major game animals of the Agta such as pig and deer are what animal ecologists call "K-selected species;" they tend to reproduce repeatedly but normally produce only a few offspring at a time, which typically take a long time to mature. For example, particular species of deer have a life span of up to twenty years (Mech 1979:74), but have a low reproductive rate (Hames 1979:248). Particular species of wild pigs have a gestation period of one hundred and ten days and a minimal possible birth interval of two hundred thirty days. They bear approximately four to five fetuses, which have a low survival rate (Diong 1973:139-141). Because of limited offspring and long maturation, the game animals of the Agta are very vulnerable to over-exploitation (Hayden 1981:525-526). They are easily affected by the disruption of the habitat, reduction of optimum habitable range and/or food chains.

Peterson has however forwarded an argument that the agricultural expansion and encroachment on the Agta forest can have positive economic consequences to the Agta (1977a, 1977b, 1981; see also Peterson and Peterson 1977). She writes that the contemporary expansion of farmland creates a growing interface of forest and cultivated field. The micro-habitat of this interface provides the maximally useful biotope for the wild plants upon which game animals feed (Peterson 1981:20). Thus, the interface between the natural forest and man-made agricultural land is an "optimum environment for game" (Peterson 1977a:69). As game is most abundant in this area, it is the "optimal hunting area" for the Agta.
In short, the agricultural expansion creates and maintains an optimal environment for the livelihood of the Agta (Peterson 1981:15).

Peterson's thesis is primarily based on the traditional ecological hypothesis that the transition between two or more diverse plant communities (called "ecotone") shows a tendency for increased variety and density of plant species (called "edge effect") (Odum 1959:278). The concepts of ecotone and edge effect are a matter of continuing debate in ecology as there is no substantial empirical evidence to prove or disprove them (see Rhoades 1978; Margalef 1968). With the exception of a few studies on small animals such as rats (Dwyer 1978), there is also no evidence that an ecotone is an optimum foraging area for higher animals.

For the Agta area, let us assume that the edges between the natural forests and agricultural fields are characterized by an increased variety and density of plant species. When an increased variety of plant species occur in a localized area, it generally means that particular plant species are not clumped (and thus abundant) but scattered over the area. This may also mean that the edges are not abundant in plant food resources to which animals could have been attracted (Rhoades 1978:612; King and Graham 1981:131-132). Further, an ecotone is generally the "tension belt" (Odum 1959:278) and particularly the "artificial" ecotone such as the forest-field edge can be very ecologically unstable. The forest-field edges are continuously disrupted by the agricultural activities of humans and their domestic animals. Small climatic changes can affect the structure of the vegetation in the edges and the food species for animals may frequently fail.
We know too little about the habitat or habitable range, diet, and social organization of the major game animals of the Agta to make any definitive statement. However, it seems that the wild pig and deer are not "edge species"—those which occur primarily or most abundantly or spend the greatest amount of time in junctional plant communities (Odum 1959:278). They are known to frequent cultivated fields during the night time only when certain food crops are available (e.g., Endicott 1979b:17; Conklin 1959a:60). For example, informants in the Agta area claim that pigs come to eat domestic tubers and deer to eat young leaves of corn and rice. During the crop season, these game animals can considerably damage crops if the farms are not guarded. When these crops are not in season, the fields are less attractive to game animals. Such sporadic visitation patterns indicate that these game animals are not concentrated in the edges and thus, they are not abundant in the edges.

There are a number of other factors that can discourage the concentration of game animals in the edges of forest and field. Hunting pressure brings dispersal of game population (Diong 1973:127), and the disruption of the natural habitat for agricultural purposes drives them into distant ranges, where they are less disturbed (Estioko-Griffin and Griffin 1981b:62-63). Game animals, particularly wild pig, also respond to weather conditions. During dry weather conditions, the pigs retreat from the forest fringe into the deeper parts of the forest (Diong 1973:127, 133). A preliminary analysis of a recent ethnobotanical study shows that most food species of the game animals occur in the interior areas of Agta rain forests. For example, in the case of wild pig, approximately forty-eight percent (N=88) of its plant foods are found
inside the lowland dipterocarp forest, forty-five percent in other forests such as coastal, montane, and stream vegetation and only seven percent in the secondary growth vegetation such as landslides and swidden area, etc. Similarly, thirty-six percent of the plant foods of the deer occur in the lowland dipterocarp forest, fifty-five percent in other types of forests and only nine percent in the secondary vegetation (Melinda S. Allen field notes).

Peterson provides the data that in a particular area in Palanan, approximately fifty-five percent (sample not provided) of the wild pig and thirty-three percent of the deer were killed within 1.5 kilometers of land clearings (1981:10). My data from the valley watershed group indicate otherwise. During a sixty-four day long observation of the hunting activities of a band of Disabungan Agta, they lived ten to sixteen kilometers away from the agricultural settlements and seven to thirteen kilometers away from the cultivated fields of their agricultural neighbors. Since they hunted further up river from the camp, Agta were hunting only in areas which were at least eight kilometers and often times sixteen kilometers away from the nearest field of their agricultural neighbor. There are swidden clearings of the Agta themselves in the upriver areas. But the Agta hunt mostly in areas away from such swiddens. During the observation period, seventy-seven percent of the hunting trips of the Disabungan Agta were made in areas outside the three kilometer perimeters of their new and old swiddens (see Appendix 7). Of the twenty-three percent of mostly unsuccessful hunting trips done within the three kilometer perimeters of the swiddens, the majority of them were carried out at night. Of a total of thirty-five major game animals killed, only eleven percent were killed within the three kilometer perimeters. The
case of Disabungan Agta hunting can perhaps be generalized to other Agta groups in Isabela. I mentioned above that the Isabela Agta live on an average seven kilometers from their respective and nearest agricultural settlements. The Agta groups of the valley watershed, who depend more heavily on hunting, live an average of thirteen kilometers away. Only those groups of the coastal areas, who depend more heavily on fishing and wage labor rather than hunting live near the agricultural settlements or cultivated clearings.

In summary, the external encroachment being experienced is resulting in the relative depletion of the Agta traditional resources. The agricultural expansion does not bring any positive consequences to the Agta but is simply displacing the Agta groups. The evidence is that the greater the outside intervention, the greater the rate of resource depletion (Bennagen 1977a:18, 19; Headland 1981b:3). This loss of traditional resources has a profound impact on the Agta groups.

Another negative economic consequence of the expansion of outside population on the Agta area is the "niche sharing" between the Agta and the outsiders. In the past, there was little overlapping in the subsistence system and/or resources of these two populations. For example, while a few non-Agta groups in the area hunted occasionally (e.g., Rosaldo 1980:72), hunting was very much an exclusive domain of the Agta. Today, the hunting niche of the Agta is increasingly being encroached on by the outsiders. The outsiders have more frequent access to new technology such as shotguns. They often use dynamite to kill game animals. They make "pig bombs" by putting explosives inside an edible root and burying it in the trail of game animals. For the deer, the bombs are hung on branches of trees. The intensive hunting by outside
populations and their use of relatively modern hunting technologies is depleting the game animals from certain Agta areas (Bennagen 1977a:12; see also Hames 1979:246). Fishing is another niche that Agta increasingly must share with outsiders. The agricultural people command new fishing technologies. They use dynamite which kills all the fish, or electric shock in river fishing. In open sea fishing, they use motor boats, and fishing nets, which Agta do not possess. As rivers close to the agricultural settlements become depleted of fish, the outsiders make extended trips to interior areas to exploit the aquatic resources. Agta bands claim that they have to guard the rivers from dynamite fishing, electric shock fishing or poison fishing by outsiders. In short, the Agta are being challenged today by outsiders in exploitation of resources that were mostly theirs in the past.

The increasing competition between the Agta and non-Agta populations over the traditional resources of the Agta has a profound effect on their system. They might have been able to replace their lost traditional resources through the exploitation of some of the "new" trade resources. That is, the Agta could intensify their trade of forest products such as copal resin, shellfish, rattan, bamboo, orchids, etc. However, this strategy has its own problems. In the past, Agta had exploited the forest and riverine products for consumption and sale without any outside restriction. In the last two decades, the government has concessionized the exploitation and sale of some of these resources. Thus, items like copal resin and rattan can be traded only through government designated contractors. These contractors often are willing to hire non-Agta personnel to collect the forest resources. Ultimately, it is probable that these resources will be exploited and sold by the outsiders. Such
encroachments by the outsiders on the Agta subsistence and resource niches will further aggravate the economic problem of the Agta.

An even more serious economic worry of the Agta is their increasing dependency on the outsiders. Such a dependency situation has been variously characterized in the literature. For example, the Philippine Negrito dependence on their agricultural neighbors has been called "parasitism" (Kroeber 1928:19), or noblesse oblige on the part of outsiders (Maceda 1964:48). While these terms accurately reflect the view of the agricultural neighbors of the Agta, the Agta themselves perceive the opposite; they have been continuously exploited by the outsiders.

The current asymmetrical relationship of the Agta and their neighbors is, in part, based on the economic imbalances between the two populations. Peterson suggests that in the present trade relationship, the "economic superiority" is in favor of the Agta (1976:329). She argues that the Agta can provide more goods in trade than the outsiders are willing or able to trade, and thus they can threaten the outsiders by intensifying their trade. She writes that the accelerated trading is a common complaint of outsiders against the Agta and the outsiders "cohere in the face of mutual threat of Agta economic superiority" (ibid.). I have argued above that the Agta do not glut the outside trade demands. In fact, they cannot meet them. For example, the animal protein trade of Disabungan Agta, which is approximately six kilograms a day, may reach less than half of the families of nearby agricultural settlements. Often, the mercantile groups pay a higher price for the animal protein and thus the agricultural neighbors may be excluded from such an exchange. Moreover, the Agta-outside trade is not a contractual transaction but a voluntary one. The outsiders have
no obligation to trade with the Agta, and they do not trade and have not traded whenever they cannot afford it. Thus, neither Agta nor outsiders perceive any economic superiority on the part of the Agta.

I suggest that the symbiosis is biased in favor of the outsiders. This bias arises because the external dependence of the Agta today is crucial to their economic survival. If the neighboring agricultural populations were called upon to make minor adjustments in their animal protein acquisition (and their seasonal labor requirement), they could maintain an independent economic system without their trade relation with the Agta. The Agta, on the other hand, have become virtually dependent on the outside system. Given their shift away from the traditional mode of life, the Agta cannot remain economically self-sufficient (see also Headland 1975b:251). It is thus an imperative for the Agta to maintain the trade or other economic relationship with outsiders even at the cost of their own economic exploitation and subordination.

The economic exploitation of the Agta by outsiders takes many forms. In Agta trade of forest items to outsiders, the latter control the market. For example, in spite of the acute demand for wild animal protein in the adjoining agricultural settlements, the price of wild animal meat is at least thirty-three percent lower than for domestic meat. In other barter trade, Agta are even more ruthlessly exploited. Three to nine wild pigs (approximate value 600 to 2,000 pesos) must be paid for one secondhand transistor radio (approximate value 200 pesos). Five hundred pesos worth of tree resin is bartered against a secondhand tape recorder (approximately 150 pesos value). Some outsiders justify such
behavior by saying that Agta trade goods are wild and so require no work in raising them. The local middleman, who handles the purchase of trade items like copal resin and shellfish, often fixes the price as low as twenty percent of the local market. For example, a fifty kilogram sack of copal resin is brought by the middleman for fifteen pesos and then sold to the contractor for fifty pesos. Most Agta are unfamiliar with the units of exchange and get further cheated. In wage labor, Agta are often paid less than their agricultural counterparts. Whereas an Agta is hired for only thirty pesos for four days of portering, an outside plowman summoned to work in the Agta field may demand as much as half of the production of the field.

The most serious economic exploitation of certain groups of Agta is the "land grabbing" by outside agricultural people. As the outsiders expand their land holding into the Agta forest, the unguarded Agta swiddens are the easiest target. The Agta have neither the means nor intent for legal reprisal. The Philippine land law is said to be vague in its stipulation regarding the land right of indigenous people like the Agta. While, the local government officials claim that they are sensitive to the land right of the indigenous people, the legal circumvention comes from the fact that the land rights are not recognized by the courts. The Agta, who continue to fail to register their land, are easily evicted from their holdings (e.g., Maceda 1974:7-8). In order to avoid confrontation with the encroachers, Agta give up their claim to the land and move to a new area.

The increasing economic relationship between the Agta and outsiders is mainly responsible for the introduction of cash and thus for the monetization of the Agta economy (see Bohannan 1971:249). Monitization
in turn is mostly responsible for bringing consumerism to the Agta. In spite of the fact that the Agta remain selective in their material desires, they spend a considerable proportion of their income from trade and wage labor in buying consumer goods. These consumer goods are becoming both a need and a status symbol to the Agta. Agta today buy items like soap, spices, carbonated drinks, coffee, sugar, canned food, nail polish and face powder. Alcoholism is another trend that is rising among the Agta (Turnbull 1930:92; Headland 1975b:250). Agta regularly trade a part of their game for commercial liquor and in the coastal areas, for locally brewed coconut or nipa beverages. The outsiders exploit these acquired habits of the Agta. Often unsolicited, the outsiders extend credit in the form of consumer goods or beverages to the Agta. Once caught in the downward spiral of indebtedness, Agta can be seriously abused. Often, Agta have left their traditional area in order to interrupt any further economic transactions and economic abuse.

Because the Agta today spend a considerable amount of time in non-traditional economic pursuits, they spend proportionately less time in foraging. This, and their preference for outside foods and consumer goods, are bringing changes in their dependence on the traditional food resources. For example, the two important traditional sources of carbohydrate food, the wild tuber and caryota palm are deemphasized as they have come to prefer domestic carbohydrates, either grown by themselves or obtained from outside. This decreasing reliance on traditional food resources has many consequences for the Agta diet (see Gross and Underwood 1971; Schlegel 1979).

A tentative energy flow analysis of a band of Disabungan Agta shows that the average daily intake is 2,081 kilocalories per person
per day (see Appendix 11). If one takes into account the individual variations in food consumption and the food consumed outside the camp, the input can be as high as 2,500 kilocalories per adult per day. We can assume that the Agta derived all their energy needs in the past essentially from their foraging alone. Today, the Disabungan Agta derive as much as sixty percent of the above mentioned caloric intake from non-traditional sources (see Appendix 10). I estimate that some groups of Agta today may derive up to eighty percent of their caloric input from non-foraged foods. While the Disabungan Agta consume relatively high amounts of protein and fat (see Appendix 11), the intake may be considerably lower for other Agta groups, who rely more on wage labor or horticulture. Such a decrease in the amount of protein intake can affect, among other things, the essential intake of amino-acids, which can act as a limiting factor in metabolism (McArthur 1974:114).

Eder has suggested that the dietary transition from wild to domesticated foods can result in a demographic decline of the population (1977b:11, 16). While the specific consequences of the Agta shift from wild to domestic foods are yet to be documented, one cannot discount their role in bringing demographic instability. Coupled with the severe ecological disruption of the area, which can bring an increased incidence of diseases (Lieban 1973:1035-1040), as well as the rise of other mortality factors (see Headland 1981a:11-12), such dietary changes may result in the demographic decline of the Agta.

Socio-Symbolic Subordination

The Agta are in limbo not only because of ecological and economic problems, but also because of the social and symbolic changes which they
are facing today. Humans do not passively adjust to natural demands but organize their productive efforts around culturally defined goals (Keesing 1981:155). While some of the socio-structural changes are consistent with the continuity of the existing formal order (Nimmo 1969:17), others reflect alterations in the formal order (Leach 1954:5). More importantly, in the long-term socioeconomic relations with the outsiders, the Agta are being partially integrated into the social system of non-Agta populations. This integration has today brought about a socio-symbolically biased position for the Agta.

It has been argued that cognatic societies like the Agta have more flexibility and plasticity in their social structure which allow more alternative behavioral choices in specific domains to members of these societies (Goodenough 1956; Appell 1976). However, any statistical change in the behavior can bring shifts in the pre-existing social system and can act as a catalyst for succeeding changes (Barth 1966; Murdock 1969). Thus, whether or not Agta cognatic structure is relatively flexible, allowing alternative behavioral choices, the changes have an impact on the traditional system. Moreover, in this case, the changes are so massive and rapid that disruption is occurring.

Parallel to the changes in the subsistence modes of the Agta are changes in their settlement pattern (see Hart and Pilling 1960; Harako 1976). For example, the constraints of horticulture and wage labor bring about a decreased mobility. There is some evidence that the earlier, rather pervasive role of kinship in the social relations of the Agta is being deemphasized. While kinship is the determining factor in the traditional band formation, the actual or potential availability of swidden
land brings people together and thus at times the rules of residence affiliation are not followed (Bennagen 1977a:20-21).

The effective shift to non-foraging subsistence and the change in settlement patterns demand that the Agta pay an additional social price. The trend of increased dependence of the Agta on horticulture or wage labor is incompatible with their traditional norm of sharing (Cashdan 1980:209). It is a difficult proposition for people who depend on horticulture to share their harvested crops (Lee 1978:7). The more horticulturally oriented Agta groups of Isabela are accused by their more traditional counterparts of untoward hoarding of non-meat items. Another price could be the modification of the Agta ritual system. In the past, all Agta groups are said to have burnt the lean-to after the death of a family member. Bennagen observes that this practice is declining as the Agta build bigger and better houses (1977a:17).

A large part of the socio-symbolic changes among the Agta is however tied to their social relationship with the outside population. Peterson writes that the non-Agta people are at a disadvantage in their dealings with the spirit world, as they themselves have no healers who can intercede for them (1976:322-329). She continues that these non-Agta people share the symbolic world with the Agta (see also Headland 1981a:4). The skill of the Agta in manipulating the shared symbolic world is acknowledged by the non-Agta people. These people seek the help of the Agta healers and are dependent on their intercession with the spirit world. This "symbolic superiority" of the Agta, according to Peterson, is part of the mechanism for restraining the social and political excesses of the outsiders on the Agta (ibid.:327-329).
I suggest that the symbolic realms of the Agta and their neighbors today have little in common. The Agta do not and cannot manipulate the symbolic world of the outsiders and do not threaten them. Neither the Agta nor the outsiders perceive the symbolic superiority of the Agta and in fact, the reverse is often the case. Thus, the Agta cannot restrain the sociopolitical excesses of the outsiders.

The Agta of northeastern Luzon are animists. Their supernatural world is said to be an ever-expanding one, where eternal spirits continue to exist and spirits of mortals continue to join them. All Agta agree that there are two classifications of spirits. The first group includes the ghosts or spirits of deceased humans (anito) and the second group represents the eternal animal spirits or "creatures" (hayup). The spirits of the human group are usually malignant and malevolent. Because they are unpredictable, they belong to the most feared category of supernatural spirits. They are also believed to be responsible for causing most spirit related sicknesses. The animal spirits, on the other hand, are generally benevolent. They are befriended by the Agta shamanistic healers (bunogen), who have no personal constitutional power to heal. With the help of these familiar spirits (called bunog), the healers mediate between the living and supernatural worlds.

The Agta version of animism is somewhat different from that of indigenous non-Christian population in the area. For example, Agta animism lacks a sacrificial ceremony. As opposed to other animists in Isabela, Agta do not seem to be concerned about well-being in the afterlife and do not worship any ancestor spirits. In fact, the conjugal pair of dieties, who are so popularly mentioned in the animistic practices of other Philippine groups (see Scott 1979:99), is unknown among
the Agta. Agta animism differs even more markedly from the folk
Christianity of the Philippine lowlands, in spite of the fact that the
latter remains influenced by animism. For example, Agta animism
conspicuously lacks the concept of a high god. They have no concept of
heaven or hell and no place, time or material object (biotic or abiotic)
is supernatural to the Agta.

The non-Christian population of Isabela has its own shamanistic
healers, who are considered powerful in manipulating the spirit world
by both Agta and non-Agta groups. Agta, including those who themselves
are healers, consult these healers. There seems no jealousy or power
rivalry between Agta and non-Agta healers. The Christian populations
of Isabela do not have shamanistic healers, but they have other
religious specialists or medicine men (hárbalaryo), whose help through
offerings, medicines, etc., is sought for intervention by the spirit
world. These populations occasionally consult Agta or other non-
Christian healers. The Agta healers claim that they do not withhold
shamanistic services from outsiders.

There are a number of Philippine lowland myths regarding the super-
natural power of the Negrito groups. One myth about the Negritos claims
that the Negritos possess a supernatural amulet (I: anting-anting), which
is said to make the possessor invisible or even invincible. The Agta
themselves, while discounting any such supernatural amulet, claim to
use some medicinal plants, which are said to have protective power for
the possessor and depotentiating power for an enemy's destructive inten-
tions or acts. The non-Agta people in Isabela however do not believe
that the Agta have knowledge of any plant or supernatural object that
can inflict harm to others. Witchcraft\textsuperscript{18} and sorcery could be one medium of symbolic manipulation (see Guenther 1976:125; Townsend 1978: 293). Among the Agta, witchcraft is acknowledged only in that they believe such power occurs among persons of non-Agta origin. Sorcery (\textit{ilo}) is claimed to be practised by some Agta individuals, who can harm another Agta or non-Agta person by manipulating certain objects. However, I mentioned above that the alleged practice and power of witchcraft among particular non-Agta groups in Isabela is well known. If these act as any manipulative power, it is particular non-Agta groups who can symbolically threaten the Agta.

There are other reasons which today put Agta in an inferior social and symbolic position. While the Agta until recently have had only peripheral missionization, today, as with all other non-Christian groups, Agta are coming into the tight grip of Christianization. Agta are becoming willing to baptize their children or have a priest officiate at their marriages. Unknowingly, they have also come to occupy the lowest socio-symbolic position in relation to other groups in the area.

Perhaps reflective of the colonial history, Christianization carries a very important sociopolitical meaning among sedentary agricultural people of the Philippines. Historically speaking, the groups who accepted colonization and Christianization early in Spanish times and became loyal to the colonial power, were given higher sociopolitical positions. The groups, who resisted colonization and adhered to their indigenous pagan religion were given a lower social position. And, it seems that this is still true today. In the Cagayan Valley, the agricultural populations seems to have a hierarchical ordering of groups or a "caste system" that is based on the order of their Christianization.
The Ilokano, who were among the earliest people to be Christianized in the Spanish time, enjoy the highest status. Next in the hierarchy are the indigenous Christian minorities, who were Christianized late in the Spanish time. Among the non-Christian groups, the immigrant Igorot seem to occupy a higher social position than the indigenous horticultural groups for they have been coming into contact with the Christian missionaries since the beginning of this century. The indigenous non-Christian group occupies a higher position than the Agta.

Supported by the demographic dominance and the political structure of the area, the social ranking of the groups is understood and more or less accepted by all groups. An Ilokano individual would be quick to point to his "pure" status and an Ibanag would emphasize his hybred status from Ilokano ancestry. Generally, the higher ranking groups tend to ostracize the subordinate groups economically and politically. For the Agta, their "primitive" religion, their foraging economy, their distinct physical features and their lack of political power reinforce their social position at the bottom of the hierarchy. In short, the Agta occupy a subordinate social and symbolic position in relation to all the adjoining populations. Given their traditional egalitarianism, they accept the lowest position with apprehension. In the face of economic and social biases against the Agta, their area continues to be encroached on, they are economically exploited, and they have to play a subservient role in relation to outsiders.

To conclude this analysis of the transitional world of the Agta, it has been argued that the once socioeconomically independent Agta groups have experienced a number of changes in that last two centuries. The multitude of factors such as possible internal population pressure
and changes in the ratio of Agta to resources, and external encroachment pressure played a systemic role in bringing about the shift away from the traditional to a transitional system. While Agta groups participated differentially, the trend was to increasingly incorporate the non-foraging economic strategies of trade, horticulture and wage labor. The continuing encroachment from agricultural and mercantile populations and the related events are causing the Agta to experience ecological degradation of their area, as well as economic and socio-symbolic subjugation by outsiders. These various conditions, processes and consequences have brought instability to the Agta system. If the traditional world was characterized by the Agta dependence on their forest resources, the transitional world of the Agta today is characterized by an increasing dependence on the outside sources.
IV. CONCLUSIONS
11. SUMMARY

The present anthropological study of the Agta Negritos of the province of Isabela, in northeastern Luzon, the Philippines has two basic goals. First, it documents the ethnography of the hunting and gathering Agta society. Second, it analyzes the conditions, the processes, and the consequences of the Agta change from a traditional foraging stage to a transitional one. This chapter summarizes the findings and major conclusions and suggests the wider theoretical and substantive significance of the present work.

Characterized by a relatively rugged terrain, the physical environment of the various groups of Agta of Isabela is one continuous chain of predominantly lowland dipterocarp type forest interrupted only by the river system. Depending on the area, the Agta groups operate in rain forest areas approximately two to five square kilometers per capita. While only a few species of his...r animals are represented in this island forest, the relatively stable tropical vegetative community is marked by a very high species diversity. The Agta, who realize the constraints of their ecosystem, exploit the high canopy interior forests of the hillsides mostly for terrestrial animal resources, the low canopy stream vegetation areas mostly for plant resources, and rivers, lagoons and sea for aquatic resources. Notwithstanding the slight climatic variations across the two watersheds of the Sierra Madre Range, the Agta area experiences rather consistently high temperature, rainfall and humidity. In spite of the fact that there is no marked ecological seasonality in the
environment, Agta contrast the relatively "wet" period of the northeast monsoon with the relatively "dry" period of the southwest monsoon. While there is little seasonal fluctuation in the availability of traditional resources, Agta make minor "seasonal" adjustments in their subsistence strategies and settlement pattern.

The socio-cultural environment of the Agta is complex but well defined. Kinship is the primary organizing principle. In the cognatic kinship system of the Agta, an ego categorizes all other members of his society into two exclusive groups, namely, kinsmen and non-kinsmen. Marriage is forbidden with all kinsmen by a strict incest rule. Non-kinsmen are potential marriage partners but until and unless such a marital link is formed they are distrusted and avoided in socioeconomic interactions. The members of kinsmen category are further subdivided into kindred and affines and contrasted terminologically. In actual practice, individuals more frequently violate the incest rule to marry affines than kindred members. Only closely related affines call for the respect relationship and naming avoidance.

The regional Agta population of Isabela is divided into four linguistic groups, occupying successive and roughly rectangular forest areas along the north-south axis of the Sierra Madre Range. A linguistic group is not a political or defense unit and does not see itself as "territorial" in its exploitation of resources. However, each linguistic group is generally endogamous. Because there are only occasional marriages between members of different linguistic groups, a linguistic group in itself represents the maximal extent of the kinship network. And because the members of one linguistic group are non-kinsmen to members of another,
each linguistic group rather fiercely maintains its socioeconomic isolation from another. In the past, this socio-economic isolation was reinforced by the occasional practice of inter-linguistic raids. Today, the distrust relationships of these groups continue. Furthermore, the communication channel of the Agta is their kinship network; thus, each linguistic group also tends to be an exclusive information group.

A linguistic group occupies an area, which usually extends to both watersheds of the Sierra Madre Range. While extensive social ties are regularly maintained among all members of a linguistic group living across the watershed, the greater physical distance involved forces them to interrupt regular economic ties. Thus a linguistic group is divided into two economically independent local linguistic groups. While members of a linguistic group can and occasionally do switch their residences from one local linguistic area to another, they remain fairly circumscribed. The members of each local linguistic group maintain more intensive social interaction and more efficient communication network than do members of different local linguistic groups.

Within a local linguistic area, the Agta are distributed in various adjacent river valleys. A river valley group is composed of a population of rather stable core members, who maintain even closer socio-economic ties than do members of different river valley groups. It is also the socio-residential unit that Agta members most closely identify themselves with.

A river valley group is further divided into bands. They are almost always camped along the river terrace or beach and are located an average of four to five kilometers apart. Averaging twenty-one people, a band is the minimal economically viable unit. Kinship
relations are mandatory for band membership. Further, because fission among members is more frequent as their kinship distance increases, a band tends to be made up of closely related kinsmen. However, the kinship network of the band changes through new marital alliances or the death of members. Thus, band composition is fluid, allowing the coming together of members who have become kinsmen and the separation of those who have become non-kinsmen through death of a relative. The band formation of the Agta is thus in direct response to their kinship network (and not in response to the resource distribution of their physical environment per se).

Within a band, families are the smallest residential units. Predominantly of the nuclear type, families maintain their own lean-tos and hearths, and are the decision making units of the Agta. For particular categories of couples or families, long term residence rules are jurally given. The newlyweds must reside with wife's close kinsmen until the bride service obligation is completed and those remarried must reside with the new husband's kinsmen. Others have a number of ordered options in their long term residence affiliations but again prefer to use close kinsmen in actual residence affiliations.

Against these backgrounds of physical and socio-cultural environments, the traditional Agta economy is oriented towards the forest. The Agta ethnozoology recognizes three life forms among terrestrial animals ('walking animals', 'crawling animals' and 'flying animals'). While the inventory of game animals is represented by all the three life forms and comprised of six species of mammals, two reptiles and various species of birds, the wild pig and deer are the major game animals of the Agta. With their simple tool complex such as bow and
arrow (and dog), the Agta used five hunting strategies ('searching', 'hiding', 'trailing', 'ambushing' and 'cornering') and a number of collective and individual techniques. Today, particular groups of Agta spend as much as forty-eight percent of their working time in hunting related activities and derive twenty-three percent of their total caloric intake directly from the consumption of the meat.

Gathering of plant resources and honey is a secondary, rather opportunistic activity of the Agta. They categories plants into three life forms, namely, 'grasses', 'vines' and 'trees.' Of the several hundred plants Agta recognize, fewer than three hundred have direct economic use or symbolic value to the group and fewer than fifty are food species. Of the food species, varieties of wild tubers, rattan, wild fruits and vegetables are most regularly exploited. Aquatic resources such as fish, eel or octopus are only of tertiary importance for most Agta groups. Fishing is done during the non-flood months of the year. Traditionally speaking, these three activities in their permissive physical environment provided the Agta with a consistently reliable foraging subsistence.

The Agta use a number of socio-cultural mechanisms to insure both a predictable resource return and the sustainability of their ecosystem. Since the plant resources of the Agta in their tropical rain forest are not clumped but ubiquitously scattered, they practise mobility to exploit them. Camp moves, which are as frequent as twenty times a year, result in less stress on resource locales and on individual resources and favor the preservation of the ecosystem. Because the Agta do not observe food taboos either in relation to wild food species or in relation to particular times of the year, all culturally known resources can be continuously exploited. The Agta have a flexible and non-prohibitive sexual division
of labor, and thus they are able to make efficient use of their skill and energy to offset the limits imposed by technology. More importantly, the egalitarian Agta practise sharing of acquired foods as well as labor. Partly because their humid environment is not conducive to the storing of food items, they allocate the procured resources among members. In particular, the meat of wild animals is most scrupulously shared among families of a band and occasionally across adjacent bands. Aquatic and plant foods are shared among close kinsmen. Such intensive and extensive sharing practices are mechanisms to bring regular allocation of food resources among individuals. In addition to providing regular access to a variety of diets, sharing allocates food in small but regular amounts per individual, and thus brings efficient consumption and metabolism of food items.

Given their predictable ecosystem, diversified economic bases and effective socio-cultural mechanisms, one would have expected the traditional Agta system to continue indefinitely. But they have, particularly in the last two centuries, experienced radical and irreversible changes in their physical and socio-cultural realms. These changes were brought about by complex conditions.

Analysis of the population control mechanisms of the Agta indicates that their past population trend was probably marked by a fairly stable parity. The Agta did not have any cultural means of controlling their fertility but the relative lack of body fat and the practice of prolonged breast-feeding among women seems to have resulted in significant birth spacing and consequently in a low fertility rate. The primary past causes of mortality were only a few common diseases, which killed more children than adults, and thus the mortality rate too was low. At most, the Agta population was rising only slowly.
Analysis of the ratio of Agta to their resources also indicates that they lived at levels well below the carrying capacity of their environment. The relatively non-seasonal rain forest vegetation allowed for the continuous exploitation of plant resources. With the exception of large pythons, the Agta did not have to compete with other animal predators to exploit animal resources. At most, the possible slow population growth could have resulted in lowering the ratio of certain resources to the Agta. However, they probably could have adjusted to these internal alterations by intensifying their traditional mechanisms, either economic and/or socio-cultural. These minor alterations of the Agta traditional system thus do not appear to account for the degree and intensity of the change which has taken place.

The Agta way of life was disrupted by the upheavals that occurred in the adjoining non-A GTA systems. Attracted primarily by the prospect of tobacco cash-cropping, large scale immigration was taking place in the adjacent lowland agricultural basin. The immigrants brought with them relatively sophisticated agricultural technology and rather aggressive land tenure systems. They occupied the alluvial flatlands and displaced the politically weaker indigenous agricultural people. These displaced agricultural populations encroached on the uplands originally occupied by the indigenous horticultural people. As more immigration continued into the area, more local groups were displaced and, as the agricultural lowlands were saturated, immigrants were forced to settle in the uplands. Erroneously viewing the Agta area as unoccupied and underexploited, large scale spatial expansion of the outside agricultural and horticultural populations took place. While some Agta groups adjusted by taking refuge upriver, others developed new economic adaptations.
To make matters worse, commercial logging of the Agta forest began in the 1950's. Having access to the regional highway and with leftover machinery from World War Two, the logging companies extracted large volumes of timber. In the following decade, mining companies entered the area. The incursion of the mercantile groups was radically different from the earlier encroachment of the agricultural population; while the agricultural expansion was areally restricted and concentrated in the low lying river terraces, the mercantile activities exploited the high canopy interior forest. Primarily because the mercantile groups were interested in resources (e.g., dipterocarp timber, minerals), with which the Agta themselves were, for the most part, not directly concerned, this incursion was not resented. The Agta do however realize that the mercantile activities in their area have resulted in increased immigration. These industries have brought outside skilled laborers. By removing big trees from the forest and by opening up logging trails, they have created ideal situations for further agricultural expansion. As more new immigrants come, they pioneer directly into the middle of the Agta homeland and expand from there.

It was the upheaval in the external system that ultimately led to the encroachment of the Agta homeland. The encroachment in turn acted as a catalyst for bringing many alterations to the Agta system. The earlier physical distance between the Agta forest home and outside agricultural settlements was virtually eliminated and consequently the Agta experienced intensive contact with a multi-ethnic and polyglot population. The net immigration of outside population raised the population density of the area many fold. The chain of events of agricultural and mercantile encroachment and expansion affected the original ratio of
of the Agta to their resources. This multiplicity of factors provided the major impetus for wide scale transformation among the Agta.

The presence of a large outside population in the forest home of the Agta which initiated the trend toward undersufficiency in their foraging subsistence also opened up new avenues for economic pursuits. The intensive interaction of the Agta with agricultural and mercantile people resulted in the intensification of a number of non-foraging economic strategies by the Agta. The most important of these practices is the trade of forest items, particularly the meat of wild animals or fish. Animal protein enjoys a ready and reliable market and has a high market value. As the volume of their trade of animal protein increases, so does their dependence on, and taste for, outside domestic cereals. In particular areas, Agta have institutionalized their trade partnerships with specified outsiders in the hope that they will obtain a regular supply of cereals. Generally speaking, today's Agta experience a deficit of domesticated cereals and they trade their animal protein even when they have a deficit of animal protein.

To supplement the import of domesticated cereals, Agta are increasingly engaging themselves in a second important non-traditional economic activity, horticulture. They clear primary and secondary forests along the river terraces in small patches. Closely related kinsmen of a band clear a cluster of gardens in an area separate from the gardens of the more distant kinsmen of another band. They practise a long fallow cycle of shifting cultivation to plant mainly upland rice, corn, sweet potato and cassava. Agta apply a foraging strategy in harvesting the cultivated crops; they harvest in portions that are required for the day and share the produce among families.
Following the development of intensive Agta-outsider relationships, the Agta were drawn into, and in some cases pushed into, the practice of wage labor. They work as porters and household or agricultural laborers for outside agricultural people and as guides for mercantile people. A few Agta bands, who live close to the agricultural settlements, have become very dependent on this non-foraging activity.

Depending on their nearness to agricultural settlements and depending on the locally available economic opportunities, the Agta groups of Isabela show a differential degree of incorporation of these new economic strategies. Some Agta bands derive up to eighty percent of their total caloric intake from these non-foraging strategies.

The consequences of the external encroachment on the Agta area as well as the increased dependency of the Agta on outsiders are numerous and generally negative. The rampant exploitation of the area for agricultural and mercantile purposes have generated both qualitative and quantitative changes of the rain forest home of the Agta, and consequently have made the ecosystem increasingly fragile. If selective logging is initiating vegetative succession, the areal expansion of agricultural population is completing the process. The permanent field agriculturalists, who become incipient horticulturalists, do not know how to maintain the balance of an upland rain forest agro-ecosystem; they do not follow the required shifting cycle and multi-field pattern. Thus their spatial expansion brings the succession of primary forest into grassland.

The continuing perturbation of the forest ecosystem affects the plant and animal resources of the Agta. The increasing trend of deforestation and thus diminution of Agta forest area further lowers the
ratio of traditional resources to Agta. Further, the non-Agta people are increasingly exploiting what were traditionally Agta resources. Over-exploitation of these resources both by the Agta and outsiders is bringing about their depletion. To offset the declining return from traditional resources, Agta are intensifying the exploitation and trade of other forest and marine items such as copal resin, rattan, shellfish, and orchids. However, in the last two decades, the government has concessionized the exploitation and sale of some of these trade items and the concessionaires are becoming more willing to hire non-Agta people to exploit these resources.

The intensive dependence on non-foraging economic strategies bring their own consequences for the Agta. Their preference for domestic carbohydrates, either grown by themselves or obtained from outside, is diminishing the importance of traditional carbohydrate resources such as caryota palm and wild tubers. In their effort to practise more effectively their trade of animal protein, Agta are indiscriminately borrowing from the new technology tools such as shotguns, dynamite and commercial poisons and are dropping the traditional tool complex. Today their economy is monetized and consumerism and alcoholism have developed. In short, they have lost their age-old economic autonomy.

Economic dependency has brought about an economically biased relation of Agta with outsiders. The outsiders, for whom economic relation with the Agta are not vital, exploit the economic helplessness of the latter. The outsiders control the market of trade goods and fix the rate of exchange. Because of their unfamiliarity with units of exchange and little knowledge of arithmetic, the Agta oftentimes are further cheated. Not infrequently, Agta are caught in a downward
spiral of indebtedness to outsiders and are further abused by demands on their labor. The unguarded Agta swiddens are the easiest target for agricultural expansion. Because they have neither the means nor intent for legal reprisal, the Agta are preempted from their land.

The ecological and economic problems of the Agta have parallel consequences in their socio-cultural realms. In their intensive interaction with outsiders, the Agta have experienced heavy acculturation. They have been exposed to different structures, organizations, values, norms and ideologies, which are bringing fundamental changes to their traditional socio-cultural system. In their pursuits of a non-foraging economy, they spend proportionately less time in foraging. Thus, some of the traditional socio-cultural mechanisms such as mobility are becoming less crucial. Moreover, the constraints of non-foraging strategies like horticulture and wage labor inhibit the continuing practice of traditional socio-cultural patterns.

Parallel to the asymmetrical economic relations of the Agta is their biased position in socio-symbolic relationships with outsiders. Today, the social stigma attached to the Agta for being non-agriculturalists has become more evident to, and intensely experienced by, the Agta. To outsiders who define social position on the basis of technological levels, the Agta occupy the lowest position in the social hierarchy. Traditionally animist, the Agta also feel endangered in their dealings with those they consider to be symbolically more powerful; those lowland animists who practise witchcraft and sorcery. With folk Catholics, the Agta have always felt inferior. In order to help offset the social dominance of the outsiders, and perhaps to alleviate some of the symbolic anxieties, the Agta are trying their best to emulate the outsiders.
They imitate outsiders in dress, speech, and a few economic activities, and often dissociate themselves from the more traditional Agta by calling them "wild." But because their contrasting physical features cannot be erased, they remain alienated from the outside social mainstream and continue to occupy a socially and symbolically subordinate position.

In spite of their dramatic transformation, the Agta are the most traditional foraging group of the Philippine Negritos and represent one of the few surviving hunter-gatherer societies in Asia. An ethnographic undertaking among hunter-gatherers like the Agta, whose culture is rapidly disappearing today, is first of all a contribution to the hunter-gatherer and, more generally to the ethnological literature. This study is not however simply a "salvage" ethnography, but also purports to have wider theoretical implications with respect to understanding human societies and how they change.

The wider theoretical contribution of the present anthropological study is towards a realization in detail, although by no means a complete realization, of a systems analysis. Borrowing the general notion of a systems perspective, this study has aimed at a holistic and systemic analysis of the Agta system and its change. Reflecting the fact that a society maintains or changes itself in a holistic manner, this study has emphasized the ecological, economic and socio-cultural realms of the traditional and transitional systems of the Agta. Similarly, a multitude of systemic reciprocities within and between the physical and socio-cultural components of the Agta system have been analyzed. This study also attempts to document the often intricate
interrelationships among the various Agta groups and extensive exchanges between the Agta and non-Agta societies of the regional system.

This study also makes a conscious effort to delineate the investigator's and insider's understandings of the Agta world. The ethnographer's description of the various aspects of the Agta is supported or supplemented by the analysis of folk taxonomies, and terminologies as well as the verbal appraisal of the informants themselves. Additionally, this study integrates in its analysis different mid-level theories and concepts from various traditionally non-anthropological fields of study.

The present study is a study of social change. Being a study on one of a few surviving hunter-gatherer societies, it illuminates the rapid transformations of the technologically simple societies of the world. While the degree and nature of transformation in human societies vary, the basic principles by which these societies change are cross-cultural. They all change due to complex conditions, by systemic processes and often with unanticipated consequences. These basic principles are relatively easily discernable in a study of change among contemporary hunter-gatherers like the Agta. It is hoped that this study adds a few new dimensions to the general understanding and toward a realization of a cross-cultural model of change in human societies.
12. THE AGTA FUTURE

For the Agta, the present ecological, economic, and socio-symbolic problems are, to say the least, dramatic. They are coping with these conditions as best they can by a compromise between traditional and non-traditional strategies. Simply put, the Agta have become too dependent to stand on their own. One would expect that such a situation as well as the perception by outsiders that Agta are socially inferior would necessarily create apprehension among the Agta. At a very human level, the Agta dilemma is to try to reconcile themselves to what they have become, particularly to their loss of economic autonomy with its accompanying negative psychic consequences.

This anthropological study has concluded that the root cause of the Agta problems in the past and today lies in the exogenous intervention in their system. The present trend indicates that the external encroachment on the Agta rain forest home will continue at an accelerated pace in the future. Thus, it is very likely that the transformation of the Agta system will also continue at an accelerated pace.

Although it is desirable, one cannot expect countries like the Philippines to put a complete ban on mercantile operations in forest areas like that of the Agta. There are larger national interests that tend to undermine any desire to protect indigenous people or their culture. Forest related industries are the source of much needed foreign exchange. They also provide employment and vital raw materials for domestic consumption. Thus in spite of their rapidly shrinking forest
area, these countries must continue to exploit it. In short, the present economic concern outweighs any long-term ecological considerations related to the mercantile activities.

In their growing concern to manage the forest system and minimize the adverse impacts, the Philippine government is looking into agrosilvicultural alternatives such as planting of leguminous trees. While effective implementation of these programs may retard the current rate of ecological degradation and help solve some of the future economic problems (e.g., firewood), it must be said here that this may not be a realistic solution to the problems of indigenous people. For foragers like the Agta, such new "forests" will probably be devoid of their traditional plant resources. Their game animals, who live in the natural forests, may become extinct in spite of the new forest cover. Thus, replacement of primary forest with agrosilvicultural planting does not solve their resource problem. If they chose to depend on the planting and marketing of these commercial trees, an unassured market can easily bring another catastrophe. The subsistence people may simply be displaced from these commercial plantations by outsiders.

Another problem, in addition to mercantile exploitation of the forest, is the encroachment of agricultural populations. The rural to urban migration has long been considered a serious problem in the Philippines and has received considerable attention. On the other hand, its "wave effect" in the form of rural to rural migration to the frontier has received little attention. However, the available evidence suggests that the frontier immigrants are encroaching on forest areas such as that of the Agta for reasons of compulsion rather than choice. The
conditions of overpopulation and underproduction have always led to displacement of people. The "emptiness" of the frontier is well known and immigrants come to take refuge. The government itself in order to redistribute the population so as to relieve the pressure on land provides impetus for pioneers to resettle in these remote areas (see Fernandez 1972). Frontier immigration is not simply a matter of economics. It is also a reminder of political upheavals elsewhere. For example, the Huk Rebellion of the early half of this century resulted in the mass immigration of an allegedly dissident population (Kirkvliet 1979). Some of the immigrants are themselves victims of ecological degradation of their area; they were forced to come to these frontiers after their area was destroyed by deforestation, siltation or inundation. At any rate, it is to be expected that immigration and encroachment of the forest area of the Agta will continue in the future.

While the future of the Agta hinges very much on the intensity with which the incursions of others on their homeland continue, they do not, and will not, in any foreseeable set of circumstances, have the power to stop this encroachment. The Agta are politically a very fragmented group. They have no unifying political hierarchy, no ties of alliance or loyalty or other formal political organizations (Bennagen 1969a:6). Political individualism cripples the ability of the Agta in forming a united front and thus posing any political threat to outsiders. As a result, they do not have the political clout needed to discourage the course of mercantile or agricultural expansion in their area.

How then will the Agta cope in the future? What economic choices do the Agta have and how will these choices determine future changes? What parallel or subsequent socio-cultural changes must the Agta seek?
If one could assume that the principles on which the Agta system main-
tains and changes itself today would remain generally operative in the
future too, one would foresee a continued compromise between traditional
and non-traditional economic strategies. This strategy of economic
survival will require a further socio-cultural shift away from the
traditional Agta structure, organization, values and norms.

The Agta could further intensify their traditional socio-cultural
mechanisms to counter the declining return of their traditional resources.
For example, increased camp mobility to exploit relatively depleted
resources could possibly bring a better return of their traditional
resources. The problem however is that increased mobility is already
constrained by factors which are not conducive to nomadism such as
their practice of horticulture and wage labor. Or, the Agta could
borrow more foreign technology such as shotguns and dynamite which
probably would allow greater exploitation of their traditional resources
(see Salisbury 1962:109-110). However, the intensive use of foreign
technology without tailoring it to indigenous needs can bring about the
depletion of the resources themselves (Hames 1979:246).

Intensification of trade with outsiders has often been a preferred
strategy of economically marginal people to offset their declining
resources (Murphy and Steward 1956). Among the traditionally foraging
people of the Philippines, the intensive trade of copal resin by the
Batak, who derive approximately one-third of their total caloric intake
from it (Eder 1978:59), is the best example. For the Agta too, the
further intensification of their trade with outsiders could be one of
their future economic alternatives for solving their continuing economic
undersufficiency.
There is no evidence to suggest that the market for the meat of wild animals will decline in the foreseeable future. It is probable that the generally frugal sedentary agriculturalists will attempt to procure their own animal protein with new technologies such as shotguns, motor boats, etc. However, given that the agricultural and mercantile populations in this frontier will continue to rise, it appears that Agta need not worry that they will glut the market. The Agta could also continue to intensify their trade of copal resin, rattan or shellfish. The only problem of the intensification of trade however is that these are potentially exhaustible resources. Any intensive exploitation of these resources could exacerbate their rate of depletion.

The Agta could escape from contributing directly to the degradation of their ecosystem, if they were to take particular kinds of wage employment. For example, intensive dependence on the practice of agricultural labor could be a way to make up their domesticated carbohydrate deficit without contributing to the ecological degradation. It is also attractive to them today as it pays relatively good wages. It must however be recalled that this opportunity is available only during the harvest time of some crops. Furthermore, the unskilled Agta ultimately could lose this employment when the agricultural homesteaders themselves reach a point of underemployment and so discontinue hiring the Agta.

The intensification of trade and wage labor as long-term economic pursuits could face even broader problems. These options would probably mean that the Agta must become further dependent on outsiders. This could bring about spiraling indebtedness and consequently further economic exploitation. Particular Agta groups, who have chosen to depend on wage
labor alone, have entered a semi-servitude relationship to outsiders (Headland 1975b:251) and other groups would be equally vulnerable to socioeconomic subjugation.

Since each and every above mentioned economic option of the Agta will likely face a number of specific and general problems, to pursue any single one will not be an optimal long-term response of the Agta. The Agta informants themselves seem to be aware that choosing only one or a few options is a risky proposition and that holding onto all options is a better strategy.

Specialization in a particular economic resource is also against the traditional economic norm of the hunter-gatherers like the Agta. Because they exploit and depend on broad spectrum resource bases, the traditional exploitative strategy of the Agta is that of the "generalist"; they exploit a wide range of resources, including the less preferred ones, to acquire a predictable return. The Agta are also "opportunists" in the sense that they switch their course of action to take advantage of available opportunities (see Silberbauer 1981:191-192). It seems probable that the "generalist" and "opportunist" Agta will practise a compromise economic subsistence that will combine both traditional and non-traditional economic strategies.

The present indications are that within the general framework of the Agta economics of flexibility, horticulture will probably occupy the economically pivotal position. That is, as hunting in the past and trade today play the important role, horticulture will probably be the most consistent activity with which the future economy of the Agta will be identified and on which other economic activities will be orchestrated.
To say that horticulture will be the pivotal economic activity of the Agta in the future is not to say that its practice does not face problems. It is only to say that the type of horticulture will probably be the best option available to them. Aside from agricultural and household wage labor, horticulture is the alternative that would be least affected by the ecological degradation of the Agta forests (see Brosius 1981: 122, 233, 238); as long as there is land area to allow a suitable fallow period, it can have long-term sustainability (Pelzer 1945:23; Conklin 1969:336). Unlike trade and wage labor, horticulture allows the Agta to deemphasize their undesirable economic dependence on outsiders, and to escape the socioeconomic dominance of outsiders. Horticulture could be one way for Agta to remove some of the previously mentioned social stigma, for its practice will confer some social prestige on the Agta.

A successful adaptation to a non-forest economy, particularly horticulture, can take place only when there are simultaneous or successive macro-changes in the socio-cultural realms. Often these macro-shifts can mean accepting not only alien concepts but also accepting some that are inherently contradictory to the traditional ones. Such economic changes thus can be costly to societies like the Agta. While the Agta probably would experience problems in a multitude of cases, they will surely face contradictions in three particular shifts, namely, settlement pattern, concept of property, and resource allocation.

Mobility is crucial to the Agta, who have traditionally used space extensively. Understandably, it is part of the "fabric of Agta culture" (W. Peterson 1981:51), and "second nature to the Agta" (Bennagen 1977b: 188). Primarily due to nomadism, Agta traditionally live in small bands
and in temporary camps. Horticulture requires considerably less mobility
than hunting and gathering. In addition to the relative permanence in
settlement among horticultural people, they generally live in relatively
closed hamlets and in a higher population density than that of hunter-
gatherers (see Harris 1972).

The trend toward sedentarization among the Agta can also lead to
other sociopolitical incompatibilities. For example, in the event that
the kinship network changes, the families today can quickly and easily
alternate their residence affiliation. They will lose this luxury once
they have to live in a relatively permanent settlement and in permanent
houses. It is possible that the Agta will not be able to maintain social
cohesion in large settlements where both kinsmen and non-kinsmen must
live together. These factors may explain why the resettlement effort
among the Agta by the military and other government agencies such as the
Panamin have failed so far.

An emphasis on horticulture by hunter-gatherers like the Agta is
also likely to require a shift in the concept of private property.
Because of their non-corporateness, the Agta have a poorly developed
concept of ownership of their estates or the material resources of the
estates. They also have few movable or immovable possessions. Their
private ownership is limited to a few personal (clothes, ornaments, bow
and arrow, etc.) and household (lean-to, cooking pots, dog, etc.) goods,
which are widely shared by members of the band. They are "primitive
communists" (Radcliffe-Brown 1932) in the sense that there is limited
private property in the resources of nature and in the means of produc-
tion (Service 1966:24). As for the swidden land, ownership is generally
premised on use and relinquished easily (Bennagen 1977a:15-19).
Horticultural people tend to accumulate some amounts of movable and immovable properties and have a relatively well developed concept of private personal properties. While their concepts of land tenure vary depending upon the man-to-land ratio and the types of crops they cultivate, horticultural people must have relatively better stipulations regarding land tenure. Shortage of land area and the need for capital investment on a particular piece of land may require that one be tied to a defined piece of land and stake claim on it (Yengoyan 1971:366-371).

In Isabela, the Agta find that they are preempted by the outsiders, particularly the agricultural population, but the latter usually do not relinquish the right to land even after it is fallowed (Bennagen 1977a:15). Thus, the Agta themselves have started claiming long-term rights on their swidden land. This shift from a norm where the concept of private property was absent to one where it is deemed essential entails a number of incompatibilities with the traditional Agta way of life. If they should stay permanently in and around their pieces of land, it will inhibit their foraging and mobility patterns. They may also have to compete with kinsmen over land resources and defend them from non-kinsmen.

Another fundamental distinction between hunter-gatherers and horticulturalists is in their allocation of resources. The Agta, like most other hunter-gatherers, regard saving and surfeit accumulation as hoarding and as such a cardinal sin (Sahlins 1965:215-218). Thus, there is the sharing of foods, including harvested crops. The sharing norm is generally deemphasized among horticultural people, whose reciprocity is structured on a *quid pro quo* basis. If there is unequal reciprocity, it
confers power and prestige on the giver and debt obligation to the receiver. Otherwise, the value of sharing is substituted for by the opposite value of saving. From sharing to saving is a radical shift. If Agta are to begin saving, they will then be caught between the effects of social pressure in forcing them to an immediate expenditure of surfeit and their recognition of the possible transformation of surfeit to saving (Peterson 1978a:111). The widespread practice of saving and thus accumulation of food resources can also cripple their pattern of mobility (see Lee et al. 1968:106). Since sharing is an important mechanism in preserving social cohesion among the Agta today, the practice of saving can bring social disruption.

In conclusion, the future economic survival of the Agta will depend on their successful incorporation of non-foraging economic strategies. As these new economic pursuits bring their own constellation of values, beliefs and constraints that are often in conflict with the old order, the Agta must reconcile the various dissonances. These changes will surely incur heavy organizational costs to the Agta, and bring dilemmas and confusion. If the past Agta story was one of autonomy and stability, the present crisis is one of dependency and compromise. Their future emphasis away from the forest and toward field is likely to be one full of contradictions and problems.
Appendix 1: Population Distribution of the Agta Negritos of Eastern Isabela
(by municipality)

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Municipality</th>
<th>Population Distribution</th>
<th>Average Distance from nearest Watershed</th>
<th>% of Families</th>
<th>Swid-</th>
<th>Not Swid-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>River Camp</td>
<td>Population</td>
<td>Agta camp (km.)</td>
<td>Agri. barrio (km.)</td>
<td>Logging camp (km.)</td>
</tr>
<tr>
<td>Jones</td>
<td>1/2</td>
<td>1</td>
<td>30</td>
<td>35.0&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16.0</td>
<td>?&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
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<td>San Mariano</td>
<td>4&amp;1/2</td>
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<td>332</td>
<td>3.6</td>
<td>8.8</td>
<td>5.5</td>
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<tr>
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</tr>
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<td>14.0</td>
<td>14.0</td>
</tr>
<tr>
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<td>26</td>
<td>441</td>
<td>5.2</td>
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<td>7.0</td>
</tr>
<tr>
<td>Dinapigue</td>
<td>2</td>
<td>2</td>
<td>45</td>
<td>17.0</td>
<td>2.0</td>
<td>?</td>
</tr>
<tr>
<td>Palanan&lt;sup&gt;d&lt;/sup&gt;</td>
<td>6</td>
<td>21</td>
<td>669</td>
<td>4.9</td>
<td>3.0</td>
<td>?</td>
</tr>
<tr>
<td>Coastal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divilacan</td>
<td>13</td>
<td>16</td>
<td>230</td>
<td>3.0</td>
<td>2.4</td>
<td>3.0</td>
</tr>
<tr>
<td>Maconacon</td>
<td>13</td>
<td>15</td>
<td>259</td>
<td>3.7</td>
<td>6.6</td>
<td>11.6</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>34</td>
<td>54</td>
<td>1,203</td>
<td>4.2</td>
<td>3.8</td>
<td>10.3</td>
</tr>
<tr>
<td>Isabela</td>
<td>8</td>
<td>42</td>
<td>80</td>
<td>1,644</td>
<td>4.5</td>
<td>6.8</td>
</tr>
</tbody>
</table>

Notes:

a. The census was conducted in the Agta language by the field worker himself.
b. A pedometer strapped on the field worker's belt was used to measure distances.
c. Unknown or not calculated.
d. The population figure for the Palanan Municipality was provided by the Panamin agent, Mr. Hilarion Gonzales.
Appendix 2: Population Distribution of the Agta Negritos of Eastern Isabela
(by linguistic group)

<table>
<thead>
<tr>
<th>Linguistic group</th>
<th>Local linguistic group</th>
<th>River valley</th>
<th>Camp</th>
<th>Population</th>
<th>No. of Families</th>
<th>% of household</th>
<th>type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Nuclear</td>
</tr>
<tr>
<td>Ilaqnin-Dikamey</td>
<td>Valley</td>
<td>1&amp;1/2</td>
<td>8</td>
<td>69</td>
<td>80</td>
<td>149</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>1&amp;1/2</td>
<td>8</td>
<td>69</td>
<td>80</td>
<td>149</td>
<td>38</td>
</tr>
<tr>
<td>Disabungan-Dipagsénghan</td>
<td>Valley</td>
<td>1&amp;1/2</td>
<td>6</td>
<td>67</td>
<td>71</td>
<td>138</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Coastal</td>
<td>3&amp;1/2</td>
<td>7</td>
<td>118</td>
<td>121</td>
<td>239</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>4&amp;1/2</td>
<td>13</td>
<td>185</td>
<td>192</td>
<td>377</td>
<td>88</td>
</tr>
<tr>
<td>Palanan-Divilacan</td>
<td>Valley</td>
<td>2</td>
<td>6</td>
<td>34</td>
<td>41</td>
<td>75</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Coastal</td>
<td>18&amp;1/2</td>
<td>33</td>
<td>385</td>
<td>396</td>
<td>781</td>
<td>193</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>20&amp;1/2</td>
<td>39</td>
<td>419</td>
<td>437</td>
<td>856</td>
<td>209</td>
</tr>
<tr>
<td>Macaconon-Abuan</td>
<td>Valley</td>
<td>3</td>
<td>6</td>
<td>37</td>
<td>42</td>
<td>79</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Coastal</td>
<td>12</td>
<td>14</td>
<td>96</td>
<td>87</td>
<td>183</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>15</td>
<td>20</td>
<td>133</td>
<td>129</td>
<td>262</td>
<td>65</td>
</tr>
<tr>
<td>Isabela</td>
<td></td>
<td>7</td>
<td>42</td>
<td>80</td>
<td>806</td>
<td>838</td>
<td>1,644</td>
</tr>
</tbody>
</table>
Appendix I: Shared Basic Vocabulary Among Particular Languages

<table>
<thead>
<tr>
<th>Languages</th>
<th>Casiguran</th>
<th>Palanacan-Divilacan</th>
<th>Maconacon-Abuan</th>
<th>Disabungan-Dipausángban c</th>
<th>Ilagin-Dikaméy</th>
<th>Ilokano</th>
<th>Tagalog</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casiguran</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palanacan-Divilacan</td>
<td></td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maconacon-Abuan</td>
<td></td>
<td></td>
<td>87</td>
<td></td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disabungan-Dipausángban c</td>
<td></td>
<td></td>
<td></td>
<td>71</td>
<td>? b</td>
<td>43</td>
<td>46</td>
</tr>
<tr>
<td>Ilagin-Dikaméy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>45</td>
<td>42</td>
<td>41</td>
</tr>
<tr>
<td>Ilokano</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tagalog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>47</td>
<td>42</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

b. Not calculated.
c. Double lines are to delineate the main group studied by the investigator.
Appendix 4: Terms of Reference Among the Disabungan Agta

Notes:

a. The non-italicized terms designate Ego's kindred.
b. The italicized terms designate Ego's affines.
c. Four of the terms—apo, idas, kuyong, and kahilayan—are reciprocal.
d. Some speakers alternate the terms, manyang and katingan for child's spouse.
Appendix 5: Work-Non-Work Ratio Among A Band of Disabungan Agta
(per economically active person per day)

Total Mandays of Observation: 451

<table>
<thead>
<tr>
<th>Observation group</th>
<th>Computed average daily</th>
<th>Adjusted average daily</th>
<th>Adjusted ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of work (^a)</td>
<td>% of non-work</td>
<td>% of work (^b)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>23.0</td>
<td>77.0</td>
<td>11.1</td>
</tr>
<tr>
<td>Married</td>
<td>35.1</td>
<td>64.9</td>
<td>21.1</td>
</tr>
<tr>
<td>Average</td>
<td>32.2</td>
<td>67.8</td>
<td>18.9</td>
</tr>
<tr>
<td></td>
<td>21.6</td>
<td>78.4</td>
<td>9.9</td>
</tr>
<tr>
<td>Female</td>
<td>15.6</td>
<td>84.4</td>
<td>5.1</td>
</tr>
<tr>
<td>Married</td>
<td>17.3</td>
<td>82.7</td>
<td>6.5</td>
</tr>
<tr>
<td>Average</td>
<td><strong>23.9</strong></td>
<td><strong>76.1</strong></td>
<td><strong>12.1</strong></td>
</tr>
</tbody>
</table>

Notes:

a. See n8 for the definition of "working time"; the working time is taken here as the "computed work".

b. Based on the observation that approximately thirty-three percent of the working time is spent leisurely, the "adjusted work" is calculated by subtracting the percentage from the computed work.

c. The average is taken from the available male work force (age 9 and above) of the band.
Appendix 6: Work Activity Schedule Among a Band of Disabungan Agta

(per economically active person per activity)

Total Manhours of Observation: 2,593

<table>
<thead>
<tr>
<th>Observation group</th>
<th>Average daily work (hrs.)</th>
<th>Hunting</th>
<th>Gathering</th>
<th>Fishing</th>
<th>Trading</th>
<th>Swiddening</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td><strong>Marital status</strong></td>
<td><strong>Unmarried</strong></td>
<td><strong>Married</strong></td>
<td><strong>Average</strong></td>
<td><strong>Unmarried</strong></td>
<td><strong>Married</strong></td>
<td><strong>Average</strong></td>
</tr>
<tr>
<td>Male</td>
<td>Unmarried</td>
<td>5.52</td>
<td>74.2</td>
<td>2.2</td>
<td>9.2</td>
<td>2.6</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>8.42</td>
<td>74.6</td>
<td>0.3</td>
<td>0.9</td>
<td>18.1</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>7.73</td>
<td>74.5</td>
<td>0.6</td>
<td>2.5</td>
<td>15.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Female</td>
<td>Unmarried</td>
<td>5.18</td>
<td>0.5</td>
<td>27.4</td>
<td>4.2</td>
<td>49.3</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>3.74</td>
<td>13.2</td>
<td>22.9</td>
<td>7.0</td>
<td>23.6</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>4.15</td>
<td>8.5</td>
<td>24.6</td>
<td>6.0</td>
<td>33.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Agta</td>
<td></td>
<td>5.74</td>
<td>48.0</td>
<td>10.3</td>
<td>3.8</td>
<td>22.5</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Notes:

a. The average is taken from the available male work force (age 9 and above) of the band.
Appendix 7: Hunting Activity of a Band of Disabungan Agta

Total days of Observation: 64
Total days of Hunting: 53
Total manhours of Hunting: 3,805
Total hunting trips: 48

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant/person time:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult man</td>
<td>110</td>
<td>73.8</td>
</tr>
<tr>
<td>Adult woman</td>
<td>21</td>
<td>14.1</td>
</tr>
<tr>
<td>Young boy</td>
<td>18</td>
<td>12.1</td>
</tr>
<tr>
<td>Size of hunting party:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One person party</td>
<td>10</td>
<td>20.8</td>
</tr>
<tr>
<td>Two person party</td>
<td>16</td>
<td>33.3</td>
</tr>
<tr>
<td>Three person party</td>
<td>6</td>
<td>12.5</td>
</tr>
<tr>
<td>Four or more person party</td>
<td>16</td>
<td>33.4</td>
</tr>
<tr>
<td>Tool:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shotgun</td>
<td>66</td>
<td>44.3</td>
</tr>
<tr>
<td>Bow and arrow</td>
<td>60</td>
<td>40.3</td>
</tr>
<tr>
<td>Machete</td>
<td>5</td>
<td>3.4</td>
</tr>
<tr>
<td>None</td>
<td>18</td>
<td>12.0</td>
</tr>
<tr>
<td>Technique:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collective</td>
<td>14</td>
<td>27.4</td>
</tr>
<tr>
<td>Individual (day time)</td>
<td>30</td>
<td>58.8</td>
</tr>
<tr>
<td>Individual (night time)</td>
<td>7</td>
<td>13.7</td>
</tr>
<tr>
<td>Hunting ground:</td>
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<td></td>
</tr>
<tr>
<td>Outside 3 km. of swidden</td>
<td>11</td>
<td>22.9</td>
</tr>
<tr>
<td>Within 3 km. of swidden</td>
<td>37</td>
<td>77.1</td>
</tr>
<tr>
<td>Game killed:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild pig</td>
<td>21</td>
<td>60.0</td>
</tr>
<tr>
<td>Deer</td>
<td>9</td>
<td>25.7</td>
</tr>
<tr>
<td>Monkey</td>
<td>5</td>
<td>14.3</td>
</tr>
<tr>
<td>Consumption/Trade ratio:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild pig</td>
<td></td>
<td></td>
</tr>
<tr>
<td>consumed (kg.)</td>
<td>305</td>
<td>58.4</td>
</tr>
<tr>
<td>traded (kg.)</td>
<td>217</td>
<td>41.6</td>
</tr>
<tr>
<td>Deer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>consumed (kg.)</td>
<td>56</td>
<td>24.7</td>
</tr>
<tr>
<td>traded (kg.)</td>
<td>171</td>
<td>75.3</td>
</tr>
<tr>
<td>Trade partner:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent agriculturalist</td>
<td>5</td>
<td>26.3</td>
</tr>
<tr>
<td>Mercantile group</td>
<td>14</td>
<td>73.7</td>
</tr>
</tbody>
</table>
Appendix 8: Height and Weight of the Agta Adult
(by sex)

<table>
<thead>
<tr>
<th>Agta group</th>
<th>Average height (ft.)</th>
<th>Average weight (lbs.)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palanan</td>
<td>5'1&quot; 4'7&quot;</td>
<td>95.0 96.0</td>
<td>M. Hanna (Field notes)</td>
</tr>
<tr>
<td>Casiguran</td>
<td>5'1&quot; 4'7&quot;</td>
<td>90.0 75.0</td>
<td>Vanoverbergh (In Wastl 1957: 806-807)</td>
</tr>
<tr>
<td>Casiguran</td>
<td>5'2&quot; 4'8&quot;</td>
<td>102.0 84.0</td>
<td>Headland (1981a:4)</td>
</tr>
<tr>
<td>Agta</td>
<td>5'1&quot; 4'7&quot;</td>
<td>96.0 85.0</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 9: Food Energy Conversion Table

(per 100 grams of raw food)

<table>
<thead>
<tr>
<th>Food item</th>
<th>Food energy (kcal.)</th>
<th>Protein (gm.)</th>
<th>Fat (gm.)</th>
<th>Carbohydrate (gm.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild pig meat</td>
<td>307.0</td>
<td>12.2</td>
<td>28.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Deer meat</td>
<td>94.0</td>
<td>21.9</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Monkey meat</td>
<td>200.5</td>
<td>17.1</td>
<td>14.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Fish (kulapia)</td>
<td>112.0</td>
<td>17.5</td>
<td>4.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Eel</td>
<td>95.0</td>
<td>17.5</td>
<td>2.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Fresh water shrimp</td>
<td>83.0</td>
<td>16.6</td>
<td>1.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Shellfish</td>
<td>97.0</td>
<td>9.4</td>
<td>0.8</td>
<td>12.2</td>
</tr>
<tr>
<td>Small crab</td>
<td>126.0</td>
<td>13.8</td>
<td>3.8</td>
<td>8.1</td>
</tr>
<tr>
<td>Wild yam (ilus)</td>
<td>103.0</td>
<td>1.9</td>
<td>0.1</td>
<td>25.2</td>
</tr>
<tr>
<td>Wild yam (balo)</td>
<td>112.0</td>
<td>1.2</td>
<td>0.0</td>
<td>28.3</td>
</tr>
<tr>
<td>Caryota palm</td>
<td>316.0</td>
<td>0.5</td>
<td>0.0</td>
<td>88.2</td>
</tr>
<tr>
<td>Honey</td>
<td>304.0</td>
<td>0.3</td>
<td>0.0</td>
<td>82.3</td>
</tr>
<tr>
<td>Fern shoot</td>
<td>37.0</td>
<td>3.8</td>
<td>2.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Palm/rattan shoot</td>
<td>27.0</td>
<td>2.0</td>
<td>0.7</td>
<td>4.5</td>
</tr>
<tr>
<td>Guava</td>
<td>124.0</td>
<td>1.0</td>
<td>0.4</td>
<td>32.5</td>
</tr>
<tr>
<td>Palm/rattan fruit</td>
<td>79.0</td>
<td>0.6</td>
<td>1.2</td>
<td>18.6</td>
</tr>
<tr>
<td>Citrus fruit</td>
<td>59.0</td>
<td>0.5</td>
<td>0.3</td>
<td>15.3</td>
</tr>
<tr>
<td>Wild banana</td>
<td>90.0</td>
<td>1.3</td>
<td>0.3</td>
<td>23.2</td>
</tr>
<tr>
<td>Rice (undermilled)</td>
<td>362.0</td>
<td>8.5</td>
<td>2.0</td>
<td>76.9</td>
</tr>
<tr>
<td>Corn</td>
<td>386.0</td>
<td>8.8</td>
<td>4.3</td>
<td>80.9</td>
</tr>
<tr>
<td>Cassava</td>
<td>141.0</td>
<td>0.7</td>
<td>0.1</td>
<td>34.3</td>
</tr>
<tr>
<td>Sweet potato</td>
<td>136.0</td>
<td>1.1</td>
<td>0.4</td>
<td>32.3</td>
</tr>
<tr>
<td>Squash</td>
<td>34.0</td>
<td>1.9</td>
<td>0.4</td>
<td>7.3</td>
</tr>
<tr>
<td>Eggplant</td>
<td>24.0</td>
<td>1.0</td>
<td>0.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>44.0</td>
<td>0.1</td>
<td>0.2</td>
<td>11.9</td>
</tr>
<tr>
<td>Sardine (canned)</td>
<td>202.0</td>
<td>19.2</td>
<td>13.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Coffee (powder)</td>
<td>357.0</td>
<td>17.8</td>
<td>1.3</td>
<td>68.6</td>
</tr>
<tr>
<td>Sugar</td>
<td>346.0</td>
<td>2.2</td>
<td>0.2</td>
<td>83.9</td>
</tr>
<tr>
<td>Cracker biscuit</td>
<td>481.0</td>
<td>7.5</td>
<td>19.4</td>
<td>69.0</td>
</tr>
<tr>
<td>Liquor (distilled)</td>
<td>37.0</td>
<td>0.2</td>
<td>0.3</td>
<td>7.4</td>
</tr>
</tbody>
</table>

**Notes:**

a. The table is based on the food composition data provided by the Food and Nutrition Research Institute, Manila (see FNRI 1968). This conversion is an approximation and involves some margin of uncertainty.

b. The above list of food items are those consumed by the Disabungan Agta.
Appendix 10: Class Contribution to the Diet of a Band of Disabungan Agta

(by family)

<table>
<thead>
<tr>
<th>Family</th>
<th>Caloric contribution per class</th>
<th>Caloric contribution per class</th>
<th>Caloric contribution per class</th>
<th>Caloric contribution per class</th>
<th>Caloric contribution per class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hunting kcal. (%)</td>
<td>Gathering kcal. (%)</td>
<td>Fishing kcal. (%)</td>
<td>Trade kcal. (%)</td>
<td>Swiddening kcal. (%)</td>
</tr>
<tr>
<td>I</td>
<td>74,919.3 (24.8)</td>
<td>46,135.3 (15.3)</td>
<td>2,340.0 (0.8)</td>
<td>158,850.2 (52.8)</td>
<td>18,512.0 (6.2)</td>
</tr>
<tr>
<td>II</td>
<td>71,347.4 (21.7)</td>
<td>67,628.0 (20.9)</td>
<td>3,887.8 (1.2)</td>
<td>171,884.4 (52.6)</td>
<td>12,220.0 (3.7)</td>
</tr>
<tr>
<td>III</td>
<td>68,055.8 (25.4)</td>
<td>37,059.5 (13.9)</td>
<td>5,552.0 (2.1)</td>
<td>141,682.4 (53.0)</td>
<td>15,023.0 (5.6)</td>
</tr>
<tr>
<td>IV</td>
<td>68,226.0 (19.7)</td>
<td>52,888.0 (15.1)</td>
<td>7,842.0 (2.2)</td>
<td>212,147.6 (60.5)</td>
<td>9,391.0 (2.6)</td>
</tr>
<tr>
<td>Agta</td>
<td>282,548.5 (22.6)</td>
<td>203,710.8 (16.4)</td>
<td>19,621.0 (1.6)</td>
<td>684,564.6 (55.0)</td>
<td>55,146.0 (4.4)</td>
</tr>
</tbody>
</table>

Notes:

a. This energy analysis is based on the actual weighing of food procured by the band of Disabungan Agta. The food was weighed fresh, raw and uncooked for every meal. It was done for a period of four weeks during September and October, and excluded minor items consumed in the camp and all items consumed outside the camp.
Appendix 11: Food Energy, Protein, Fat and Carbohydrate Intakes of a Band of Disabungan Agta

(Per person per day)

<table>
<thead>
<tr>
<th>Family</th>
<th>Food energy (kcal.)</th>
<th>Protein (gm.)</th>
<th>Fat (gm.)</th>
<th>Carbohydrate (gm.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>2,018.5&lt;sup&gt;a&lt;/sup&gt;</td>
<td>68.4</td>
<td>50.5</td>
<td>320.5</td>
</tr>
<tr>
<td>II</td>
<td>2,069.4</td>
<td>67.7</td>
<td>50.8</td>
<td>327.2</td>
</tr>
<tr>
<td>III</td>
<td>2,072.7</td>
<td>73.2</td>
<td>56.7</td>
<td>322.0</td>
</tr>
<tr>
<td>IV</td>
<td>2,163.8&lt;sup&gt;b&lt;/sup&gt;</td>
<td>71.3</td>
<td>53.0</td>
<td>361.2</td>
</tr>
<tr>
<td>Agta</td>
<td>2,081.1</td>
<td>70.2</td>
<td>52.8</td>
<td>332.7</td>
</tr>
</tbody>
</table>

Notes:

a. Per person per day intake is calculated by dividing the total energy, protein, fat and carbohydrate intakes of the respective families by the total number of persons, who consumed them.

b. The anthropologist ate with family IV during the data collection. His share of contribution, particularly in carbohydrate, accounts for the higher carbohydrate intake of this family and thus, a higher food energy intake.
Appendix 12: Energy Expenditure Among a Band of Disabungan Agta

(indirect measure: per adult per day)

<table>
<thead>
<tr>
<th>Sex</th>
<th>Period</th>
<th>Running kcal. (hrs.)</th>
<th>Swimming kcal. (hrs.)</th>
<th>Walking kcal. (hrs.)</th>
<th>Standing kcal. (hrs.)</th>
<th>Sitting kcal. (hrs.)</th>
<th>Lying kcal. (hrs.)</th>
<th>Sleeping kcal. (hrs.)</th>
<th>Total kcal. (hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Work</td>
<td>168.0(^a) (0.2)</td>
<td>---</td>
<td>450.8 (2.3)</td>
<td>130.9 (1.1)</td>
<td>105.0 (1.5)</td>
<td>---</td>
<td>---</td>
<td>854.7 (5.1)</td>
</tr>
<tr>
<td></td>
<td>Non-Work</td>
<td>---</td>
<td>98.0 (0.2)</td>
<td>176.4 (0.9)</td>
<td>107.1 (0.9)</td>
<td>385.0 (5.5)</td>
<td>106.4 (1.9)</td>
<td>465.5 (9.5)</td>
<td>1,338.4 (18.9)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,193.1 (24.0)</td>
</tr>
<tr>
<td>Female</td>
<td>Work</td>
<td>---</td>
<td>---</td>
<td>85.7 (0.4)</td>
<td>37.5 (0.3)</td>
<td>29.4 (0.5)</td>
<td>---</td>
<td>---</td>
<td>152.6 (1.2)</td>
</tr>
<tr>
<td></td>
<td>Non-Work</td>
<td>---</td>
<td>96.6 (0.2)</td>
<td>191.5 (1.1)</td>
<td>116.3 (1.1)</td>
<td>465.0 (7.8)</td>
<td>109.4 (2.3)</td>
<td>430.9 (10.3)</td>
<td>1,409.7 (22.8)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,562.3 (24.0)</td>
</tr>
</tbody>
</table>

Notes:

a. Energy expenditure is calculated from the estimated durations of activities, the body surface areas (male=1.4, and female=1.2; see Appendix 8 and the nomogram provided by Schottelius and Schottelius 1978:481), and kcal/m\(^2\)/hr. expenditure figures provided by Knoebel (1976:675).

b. The estimated durations of activities are derived from the work and non-work ratio for each sex (see Appendix 5) and is supplemented by the observation of such activities.
FOOTNOTES

1. The Negritos of the Philippines are variously called by themselves or by their neighbors Agta, Aeta, Ayta, Atta, Ata, Arta, Ati, etc. Most of these are Proto-Austronesian or Austronesian words for 'black' or 'black person'.

2. Brief ethnographies of the Agta are also provided by Simangan (1956), Zipagang (1970) and Simon (1975).

3. When asked for records on Agta census, municipal and barrio officials admitted that the Agta are "transients" and thus were never included in the census.

4. The word "cognatic," in its former secondary meaning of "related on the mother's side" is no longer used. Instead, its meaning "akin by birth" is used today (Murdock 1960:2).

5. Peterson (1978a:117) writes that among the Agta, the child of one's parent's older sibling is addressed as 'older sibling' irrespective of his/her age. However, in my study, I found relative age of ego to the alter rather than the sibling order of their parents to be the important consideration of the Agta kinship.

6. The term "band" has generally a connotation of territorial ownership, corporateness and fixed membership (Woodburn 1968b:103). However, following Damas (1969a:197-211), this term is used here simply to mean a population living in a camp. The Agta word *pisan* has often been used to mean 'band' (e.g., Bennagen 1969a:5-7; Peterson 1978a:passim). My information is that Agta use this word only as a verb (*magpisan*) to mean "to come together or to be together" (see also Headland et al. 1974:122).

7. The flow chart is a working model of the Agta residence behavior, and thus has been kept general. Short visits or temporary residences are not accounted for in the model. Further, it seems that the predictability of the model is higher when applied among more traditional Agta groups.

8. "Working time" is defined here as a span of time from the beginning to the end of a specific activity. It includes the time for resting or even sleeping. "Hunting time" means the period that is spent away from the camp for the purpose of hunting, although other activities are also carried out.
9. The Griffins are currently undertaking a two year long field research to document the case of women hunters.

10. There are no meteorological data presently available from the Palanan area. The Casiguran Bay area, which lies approximately one hundred kilometers south of the Palanan Bay and has similar orographic features, shows no marked "dry" and "wet" seasons. For example, in mean monthly rainfall, there are 166 millimeters of rain even in the "driest" month. The temperature fluctuates only by four degree Celsius from the coldest (January) to the hottest month (June) (see Flores et al. 1969:176-184).

11. While the Agta themselves distinguish the linguistic groups from one another, they have no specific names for such groups. They identify such groups with names of particular rivers or other geographical reference points in the area, and I have done the same in the text.

12. The technique of social triangulation is to relate "the birth of the individual to some notable event, the date of which is known" (Mitchell 1949:295).

13. W. Peterson (1981:52-53) mentions that a cholera epidemic that hit Palanan in the 1970's killed thirty to fifty percent of the (sample not provided) Agta population. It could not however be confirmed.

14. While the debate is far from settled, most anthropologists believe that in prehistoric times, the transition from Pleistocene to Archaic/Mesolithic (Hayden 1981) or to Neolithic cultures (Lee 1972d:342; Howell 1976:138) cannot be linked to population pressures resulting from population growths.

15. The term Kalinga, which literally means 'enemy' in many north Luzon languages, was applied to all non-Christian people inhabiting areas in and around the Cagayan Valley. The Kalinga horticulturists described in this text also have no known tribal or linguistic connection with the Mountain Province Luzon group with the same name (see Scott 1979:93).

16. Among the game animals killed by the Disabungan Agta, the male adult wild pig weighed on the average thirty kilograms (N=8), the female adult, twenty-three kilograms (N=9) and the young adult, seventeen kilograms (N=12). Of the deer, the average buck weighed thirty-two kilograms (N=4), the doe twenty-five kilograms (N=6) and the young adult eleven kilograms (N=5).

17. "Stressor" is any condition or agent that produces stress (Levine and Scotch 1970:8).
18. "Witchcraft" is defined here as that destructive power that is rooted in the individual as a constitutional resource. On the other hand, "sorcery" is that power of an individual, which derives from the utilization of resources external to the individual such as magical procedures (Liebá: 1967:65).
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