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RICE-RELATED KNOWLEDGE, FARMING STRATEGIES AND THE TRANSFORMATION OF SWIDDENS

Amongst the Batak of Palawan Island, the Philippines

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Introduction

In the province of Palawan, in the Philippines, the swiddens of the Batak people are increasingly characterized by short fallows, poor tending, low yields and little crop diversity. These characteristics are often perceived by both government agencies and non-government organizations (NGOs) as inherited features of the indigenous farming system. These perceptions are based on misinformation and oversimplifications that have deep historical roots (Thrupp et al, 1997).

In spite of the complexity of their farming knowledge, the Batak have generally been portrayed as the last hunter-gatherers of the Philippines and their rice-related knowledge has often gone unnoticed. As a result, the Batak have been described as people in need of agricultural knowledge and technology, and have become the target of culturally insensitive development and conservation projects aiming at improving their livelihood and nutritional levels.

Due to important transformations currently taking place within Batak society and, as a result of external influences, their contemporary swidden practices can no longer be defined as 'customary' or 'traditional' – nor even as distinctively 'indigenous'. These practices have been adjusted over a long time by the impact of major socio-political and environmental changes. As a result, rather than a well-defined Batak agricultural system, what we now have is a multiplicity of opportunistic responses, open-ended processes and coping strategies aiming at ensuring everyday survival rather than the continuity of an inherited farming knowledge.

My contention is that particular features of Batak swiddens have developed as micro-responses to government programmes, large-scale demographic pressures,

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ecological transformations and state policies. The latter, especially those dealing with forest conservation, have been detrimental to upland communities.

The way in which the Batak adapt to, and cope with, state demands challenges the popular picture of coercion by the national government meeting resistance by upland dwellers. Certainly, we can no longer accept the idea that local processes of change are simply micro-level manifestations of national and international processes, or the outcomes of top-down development programmes (compare Bryant et al, 1993, p105; Alejo, 2000). Rather, we must take into account the 'multiplicity of voices within development, even if some are more powerful than others' (Grillo, 1997, p22; Preston, 1994; Apthorpe and Gapser, 1996). In short, we cannot talk of a 'grand politic', nor of a 'hegemonic development discourse' (Grillo, 1997) sculpting local events without taking into account the fact that people's micro-responses are pivotal in shaping state programmes and 'attitudes', as well as in turning development, and the theoretical side of laws, into actual practice.

This paper has several related objectives. In the first section, I introduce specific aspects of Batak farming knowledge, especially those related to local terms for different stages of rice growth, rice partonomy and morphology, and classification of soil and tree zones and types of fallow vegetation. I then provide a few examples of how Batak identity as been remodelled to fit the myth of the pre-agriculturalist 'noble savage', and how, in this process, the farming knowledge of the Batak has been denigrated by so-called 'experts' as being marginal and culturally irrelevant. In the second section, I provide some indication of trends in Batak rice yields and subsistence strategies from the early 1980s to the present time. This analysis involves an examination of Batak farming innovations, adaptations and counter-strategies. All of this information is based on verbal accounts given by Batak collaborators. As I will attempt to suggest, the changing relations between forest availability, swidden size and fallow periods, and the reasons why yields are declining per unit of land and labour, can not be understood without seeing the larger picture and assessing the different factors, both external and internal, that have contributed to transform the Batak swidden system into a costly and often unproductive enterprise. In the final section, I examine how national and local politics have had, and continue to have, the strongest bearing on everything happening in and around Batak swiddens. This is the third of three chapters dealing with swidden farming on Palawan Island. See figure 1 in the first chapter, about the Cuyonon system of shifting cultivation, for a map showing the location of Batak territory on Palawan.

The Batak

The Batak are found scattered in the north-central portion of Palawan Island. Around 1880 'they were still demographically, socially and culturally intact' (Eder, 1987, p23). However, while Eder estimated their population to be about 600-700 individuals in 1900, his complete census in 1972 located only 272 with two Batak parents and 374 with one Batak parent (Eder, 1987, p110). My provisional census in 2005 indicated

that there were then only 155 individuals with two Batak parents within a population of fewer than 300 people, scattered in different local groups.

The settlement of Tanabag (see figure1 in the leading chapter of this section) is still predominantly populated by Batak; others have been largely absorbed into Tagbanua settlements or have intermarried with other ethnic groups.

The present study concerns the Batak community living in the territorial jurisdiction of Tanabag, in the north-central portion of the island, and now settled in the village of Kalakuasan. The community consists of about 30 families and is located about four kilometres from the national road connecting the northern municipalities of Palawan to Puerto Princesa (the provincial capital).

It is difficult to establish whether, and at what point in time, the Batak or their ancestors moved from an economy solely devoted to hunting and gathering to a more diversified livelihood strategy that also included agriculture. Eder, drawing on previous ethnographic material (Marche, 1883; Miller, 1905; Venturello, 1907; Warren, 1964) believes that at the end of the 19th century, the Batak had a mainly hunting and gathering economy, integrated with other peripheral activities. At this time, many Cuyonon people had left their home island of Cuyo (northern Palawan) in search of fertile lands for rice cultivation. 'They travelled by sailboat to Palawan each January to make their swiddens on rich, virgin forest soils, returning home in September with the newly harvested rice' (Eder, 1987, p46). These migrations did not have a major impact on the Batak lifestyle, but – according to Eder – it was through these contacts that the Batak began to engage in rice farming. Thus, 'a case can be made that rice may have been acquired by the Batak in the latter part of the 19th century' (Eder, 1987, p46).

Batak farming knowledge

Soil/tree zones

Batak criteria for selecting farmable land are based on both soil characteristics and the combination and density of botanical species found within a particular plot of land. Generally, through the identification of botanical species, the Batak are able to make accurate guesses about the suitability of a particular area for rice cultivation or the cultivation of other crops. Categories such as *baled* (coastal areas), *pangras* (mid-uplands), *kabuludan* (highlands) have two main connotations: one is related to the type of soils and trees found within them and the other to the geographical location of these zones. For instance, the term *baled* is used to indicate coastal areas where most coconut plantations are found. At the same time, it is also used to indicate a combination of trees and soils that are found specifically in coastal or seashore locations.

According to the Batak, *baled* were traditionally used for rice cultivation and provided locations for their settlements before the massive arrival of migrants in the 1960s. The Batak consider *baled* soil and tree zones to be particularly fertile, to the extent that rice cultivation can be repeated for two consecutive years in the same plot

of *baled* land. This is different to conditions found in *pangras* or *kabuludan* areas. Some of the most common 'tree indicators' *(tanda'an kayu)* found in *baled* zones include *bangkal (Nauclea orientalis)* and *talisay (Terminalia catappa)*.

The *baled* zones are also characterized by two soil types: *sarasad* and *tabur*. *Sarasad* is often described by the Batak as very soft and infirm, mixed with medium-sized stones, and suitable for rice cultivation. *Tabur*, on the other hand, can be found near the seashore and up to four or five kilometres inland. It has a high percentage of *enay* (sand and fine gravel) and is regarded as unsuitable for cultivation. *Pangras* zones are those found between *baled* and the steeper mountainous zones called *kabuludan*. The Batak claim that most of their food-seeking activities – hunting with dogs, digging for tubers, trapping flying squirrels, collecting honey and farming – take place in the *pangras*. In particular, the Batak emphasize that *pangras* zones have little underbrush *(dikut)*, and it is easy to find a way through the vegetation, even without the help of a machete *(paida)*. *Pangras* tree-indicators include *barasan (pandanus sp.), bagu (Gnetum gnemon), ipanga' (Pometia pinnata), banebegan (Pterocymbium tinctorium), bunug (Garcinia benthamii), saleng (Canarium asperum), biasalan, anilaw, imparay, amburaen* and *mambuy*.[1]

Garcinia benthamii Pierre Syn. of *Garcinia celebica* L. [Clusiaceae]

For the Batak, this species indicates the *pangras* zone, where they do most of their farming. Its presence in old fallows suggests there will be few weeds in a cleared swidden.

By and large, the soil category associated with these botanical species is generically defined as *pinangras*. Under this definition, various types of soils are found, including *runtur*, a kind of soil mixed with large stones, not suitable for planting; *lugta katenga'an* or *mestizo lugta*, composed of both *pinangras* and *kinabuludan* soils, which is suitable for most crops, except for *Colocasia esculenta (amias)*; and *lugta ugali*, which is mainly soil with no stones in it (at least on its superficial levels), and according to the Batak this soil, due of the low presence of stones, becomes extremely soft during rainy days. Interestingly, the Batak believe that a certain percentage of stones in the soil are an advantage to the growing of crops. Specifically, stones are attributed with the quality of making the soil firm. Moreover, certain stones, just like all living beings, are said to be endowed with *ginawa* (vital breath), and it is by virtue of this living essence that they can retain water and keep the soil moist and 'cool' *(maramig)*.

Generally, *kabuludan* areas are not used for cultivation, unless the presence of particular tree species is detected. The end of the *pangras* zone and the beginning of the *kabuludan* is usually marked by the presence of *anibong (Oncosperma trigillaria)* palms. *Kabuludan* plant indicators include *rumaraw (Swintonia foxworthyi), bagtik (Agathis philippinensis), uladan (Dipterocarpus grandiflorus), natu (Palaquium luzoniense), panpan (Ficus benguetensis), balingasag (Phyllanthus buxifolius) magalupa, ba'an, tulatula* and *Ulayan (Lithocarpus llnosii).* These trees indicate that the soil will have a high density of superficial roots, making it unsuitable for rice cultivation. Occasionally, the Batak say, the presence of *pangras* trees in some portions of the *kabuludan* indicates that cultivation is still possible. Generally speaking, the term *kinabuludan* can also be used to refer to all types of soils found in the *kabuludan.* The most common is known as *tagerter.* It is a very compact type of soil containing soft reddish stones *(batu limukun).* Overall, a major difference between *kabuludan* and *pangras* areas is that the vegetation of the *kabuludan* is very dense *(pa'ak),* making it difficult to walk through it without the help of a sharp machete *(paida).*

Types of swidden

The general term for the space surrounding a swidden hut is *mayag* (the domestic space); everything beyond this is generally referred to as *talun* (not planted by human hands, or untamed space). The Batak term for primary forest is *geba'*, while *lumakad* is generally used to refer to old swiddens that have reverted to forest (after about 20 years of fallow). All other swiddens, from one to several years old, as long as they do not resemble a fully-grown forest ecosystem, are generally named *luman*, independently of whether they are covered by weeds, shrubs, small or medium-size trees. According to some Batak, a *luman* that has already passed the first year of fallow can be defined as *tumbago.* However, only fields that have undergone a fallow period of at least 4 to 7 years can be reconverted into a cultivated field *(uma).*

Basically, there are six stages in the swidden cycle: underbrush cutting, felling the forest, burning the dead vegetation, planting or sowing the seeds, weeding the field and harvesting. Swiddens are burned in March, at the peak of the dry season, and planting begins in April. Harvesting takes place in mid-August and often continues through October.

The conversion of forests into swiddens by slashing and burning is certainly the most radical form of environmental modification practiced by the Batak. The forest is believed to be the domain of a large number of *panya'en* (powerful non-human spirits). Before clearing a forest plot, various entities need to be consulted and appeased. According to my Batak collaborators, after trees have been felled, the swidden begins to be occupied or visited by various superhuman entities. Special offerings may be made to establish a friendly relationship with these 'newcomers'. Therefore, the replacement of forest with swiddens does not necessarily imply the transformation of an untamed natural domain into a domesticated one (i.e. a switch from supernatural to human sovereignty). On the contrary, Batak practices seem to indicate that changes

in the landscape merely activate new patterns of interaction with the supernatural, since the entities inhabiting the tree canopy are different to those occupying or visiting the swiddens. However, different entities can share overlapping domains. Ultimately, the swidden becomes imbued with all the social 'relationships' that have characterized its existence, from tree felling to cultivation and final regression to its original forest state.

Amomum palawanense Elmer [Zingiberaceae]

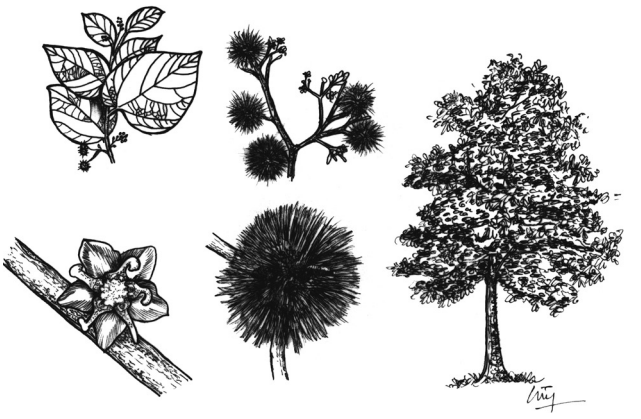
Batak farmers say this plant has a 'high water content' and indicates 'cool' soil when it dominates fallow vegetation.

In addition to the word *uma,* which is used to refer to cultivated swiddens, the term *napu* is used instead to define small-sized swiddens located in remote and 'hidden locations' *(kat tagu)*. In earlier times, these swiddens represented an important source of food, especially when community members were forced to leave their settlements following unexpected incursions by outsiders and potential enemies. Generally, *napu* were only planted with *amias (Colocasia esculenta), punti (Musa sapientum), ubi (Dioscorea alata), tubu (Saccharum officinarum)* and *kamote (Ipomea batatas)*.

Batak classification of swidden typologies is complex and articulated. Specifically, the Batak name fallows according to the dominant species growing in them. *Pangras* and *kabuludan* areas that have already been used for cultivation and have become fallows contain a mixture of plants and, often, some dominant species. The kind and number of species, as well as their density and the percentage of the vegetation occupied by each, changes according to the time the field has been fallow. The overall percentage of particular species on a designated plot of land helps the Batak to determine the soil quality, ranging from *maniwang* (literally thin or skinny) to *malusung* (fat and healthy) and *maramig* (cool). Typically, those fallows associated with 'thin' soil, are called *kugununan* when *kugun (Imperata cylindrica)* is the dominant species or *masabsabanen* when *sabsaban (Dinochloa palawanensis)* is dominant. Both species can be found in *pangras* areas, and are indicators of poor soil fertility. Plants growing on these soils, the Batak say, will be *maruya* (weak). Specifically, *kugun* signals a lack of nutrients in the soil and high acidity levels; *sabsaban,* as well as low fertility, indicates thick root formations that are 'not easy to uproot' *(makuri ulputun),* thus representing a major constraint to cultivation.

Luman types having *maramig* (cool) soils are those hosting a large concentration of plants with 'high water content' *(madanumen),* such as *tagbak (Amomum palawanense), banban (Donax cannaeformis), tebeg (Ficus sp.)* and *agutay (Musa errans)*. Such

luman types are named according to the dominant species found within them (e.g. *matagbaken, mabanbanen, matebegen, magutayen*). *Agutay (Musa errans)* is found mostly in *kabuludan* zones. Those areas dominated by this species (i.e. *magutayen* types of *luman*) represent an exception to the general rule that *kabuludan* are not suited for cultivation. However, the Batak say that in order to cultivate *magutayen* fallows, the offshoots of *agutay* (wild banana) must be constantly cut during the growth of rice.



Commersonia bartramia (L.) Merr. [Malvaceae]

The Batak say this species is likely to be found on fields that have undergone a sufficiently long fallow period.

The Batak also name at least two *luman* types colonized by certain types of weeds and shrubs. Rice cultivation is still possible in these *luman,* but more intense weeding is required. These include *magunuyen* – fallows colonized by *agunuy (Chromolaena odorata)* – and *manuyunuyuen* – fallows colonized by *nuyunuyu (Lantana camara).* These *luman* types are found in *pangras* areas and mostly on flat land. Other *luman* types dominated by tree species include *kakarangianen,* or fallows colonized by *karangian (Trema orientalis); matawaen* or *katawaen,* dominated by *tawa (Duabanga moluccana);* and *ka'anilawan,* dominated by *anilaw,* which is often found in combination with *bunubunut (Commersonia bartramia).*

The Batak say fields that have undergone sufficiently long fallow periods are likely to host species such as *bunubunut (Commersonia bartramia), karangian (Trema orientalis),* and *anilaw.* If the predominant species is *bunug (Garcinia benthamii),* the re-cultivated field will have few weeds, except for some vines such as *kulagbaw (Merremia vitifolia), abagan (Dioscorea luzonensis)* and *pasulsug* (Malvaceae).

Aside from those areas dominated by *sabsaban (Dinochloa palawanensis),* other *luman* types can be entirely colonized by bamboo, such as *simsim (Schizostachyum sp.).* The latter, in contrast to *sabsaban,* does not have a widespread root-structure. *Simsim* roots can be easily uprooted *(maruway ulputun)* and, according to the Batak, *luman* dominated by this species are suited for the cultivation of rice, but not of maize. *Simsim* vegetation tends to burn very quickly and precautions must be taken to avoid the fire spreading to surrounding vegetation when the field is burnt. *Ma'ambutingen,* which are fallows dominated by *ambutin (Melastoma malabathricum),* are found in disturbed areas with poor soil fertility. The Batak say that fallows where patches of

ambutin grow together with other species can still be planted with rice, but abundant yields should not be expected.

Rice partonomy and terminologies

The hypothesis that rice cultivation is a relatively recent acquisition among the Batak (Eder, 1987) must be assessed with caution. The Batak, in fact, have a very complex and detailed mythology concerning rice. Numerous legends trace the origin of rice back to their remote past. It is, therefore, difficult to believe that rice is a recent introduction, especially when it is considered that the Batak name and recognise about 72 landraces of upland rice, of which 44 are said to be *dati* (old) and *tunay* (original) to the area; 21 are considered relatively new; and at least seven have been acquired very recently. In addition to this, the Batak have many names for the different stages of rice growth and for its morphological characteristics.

Batak rice partonomy is particularly detailed: *kuut* generally refers to the part of the stalk that remains attached to the ground after the ear, or panicle, has been cut. It also refers to the panicle axis or rachis – that portion of the stalk that is left after all seeds in the panicle, or spikelets, have been scraped away. The scraping tool consists of a concave shell. *Kutban* refers to both the panicle and the portion of the rice stalk that remains attached to it after harvest. *Kuway* is name for the panicle itself, which is formed by the individual spikelets *(burun)* attached to their own short stalks, or pendicels. The 'hairs' of the spikelet are defined as *surad* or *benget it paray* (the beard of rice). Aside from the individual names of each rice variety, rice classification is mainly based on several general criteria: the colour of the unhusked grains; the hairiness of the spikelets; glutinous qualities; and the period in which they reach maturity. *Marabar* is a term used for rice with reddish grains; *mailum* (black) and *malante* (white) are colours also used to define rice varieties. Rice varieties with very hairy spikelets are classified as *masuraden, mabunguten* or *mabenget-bengeten* (literally beardy). These hairy varieties are said to be itchy *(maindang)* and thus better equipped to resist attacks by birds. *Keras* is a general category referring to non-glutinous varieties of rice, while *pulut* refers to glutinous or sticky varieties. Those rice varieties reaching maturity in about three months are called *muman,* while those taking four months are named *urianen. Ragbas* refers to rice plants whose panicles grow grains of different sizes and shapes, while *Keyebet* is a term used to refer to panicles with few spikelets, which will never develop into healthy and mature ears of grain. This might happen when rice is planted on poor soil or is affected by diseases.

Stages of rice growth

Interestingly, the Batak do not discuss the growth of rice plants in simple morphological terms, such as 'the rice is tall,' 'the rice is short,' and so on. They relate the size of the plants to the animal species the plants are capable of hiding. *Darugi* is the Batak term for young rice plants, standing just a few centimetres high. When they are a little

higher, they become *pandakpan piak* (literally, 'can catch a chick') when the plants are tall enough to hide a chick. One of my Batak female collaborators told me: 'when rice is like this, you can grab a chick hidden below it, because the chick cannot see you'. Similarly, the next stage of rice growth is named *palebngan babuy* (literally, 'causing a wild pig to bury under'). The same woman explained: 'the rice plants are now tall enough to hide a wild pig under them, so you'll be unable to see the pig'. The fourth named stage is known as *dugnun i babuy* (literally, 'the bed or nest of a wild pig'). Clarifying the term, 'the rice plants are sufficiently tall to hide a wild pig standing on its feet, while searching for a place to rest'. From this point, there are different stages in the rice plants' growth to maturity. Panicle initiation starts several days before the panicles emerge. Swelling of flag-leaf sheath indicates the start of the reproductive phase. The stage at which the 'swelling' becomes visible is referred as *beres* and the Batak say this is equivalent to the notion of being pregnant *(mateng)*. Generally, the *beres* phase is divided into two successive periods, the first known as *tinay lalake* (the belly of a man), and the second as *tinay babae* (the belly of a woman), referring to a more advanced stage of swelling, occurring when the panicle is ready to appear, or literally, it 'opens up' *(mabuskad)*. When spikelets begin to stick out of the panicle, the term *pamurid* is used. However, grains – at this stage – are still flat and mostly empty; in Batak terms they 'have no flesh' *(dagwa cadawa'an)*. Maturation of the rice ears is not uniform. Half of the ear may contain ripened grains, while spikelets in the lower half may be green. The Batak define as *uka* (older brother) those ears that are the first to reach maturity. They will be followed by their younger brothers *(are')*. Generally, the Batak will describe this particular phase with the following expression: 'When the young brother is just coming out, the elder is ready to be put into a sack'. The rice-growth stage identified by the Batak as *pamegsay batang* or *magpamegsay nat batang* (literally, 'riding on a tree stump') signals that maturation of the rice is moving towards an advanced stage. This expression indicates that the weight of grain is bending the rice stalks and the panicles are swaying over dead tree stamps. In a matter a few days, the panicles will be 'leaning forwards' *(nakadapay)* and birds will start feeding on them. At this stage, the grain is 'not yet mature' *(ilaw)*, but the Batak may decide to harvest them prematurely to make *tanek* or *pinilpig*. *Tanek* is a way of processing the unripe rice *(bagung' paray)*. The *paray* (rice in the husk) is first boiled, placed on a rattan mat, and then dried in the sun. This traditional way of processing immature rice achieves immediate relief from hunger, but it reduces the potential productivity of rice fields, since immature grains weigh less than mature seeds.

As the number of mature rice plants in the swidden increases, the Batak will be using the expression *panuldu tuldu'en mamataen,* meaning that the rice plants can be easily pointed out to anyone who is able to see. The successive stage is called *panuldu tuldu'en it butar* (literally, 'can be shown to a blind person'). The rice spikelets are now very bulky and have acquired a golden colour, maturation is complete *(nangapus)* and harvesting *(magkayeg)* can finally take place.

The cosmological origin of rice

The most important Batak annual ceremony is called *Lambay*, and it aims to enhance the dispersal of rice seeds and bees from their cosmological places of concentration. The name is associated with the notion of dispersal (Novellino, 2009), since in the Batak language, the word *lambay* can be translated as 'to throw away' (disperse), while *lambayan* refers to the area where the annual ceremony takes place. The *lambay* ritual starts in March, when honey gathering begins, followed by the burning of the new swiddens and the planting of rice and other crops in April. The blossoming of *banebegan (Pterocymbium tinctorium)* signals the arrival of the honey season, as well as the beginning of *lambay.* The ritual is based on two cycles over two years. The first cycle lasts seven days and the second cycle, performed on the following year, lasts fourteen days. The latter is more elaborated in terms of ritual performances and the construction of ceremonial objects.

The Batak envisage a kind of cyclical system in which the seasonal production of honey and rice depends upon the flow of bees and of life-forces of rice *(kiaruwá it paray)* from *gunay gunay,* a mythical location found at the edge of the Universe. The *Lambay* rite centres on the idea that through 'magical' practices – involving the use of ritual objects, bodily movements, words and musical sound – both bees and rice are dispersed from the cosmological location in which they are concentrated and thus become accessible to the Batak.

As well as being stored in its cosmological location, rice is also stored in people's granaries, along with the seeds of the first seven ears harvested from the middle of last season's swidden field. The middle of the swidden field has a special significance in Batak eco-cosmology and worldview. The seven ears are said to represent the *fundu* (the reserve-stock) of the *kiaruwa'* (the life-force) of rice, and should not be used as food.

A Batak legend attributes the origin of rice to a human sacrifice. There are various versions of this myth, but the most popular one tells of a time long ago when humans planted only *kalabasa (Cucurbita maxima)*. Then, one day, during a dream, a man received an order to kill his only child. He also received instructions to disperse the blood and various parts of the child's body all over a swidden field. The legend says that after three days, the blood, skin and flesh of the sacrificed child transformed into different varieties of rice, as well as other crops (Novellino, 2009). These days, in addition to the *Lambay* ceremony, before planting takes place the Batak practice rituals to call back the *kiaruwa'* (life force) of the child (i.e. of rice) who was killed by his father in the legend.

Farming strategies and the transformation of swidden farming

In contemporary conservationist discourse, a 'simple' or 'less advanced' technology may be regarded as a positive feature because of its low environmental impact. In respect to this, Milton has argued (1993, p4) that 'the quest for a viable future is seen by many environmentalists as a search for a sustainable culture, one whose fundamental

principles and the practices that follow from them are environmentally benign'. In the case of the Batak, there exists a persistent interpretation of 'Batak identity' coined by local conservationists, foresters and development interests that has been used to justify culturally unsound conservation-cum-development projects aiming to turn the Batak into sedentary farmers. Such projects continue to be tailored on a romanticised idea of what the Batak and their society are thought to be about. To cite an example, in 'Application for Certificate of Ancestral Domain Claim (CADC)', compiled by Haribon-Palawan (a Philippine environmental group), we see the Batak defined as:

> 'one of the primitive indigenous people of Palawan…nomadic in culture.... They moved from one place to another to satisfy their biological needs…To this day, their religious faith continues to be based on the spirits in nature, whom they believe to reside within big rocks and trees' (Haribon-Palawan and IUCN, 1995, p1).

The key point here is that the landscape in which the Batak live is perceived by conservationists as 'transcultural and transpersonal – in other words, biological in nature' (Lang, 1987). In short, it is a setting in which people must satisfy their physical urges, thus leading a biological, rather than a cultural, existence. Similar descriptions are also found in a project report prepared by the International Union for the Conservation of Nature (IUCN) and Haribon-Palawan. Here we learn that:

> 'Batak are among the Philippine's last remaining aboriginal forest hunter-gatherers. They are nearly wholly dependent for their livelihoods upon the collection and sale of non-timber forest products (NTFPs), primarily rattan, *almaciga* (Manila copal, a tree resin), and honey' (Haribon-Palawan and IUCN, 1996, p2).

Surprisingly, Batak dependency on agriculture and the antiquity of their swidden cultivation practices are not mentioned. Remarkably, it seems that Batak 'slash-and-burn' agriculture is deliberately kept hidden, for the fear of ruining the idealised version of the 'last surviving hunters and gatherers' put forward by project proponents.

This view is further reinforced by another statement:

> 'Batak began practising shifting cultivation one hundred years ago after becoming accustomed to eating rice received from barter of NTFPs (non-timber forest products) with lowland merchants…the Batak prefer a life in the forest which precludes investing time required to attend to intensive *kaingin* (swidden cultivation).' (Haribon-Palawan and IUCN, 1996, p6).

The assumption that Batak agriculture is a recent introduction is also found in academic writings (see Eder, 1987).

It is a rather nice irony that Batak practices such as swidden cultivation, which contradict environmentalists' images of the 'noble savage', are usually labelled as introduced technologies. This has served to justify the introduction of new agricultural techniques, such as wet-rice farming, that are totally alien to the Tanabag Batak, and even unsuited to the upland soil conditions. It is perhaps not surprising that all attempts to introduce alternative agricultural methods amongst the Batak have failed.

A chronology of changes

I intend here to provide a chronological assessment of Batak responses to the dramatic changes that have confronted them between the 1980s and the years since 2000. I will give particular attention to the period between 1986 and 2004, since these years have seen the most dramatic impact on Batak farming and livelihood practices, as well as on their cultural integrity. My first arrival in the Philippines was in 1986 and since then, I have spent about seven years with local indigenous communities.

Farming in the early 1980s

Until the 1970s, contacts with lowlanders were of no great consequence to the Tanabag Batak. However, the early 80's marked an increasing dependency among the Batak on lowland Filipino society. In those years, the gathering of *Agathis* resin, rattan and honey (all male activities) acquired a central role in the livelihood of the Batak, and they became increasingly indebted to local middlemen. The participation of male Batak in the market economy altered the complementarity of male and female roles, which was characterised by equal access to resources, ability to provide food, child-care responsibility and social recognition. In turn, traditional female productive activities, such as tending to swidden fields, gathering wild vegetables, molluscs and fish, begin to loose status when compared to commercial marketing practices, in which only men made decisions (Eder, 1987; Novellino, 1997, 2010).

In order to obtain cash to purchase basic commodities, the Tanabag Batak also worked as labourers in the fields of migrant farmers. Demand for wage labour was particularly high at the time when the Batak were engaged in their own farming activities. As Cadeliña (1985, p6) noted, the Batak 'have to carefully balance their time budget so that their own swidden fields are not neglected'.

However, in the early 1980s, despite increasing contacts with outsiders, the Tanabag Batak still enjoyed strong social ties (Cadeliña, 1985). Reciprocity networks were especially active during the harvest season, with food given out and received by households. In these years, the integration of traditional foraging and farming practices with commercial gathering, wage labour and other options represented the Batak response to gross calorific decline. This coping strategy had the ultimate effect of improving the absolute amount of food production, in terms of calorific output-input ratio, but it appeared to be less efficient than traditional subsistence strategies

that included the exploitation of other important food zones, such as coral reefs and mangroves (Cadeliña, 1985, p119).

The middle 1980s

In 1986 the Batak community was located in the settlement of Tina, about six hours' walk from the closest Filipino settlement.

In early 1987, a logging company reached the upstream settlements of Tina and continued to move further into the interior. The ancestral territory of the Tanabag Batak was by then criss-crossed by logging roads. At Kapuyan, Kapisan and Maniksik, the *Agathis* trees on which the Batak depended for the gathering of commercial resin were felled. As a result, the Batak lost most of their extractive reserves closer to the coast, and were forced to harvest resin in the far interior. This entailed higher energy expenditure and corresponding calorific stress.

By the late 1980s, information and technology transfer between the Batak and migrant settlers had proceeded both ways. The Batak had acquired techniques for constructing muzzle-loading guns and had learned to make explosive devices to catch wild pigs (McDermott, 2000, p114). On the other hand, Filipino lowlanders had learned Batak techniques for harvesting resin and wild honey. More importantly, they gained access to the secret paths leading to remote extractive reserves where *Agathis* trees were still abundant (Novellino, 2010). Increasing competition over non-timber forest resources emerged as a new threat to the Batak.

The Tanabag Batak farming systems and mobility patterns that I observed in 1986 and 1987 were similar to those described by Cadeliña in 1981 and 1982. In January and February, at the start of the dry season, the people camped along the river edges (a practice locally known as *da-us*). Women devoted much time to hook-and-line fishing, while men set up traps for river eels and the whole community engaged in *lu'gu* (stunning fish with poisonous *magarrawa'* vine). In March, the people abandoned their *da-us* camps, performed the *lambay* ceremony, and moved again to their swidden locations to plant rice, anticipating the arrival of the first rain in April.

Soil samples taken by Cadeliña from hilltops, slopes and valleys within unfarmed Batak forest in 1981 indicated that Batak swidden fields cut from secondary forest and fallowed after cropping were successfully regaining their natural fertility after periods averaging between seven and 18 years (Cadeliña, 1985, p25). Fields were cropped for one year only. Cadeliña's descriptions confirmed my own observations in 1987, that Batak rice fields were intercropped with various cultivars, some of them becoming productive after the rice harvest. *Colocasia esculenta, Alocasia esculenta, Dioscorea alata* and various cucurbits were planted in the swiddens, at the base of stumps, dead logs and fallen tree branches. *Colocasia esculenta* was planted either following underbrush clearing or after rice harvesting, but only in those swiddens that retained a good moisture content. Cassava *(Manihot esculenta)* was planted around the margins of the swidden fields at the same time as rice, or in separate fields. Corn and rice were planted almost at the same time, with the former maturing in

about three months. Poaceae species such as *Andropogon sorghum*, *Sorghum vulgare* and *Setaria italica* – when available – were planted concurrently with rice, forming broken lines or individual patches across the field. Corn and millet usually lined the edges of rice fields. Beans and squash were harvested in the months from November until March. Sugar cane *(Saccharum officinarum)* was planted around or inside the swidden at the same time as rice, or about 20 days after rice planting. Sweet potatoes were usually introduced to the field after it was re-cleared in October, when most of the other crops had been harvested. This practice was locally known as *dab-dab*, and was successful only in those swiddens cut from virgin or old-fallow forest, that were less susceptible to weeds. After planting, sweet potatoes and other root crops required minimal maintenance, and the tubers were harvested in December, when tree cutting began, and represented an essential calorific intake when men were busy cutting trees for the next planting season (Cadeliña, 1985, p69).

Coconut palms, bananas, fruit trees such as papaya, leguminous plants such as *Cajanus cajan, Zingiberaceae* and *Capsicum frutescens* were also grown in suitable locations within or around swiddens.

In the mid 1980s, a remarkable diversity of traditional rice landraces and other crops could be found in Batak swiddens. At that time, my research indicated that the Batak had names for more than 60 local varieties of rice, most of which could be found in the community. They also recognized more than three varieties of maize, nine of sweet potato, seven of *Colocasia esculenta,* 11 of domestic *Dioscorea,* eight of sugar cane and 16 kinds of bananas, to say nothing of various cucurbits and many others.

Cadeliña found that in the early 1980s, a well-maintained Batak swidden field of about one hectare could produce a yield level that was comparable to that proposed in the so-called Green Revolution, with all of its requirements for high-technology inputs (Cadeliña, 1985, p125). Further, Cadeliña estimated that by pooling labour from relatives, a household cleared a swidden plot averaging one-third of a hectare, and that a one-hectare Batak swidden field, under various levels of maintenance, produced about 3900 kilograms of husked rice. A field with excellent maintenance (with weeds completely removed) produced almost 5000kg, while a moderately maintained one (with between 30% and 50% of the field weeded) produced about 4000kg. A very poorly maintained field (with less than 30% of the field weeded) produced about 2000kg. Cadeliña pointed out that one of the critical factors for a high yield was a careful weeding schedule, since the stages of growth of local varieties were rather short (between 110 and 120 days).

Batak swidden practices in the 1980s were still characterized by an intensive exchange of labour and resources. Cadeliña observed that swiddens fields were never planted simultaneously, so rice crops were not harvested at the same time, making reciprocal food sharing a pragmatic exercise. While some households waited for their rice to mature, those already harvesting their crop provided the waiting ones with much-needed rice until their turn came. According to Cadeliña, 'planting at different

times seems to constitute a technological response to their anticipated cyclical calorific stress and to the stress they have just been through" (1985, p79).

Cadeliña's findings led him to conclude that 'under their present swidden system, there is no fear of forest disintegration, if outside pressures are kept to a minimum' (1985, p32).

The early 1990s

The 1990s brought government measures for environmental protection and path-breaking legislation to safeguard indigenous rights to land and resources. The early 1990s also saw the first encounter between the Tanabag Batak and the local NGO, Haribon-Palawan. Between 1991 and 1992, the P-BIRD (Palawan-Batak Integrated Rural Development) project was implemented in Tanabag. One of the project's goals was to promote food self-sufficiency by maximising crop production through the implementation of backyard communal gardening, an irrigation system, pilot wet-rice plots and sloping agricultural techniques. Community members were organised into groups to build contour lines, but not all participants contributed the same amount of labour. People took part in the project on the condition that they were compensated with a daily allowance of rice. The Batak later complained that rice provisions were insufficient, and the time invested in terracing did not allow them to accomplish their traditional swidden farming. Furthermore, there was no clear agreement on who would be in charge of maintaining the terraces once they were built, or how yields would be divided amongst households. In the end, the Batak decided to quit, and the contour lines were never completed.

More threats to Batak swiddens

In 1994, shifting cultivation was banned and the rule was enforced by the City Government of Puerto Princesa, on Palawan (Novellino, 2007; Novellino and Dressler, 2010). The Batak were forbidden to cut trees in both primary and secondary forest, as well as those grown in fallow forest, or to burn any vegetation. The prohibition placed an unendurable burden on the forest. To compensate for the loss of agricultural products, indigenous people were forced to over-exploit their own resources, including the resin of *agathis* trees, rattan and honey. While rice yields fell to unprecedented levels, rice consumption increased. The Tanabag Batak needed more rice to support the exertion of gathering expeditions for non-timber forest products. Due to the prohibition, slashing and clearing activities were mainly limited to areas covered with bushes and wild grasses, and as a result, the growth of weeds became vigorous and the land rapidly lost its nutrients. In the years following the ban, several local varieties of upland rice disappeared and the production of root crops decreased dramatically.

Paddy rice again!

In 1994, Haribon-Palawan made a second attempt to implement an Integrated Conservation-Development Project amongst the Tanabag Batak. This was financed through the technical assistance of the International Union for the Conservation of Nature (IUCN). In 1995, the Batak were encouraged to develop two hectares of lowland rice. However, according to community members, the soil on which this was supposed to happen lacked the ability to retain water and was inadequate for paddy cultivation.

It is interesting to note that paddy-rice development and improvement of *kaingin* (swidden agriculture) were not included in the initial project proposal, but were nevertheless implemented. In 1997, the consultant in charge of the technical evaluation wrote: 'some of these activities (paddy-rice development) were not requested by the beneficiaries, but were strongly suggested by the project. It is not surprising that the introduction of the two paddy-rice plots failed'. The failure was also blamed on 'inappropriate technology' for the Batak, including motor pumps, use of fertilizers and pesticides and use of oxen (Bech, 1997, p13).

'Slash or not to slash': the notion of dati kaingin

In the late 1990s, the Philippines Department of Environment and Natural Resources (DENR) made various attempts to stop the practice of shifting cultivation in Palawan. Several DENR officials shared the idea that indigenous claims over land (through implementation of the Indigenous Peoples' Rights Act of 1997) did not entail the right to cut trees, but only the right to protect them.

The ambiguity inherent in the DENR's references to indigenous people was clearly visible in its *dati kaingin* (literally 'old swidden') principle. From a DENR perspective, *dati kaingin* referred to swiddens without tree cover that had been used repeatedly over the years. DENR officials in Palawan insisted that existing swiddens could not be expanded, and that slash-and-burn farming was allowed only in *dati kaingin*. This view was confirmed by a former DENR employee:

> 'If the people are making *kaingin* in an area that is already *kaingin,* this is not prohibited. But if they have to cut more forest, even if this has been growing through a fallow cycle, this is forbidden; unless the DENR issues them a permit to cut trees'.

In other words, the Batak were being urged by DENR foresters to cultivate soils that had not yet regained their nutrients, and to keep doing so until fertility was exhausted and *Imperata cylindrica* took over.

Indigenous views on these matters were diametrically opposed to those of the DENR. Elisio, a Batak in his forties, said:

> 'The coastal forest is forever gone. The migrants have substituted forest trees with other plants (cashew, mango, etc.). But for us, this is not a good idea. When we make a swidden, we like the forest to grow back, because we depend on it. If you walk in our fields under fallow (*luman*) you'll see a lot of plants. The foresters call them weeds. In reality, many of these "weeds" are the seedlings of wild trees. As you can see, the forest is growing back!'

The anthropogenic influence on the composition of old forest has been well documented (e.g. Fairhead and Leach, 1998). Yet, both the DENR and local environmentalists on Palawan seemed to have limited understanding of how fire and fallow periods contributed to the creation of highly diverse and biologically valuable ecosystems, with thriving plant and animal species that could not survive in 'natural' forest (see Margalef, 1968; Brosius, 1981; Rai, 1982). Cadeliña argued that one adaptive function of Batak fallow forest was the production of 'food resources that never grow in other zones…Plant species are highly diverse, ranging from shrubs and bushy type trees in most recently fallowed fields to hardwood ones largely below one or two feet in diameter in areas fallowed for several years" (Cadeliña, 1985, p30). These findings have been corroborated by inventories conducted on Palawan by McDermott (1994).

Batak swiddens in the 1990s

Around the late 1990s, several members of the Tanabag Batak community complained that their fields had become *maniwang* (thin), in the sense of becoming infertile. They said yields were poor and some fields produced less than 500 kilograms per hectare. Having not measured the rice harvested in Batak fields, I am unable to provide an accurate estimate of the average rice yield during these years. I will rely, instead, on data collected by Melanie McDermott (2000), in the neighbouring community of Kayasan. This settlement is about 10 hours' walk south of the Tanabag river valley, and is inhabited by a mixed population of Batak and Tagbanua that were also affected by the city government ban on shifting cultivation. In Kayasan, McDermott calculated an average rice yield in the order of 615 kilograms per hectare, equivalent to an 18-fold increase over the seed planted (2000, p367).[2] This is significantly lower than in earlier decades. Elders in both Kayasan and Tanabag claimed that before the massive influx of migrants in the early 1960s, typical harvests were 40 to 60 times the volume of seeds used, or more. This would suggest that between the 1960s and 1990s, indigenous rice yields might have shrunk by at least 50%, and probably more.

The oldest member of the Batak community at Tanabag, a man called Ubad, said he could remember times when fields were left to fallow for 15 to 18 years.

> 'Today, because of government and DENR restrictions, the people clear their swiddens again after three or four years, when trees have not even reached the

> size of a leg. When you burn them, little ashes are produced – not enough to make your rice healthy.'

A similar situation was observed by McDermott during the late 1990s in Kayasan. She observed eight indigenous farmers making swiddens in fallows that were only two or three years old (2000, p357). Interestingly, contemporary Batak kapitans (village leaders) are among those having the lowest agricultural production. This is because they are often too busy attending government meetings and NGOs seminars to have the time for weeding. Not surprisingly, some of them feel that they should receive the largest share of the rice supply, or cash from politicians. Too often, this causes resentment among other community members.

Overall, it would appear that the increasing involvement of the Batak in the cash economy and continuous dealings with government authorities and with other external agents has badly affected their internal cohesion and solidarity. Reciprocal labour exchanges in rice planting and harvesting are now confined to a more limited pool of close kin, and rarely involve the whole network of relatives and fellow villagers.

The decline of collective harvesting and planting is also attributed to the poor yields, which limit the quantity of harvested rice that a household can give and receive in exchange for labour. This situation is quite different from that described by Cadeliña (1985, p79) in the early 1980s, when harvesting households provided much needed rice to those families awaiting their turn at harvest. At that time, rice exchanges represented a Batak mechanism to cope with cyclical food fluctuations. Today, these exchanges occur less frequently, and are of a very small scale. As a result, people face more severe calorific stress, especially during the pre-harvest season.

Because of DENR restrictions, old-fallow forest *(lumakad)* is now rarely cut. Short-fallow fields are too poor to sustain a healthy second crop, so the practice of *dab dab* (the planting of root crops in swiddens re-cleared after the rice harvest) is also adversely affected. Failed *dab dab* cropping has contributed to the progressive loss of local varieties of *Dioscorea* and sweet potatoes. *Colocasia esculenta* is now rarely planted, because it does not grow well in short-fallow land.

Another reason for the collapse of root-crop production is the Batak switch towards a more sedentary existence. Because of government demands, people's occupation of upland huts generally lasts only until October or November, when rice harvesting is complete. After that, root crops are left unguarded and become vulnerable to the appetites of wild pigs. Compared to the mid-1980s, cassava production is now at its lowest, and it can no longer support the Batak during the hungry months. The Batak now appear to have little incentive to cultivate root crops in their swiddens because of wild pigs, or around their permanent settlement because of stray domestic pigs. Since root-crop production is shrinking, they favour only those varieties that give the highest yields in the shortest possible time, and cultivation of cassava and sweet potatoes is limited to the *madali* (fast) varieties. The old *mabuhai* (long-duration) varieties have been abandoned. For instance, the Batak now prefer the yellow variety *(dulaw)* of cassava that can be harvested in three or four months. Similarly, local varieties of

sweet potatoes, such as *tamlag, kaliktan* and *raging,* have been replaced by improved varieties.

The years after 2000

By the year 2000, monetization and the breakdown of traditional reciprocity had reached a stage where it was virtually impossible to see a Batak sharing wild pig meat with his neighbours. Meat is sold to coastal restaurants, as well as to fellow villagers. Overall, the years following 2000 have been characterized by social disorientation, decreasing reliance on community leaders and shamans, the growth of household-based responses to crises and the intensification of climate change. The deterioration of Batak social fabric has been matched by an increasing disenchantment with legislation, the state and the work of NGOs.

In the year 2000, due to unpredictable weather patterns and excessive rain, the Batak were able to burn only small portions of their swiddens. In May, the continuous heat caused serious damage to the young rice plants, and the outcome was crop failure.

Insurgency and the abandonment of swidden fields

State attempts to crush a communist guerrilla movement on Palawan created yet another example of how political events continue to impact on the subsistence strategies of the Batak. In 2001 and 2002, the Batak were requested by the Philippine armed forces to refrain from visiting their upland fields that were planted with root crops. Military officials feared that a Batak presence in the hinterland could encourage members of the Maoist 'New Peoples' Army' to establish camps in the forest and collect so called 'revolutionary taxes' (a tribute in cash or kind) from the Batak. As a result, Batak agricultural production registered a new drop and malnutrition increased.

Borrowed technology and innovations in Batak farming

While Batak crop yields suffered a progressive decline in the 1990s and 2000s, new farming innovations and experimentation continued.

Techniques for suppressing Imperata cylindrica

The expansion of grassland in limited parts of Batak territory has encouraged the development of new strategies for suppressing *kugun (Imperata cylindrica).* These methods are still being tested, but one technique has already proven to be successful. It consists of the combined planting of cassava and bananas (the latter being planted for two consecutive years) in a plot colonised by *Imperata*. I was told that, during the growth of the cassava and bananas, the *kugun* should be cut constantly, to 'weaken' it. By the time cassava is harvested, the banana leaves are large enough to produce shade that will hamper the growth of *Imperata*.

The acquisition of tagad

During critical periods of food shortage, the Batak may activate alternative livelihood strategies that are part of a 'covert repertoire' of memorised options. For decades, the Batak have been exposed to technologies introduced by migrants, including charcoal making and use of the *tagad* (the migrants' planting stick, which ends with a flat metal blade). Such technologies have never been adopted collectively, but have been used by some individuals from time to time. Very recently, several Batak have begun claiming that the flat metal blade of the *tagad* not only facilitates the planting process, but may also ensure better harvests. They give several reasons for this: First, the *tagad,* rather than making round holes in the ground (like the traditional wooden dibble stick), produces only thin cuts that deny birds access to the seeds. The *tagad's* thin cut in the soil also means that after placing the seeds, there is no need to cover them with soil. Secondly, the *tagad* is more manageable than the heavy Batak dibble stick and because of the limited effort required to lift the *tagad* and strike the soil, the user can perform both tasks of making holes and planting seeds. Thirdly, due to its lighter weight, even children can use it.

It should be pointed out that traditional Batak rice planting involves groups of men and women working together. The men strike the soil with their dibble sticks, which are pointed at one end, and the women place seeds into the holes and cover them with a thin layer of soil with a sweep of their foot. The holes are circular, and therefore hungry birds find it easy to reach the seeds.

A question now, is why, if the Batak have known about the existence of the *tagad* for many years, has this technology become widespread only as lately as the 2000s?

Perhaps the answer will be found in the decline of traditional large reciprocal labour gatherings at rice-planting time, and of collective actions in general, leading to more individual and family-based approaches to farming. The Batak tend now to economise on labour input as much as possible and rely on the manpower of their own household, so a technology as simple as the *tagad* can prove very useful. Overall, according to Batak users of the *tagad,* their traditional planting methods require more labour per unit of output than the new technology.[3]

More cashews in Batak swiddens

As we have seen, new farming strategies are emerging in Batak swiddens that allow both women and men to work more autonomously, and to rely less on reciprocal exchanges of labour. Cropping regimes have also been subject to changes, and recently some households have introduced cashew trees in certain portions of their swidden fields. Some of the households I interviewed claimed that their decision to plant cashew was made for three main reasons: (1) it is a low-risk crop, requiring limited capital and little labour (except during harvesting); (2) it grows on poor soils; and (3) it can provide annual income. It should be pointed out that, in other regions of the Philippines, cashew plantations on slopes have shown low water infiltration rates and little capacity to accumulate soil organic matter, thus contributing to soil

erosion. In the case of the Batak, some households have opted to intercrop cashews with rice, but the main reason for this is to establish evidence of their ownership of freshly opened swidden land. Writing of freshly opened swiddens, after all the official barriers described above, introduces a new and somewhat surprising aspect of recent Batak studies that illustrates how intimately the fortunes of the indigenous people are entangled in the local politics of 'mainstream' Philippines society. Every three years, during the provincial and municipal elections,[4] politicians tend not to enforce restrictions on shifting cultivation in a bid to attract the votes of their upland constituents. As a result, the introduction of cashews into Batak swiddens occurs more frequently at election time, when more land becomes available because larger fields are opened from old-fallow forest. However, there is always fear that, after the election, these new fields may be placed under government surveillance through the implementation of reforestation projects, hence the intercropping with rice.

Swidden farming and the election cycle

It appears that on Palawan (differently from their national counterparts), local politicians are more interested in encouraging flexibility in policy implementation, rather than coercion. This is because flexibility allows them to manipulate legislation so that it suits their own agendas. They often refer to the authority delegated to them by higher bureaucracies when striving to legitimise their interpretation of the law. This 'flexibility' is employed to drive their 'powers of coercion'. In order to exercise (or parade) these powers, indigenous people and rural peasants need to be kept in a state of latent illegality. The state, if it so wishes, can then create avenues and opportunities for the so called 'unauthorized users of public land' to revert to legal citizens, to pursue their slash-and-burn practices without being apprehended, and even to be praised for their ecological wisdom.

When, at election time every three years, politicians tend to turn a blind eye to violations of restrictions on clearing forest, the Tanabag Batak and other communities take the opportunity to increase the size of their swiddens, and even to clear patches of old-growth forest instead of restricting themselves to land where only small diameter trees and shrubs are found.

If, during an election, more old growth is converted into swiddens, this is not because politicians fail to implement the law. Rather, they want to show their indigenous constituents that they have the power to divert the law, as long as they receive electoral loyalty in return. Therefore, in order to be resilient, Batak farming knowledge and practices must be modified into a kind of 'dependency', to cope with state demands and political contingencies. These adjustments are problematic because the discrepancy between official requirements and actual implementation of national laws blurs the distinction between what is legal and what is not. To gain access to their natural resources, the Batak have learned new strategies to exploit this vagueness, as well as taking advantage of government institutional weakness, clientship and administrative inefficiency. While these strategies tend to counter domination by

central authorities, they also unavoidably lead to malfunctioning government and a state of permanent farming crisis in the uplands. While the Batak have learned how to establish relationships with politicians, their ability to understand the intricacies of legislation remains limited.

Overall, politicians act as patrons towards indigenous leaders, who tend to capitalize on their knowledge of local politics to gain as many benefits as they can for their communities and for themselves. Of course, these interactions are prone to high-level manipulation. For instance, at election time, the promise of '*libre kaingin*' (unrestrained swidden practices) is a carrot on a stick that is usually dangled by politicians in front of indigenous communities. As a result, every three years, more old forest is converted into swiddens and is taken out of long-fallow rotation. This is because government interventions, over the years, have altered the sustainability of indigenous agricultural systems to the extent that it has become increasingly difficult for the Batak to replicate their traditional ecological knowledge.

People taking advantage of the local elections[5] to convert old-fallow forest into swiddens often try to open as many fields as they can. Households with favourable numbers are dislocated and unmarried children sent to different locations to open new swiddens. This is primarily an effort to minimize the drastic decline in rice yields that they expect in the two years before the next election. At the same time, government and non-government agencies continue to target indigenous swiddens for conversion into permanent plots.

Batak swiddens in the 2000s do not differ in size and yields from those of the late 1990's: they are labour intensive and give low returns. By and large, what we have is a farming system that for two successive years – between elections – tends to rely mainly on soils that have not regained their nutrients, and thus are quickly colonised by weeds.

As the population becomes more sedentary and the feeding pressure concentrates on fewer areas, some community members have expressed an interest in acquiring ploughs and buffaloes to prepare fields. It is important to note that ploughing was long resisted by the Batak, but they are now becoming familiar with its potential benefits, including enhancement of root growth, ability to reduce weeds, the ability to plant a second crop such as mung beans or peanuts, and control of runoff and evaporation. Some households are even planning to break the soil in areas packed with well-developed grass in order to plant corn and vegetables, although they do not yet have the equipment to pursue these goals.

Discussion

I have proposed that, through a chronology of changes from the 1980s to the present day, declining yields per unit of land and labour are among the basic features of contemporary Batak swidden practices. This trend has reinforced public misconceptions about those practices. Furthermore, I have attempted to show that Batak farming knowledge is complex and articulated, contradicting the general view

that their agricultural practices are unsophisticated and technologically backward. On the contrary, farming innovations and experimentation continue to take place, often as a way of countering changes confronting the Batak. Clearly, a complex set of events and circumstances, rather than Batak farming 'ignorance', has contributed to detrimental changes in Batak farming practices, such that the environmental sustainability of these practices can no longer be taken for granted. These events include demographic pressure, loss of important ecological food zones, a drop in seasonal movements, competition over resources, indebtedness and government restrictions on forest use. Undoubtedly, top-down technical approaches to stabilizing shifting cultivation, imposition of imported participatory logic and various forms of external interference have played a major role in the breakdown of Batak social-support systems and mobility patterns.

This description of Batak agricultural transformation does not provide much hope for a positive turn of events. Indeed, the overall picture is gloomy. What appears as inevitable is that Batak traditional practices will continue to undergo radical changes, and the outcome of this cannot be easily predicted. Nowadays, some Batak are beginning to discuss the possibility of procuring the necessary equipment for ploughing some of their short-fallow fields, increasing the cultivation of permanent tree crops (especially coconuts and cashews) and optimizing the household's labour force. Overall, they are adopting short- and long-term livelihood alternatives to compensate for agricultural decline, as well as a number of techniques and strategies to give the highest results per unit of labour input. Interestingly, the ongoing trend displays some elements of a transition from shifting to sedentary upland agriculture, as well as an orientation towards household-level agricultural specialization. On Palawan, a few cases already indicate that such a transition has already occurred with a certain degree of success, but not without environmental costs.[6]

It seems unlikely that the Batak will replicate the kind of technological innovation that has accompanied agricultural change among some non-indigenous farmers on Palawan. This is mainly because agricultural intensification in the uplands requires greater labour intensity and increased use of various subsidies in the production process, such as fertilizers and pesticides. Marketing skills are also needed, as well as the ability to withstand competition from producers in other communities. The socio-economic deprivation and calorific stress that the Batak are presently facing, in addition to their cultural orientation, makes it impossible for them to achieve such changes. Firstly, the Batak are already fully enmeshed in the trade of non-timber forest products, especially resin and rattan, through which they obtain most of their rice. A typical Batak household, where men are busy for most of the time in commercial gathering, may be unable to mobilize sufficient labour internally to ensure successful gardening. On the other hand, although occasional tree cropping is tending to increase, the deferred nature of its returns does not make it a viable and appealing option to most people. Furthermore, Batak households lack the capital resources to purchase production inputs and to sustain themselves until sales begin.

More importantly, knowledge of changing market conditions and commercial gardening technology at the community level is still inadequate.

Overall, in recent years, changes have become so complex and diversified that the Batak have been unable to cope with them successfully. The 1980s, in particular, saw an intensification of crises leading to a worsening of the Batak livelihood, and this plunged to an exceedingly intolerable level in the last half of the 1990s.

Those who do not grasp the connection between local politics and the responses and adaptation of the Batak to new farming regimes will continue to blame indigenous communities for the dramatic changes occurring in the Palawan landscape; for the expansion of grassland and for the progressive decline of forest cover. However, the link between what goes on during election time and what goes on in the environment is, for the Batak, a rather obvious and recurrent phenomenon. In order to compensate for declining yields, they have to make larger fields, and the election cycle provides them with the opportunity to do this. Since land is not increasing, this leads to a further decrease in the length of fallow periods, which leads to further decline in yields, and so on in a vicious circle of escalating resource degradation. As more precious topsoil and vegetative cover is lost, environmental organizations will throw more weight behind government measures against shifting cultivation. The more such measures are enforced, the more the Batak will cultivate soils that have not regained their nutrients, and hence they will have to devote more time to controlling weeds and pests. The consequences, once again, are all too predictable and tragic: more areas will loose the capacity to support natural forest, local landraces will continue to decline, malnutrition will worsen, pressure on non-timber forest products will increase exponentially.

It is a rather nice irony that the expansion of degraded fallow land brings new opportunities for external agencies to engage in tree-enrichment planting and other conservation measures. In a similar vein, declining food production and diminishing biodiversity provide additional incentives for international organizations to finance more such measures. It is no secret that much of the international aid money for the conservation of Palawan – such as that from the European Union – has already been spent in vain on projects that have failed to improve upland agricultural production.

Conclusions

It will require detailed scientific studies to determine whether conditions for optimal long fallows still exist in Batak territory – or anywhere else on Palawan. Such studies are difficult to carry out and require a long-term commitment. Part of the problem lies in the evolving demography, and in the economic changes taking place within lowland peasant societies. It may be useful to point out that, in recent years, urbanization rates in Palawan have been high.[7] Therefore, it would be wrong to assume that, in a near future, the rural population of Puerto Princesa municipality will colonize additional portions of Batak upland territory by opening more swidden fields into the interior. The young Filipino generations of the coastal settlements do

not find shifting cultivation an appealing option. It is regarded as a backward practice; a failure to progress. Conversely, the majority of young people aim at educational attainments and, often, they look for off-farm employment opportunities in the capital city. Interestingly, swiddens originally opened by Cuyonon migrants have been abandoned in increasing numbers over the years, and most of these have reverted to forest. As a result, some Batak have decided to put back into cultivation those areas that were first opened by migrants in their traditional territory.

Overall, the Tanabag Batak continue to be anchored to their land, while experiencing a dramatic demographic decline. It may be possible to speculate that, compared to other neighbouring indigenous communities, the Tanabag Batak may still enjoy a favourable man-to-land ratio in coming decades. However, this does not suggest that they can turn back the clock to fully sustainable swidden agriculture and replicate the old farming regime. Too many socio-political contingencies and environmental changes have occurred over the past three decades. Remarkably, some Batak are still able to recover the soil fertility in fallowed sites, but to do so they have to cut secondary forest 'illegally', facing the risk of being apprehended and fined.

Perhaps, what is needed most is government recognition of the differences between indigenous and migrant practices of shifting cultivation. Until now, such differences have been ignored by decision-makers. Moreover, the laws forbidding shifting cultivation nationwide (Forest Act no. 1148 of 1904, Revised Forestry Code - Presidential Decree no. 705 of 1975) applies to both indigenous and non-indigenous peoples. A positive move forwards would be the issuance of an administrative order by the Department of Environment and Natural Resources clarifying the conditions under which indigenous communities may be exempt from the prohibition on shifting cultivation. The order should spell out the distinction between 'degraded areas' (those that are unlikely to revert to forest) and indigenous fallow fields. This would be conditional upon indigenous communities using their swidden fields rotationally. This is just the opposite of what the department's foresters are presently doing: they warn the Batak not to expand their swiddens and, instead, encourage them to cultivate existing fields continuously until all nutrients are nearly exhausted.

It is my contention that laws should move away from coercion towards providing incentives to the Batak and other indigenous cultivators to make their swiddens more productive and sustainable. This should be paralleled by serious efforts to offer technical, credit, institutional and other support services, in order to increase and stabilize indigenous-farming outputs. In places where swidden practices have become irreversibly unsustainable, specific strategies or alternatives should be developed in close coordination with the client communities, rather than imposing top-down technical solutions. Another major challenge is to document and evaluate the upland-farming strategies of the Batak and other indigenous communities through an integrated and interactive long-term process of research and development. This process should identify best farming practices and understand them in the context in which they are used. Unfortunately, the type of development that is now setting the

trend on Palawan is not moving towards these objectives, nor there is any indication that it ever will.

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Notes

1 There were no botanical names available for these species, mentioned here by their Batak names.

2 Reported yields from swidden cultivation elsewhere in the Philippines are as high as 2300kg/ha (Conklin, 1957). Conelly (1983), after an assessment of numerous studies, proposes that the average productivity of traditional long-fallow shifting cultivation in Southeast Asia is 1600kg/ha.

3 In April 2004, I witnessed the planting of a large swidden field by groups composed of at least eight men and about five women. Interestingly, women and men were working in separate groups, and each individual had his or her own *tagad*. However, at the same time, other community members (especially elders) continued to use the traditional dibble stick, and to rely on the customary division of labour in which men were the dibblers and women placed the seeds into holes.

4 Local elections for municipal and provincial representatives, as well as for district representatives of the lower house, are held every three years. Presidential elections are held every six years.

5 The situation I describe represents the most common trend, but there are individual variations and exceptions to the rule. For instance, during non-election time, some households, in spite of government prohibitions, will still open old-fallow forest in remote locations, where they cannot be easily reached by foresters. Newly married couples, especially in cases where the wife is pregnant and they lack labour and resources to invest in the consuming task of cutting secondary forest, may opt to clear bushy land. A family with one member in poor health may also be forced to clear areas in the immediate vicinity of Kalakuasan, where soils are generally poorer. In short, the impact of policy on people's farming practices varies according to households' individual circumstances. Often, these are unpredictable and cannot be easily accounted for.

6 In the case of the Cuyonon community of San Jose (Puerto Princesa municipality) such costs have included the disappearance of the last stands of tropical forest in that area, depletion of water sources and the massive use of commercial fertilizer, with deleterious effects on the soil (Eder, 2000).

7 The City of Puerto Princesa comes fourth on Palawan for current annual population growth, at a rate of 4.89% (Province of Palawan, 2001).