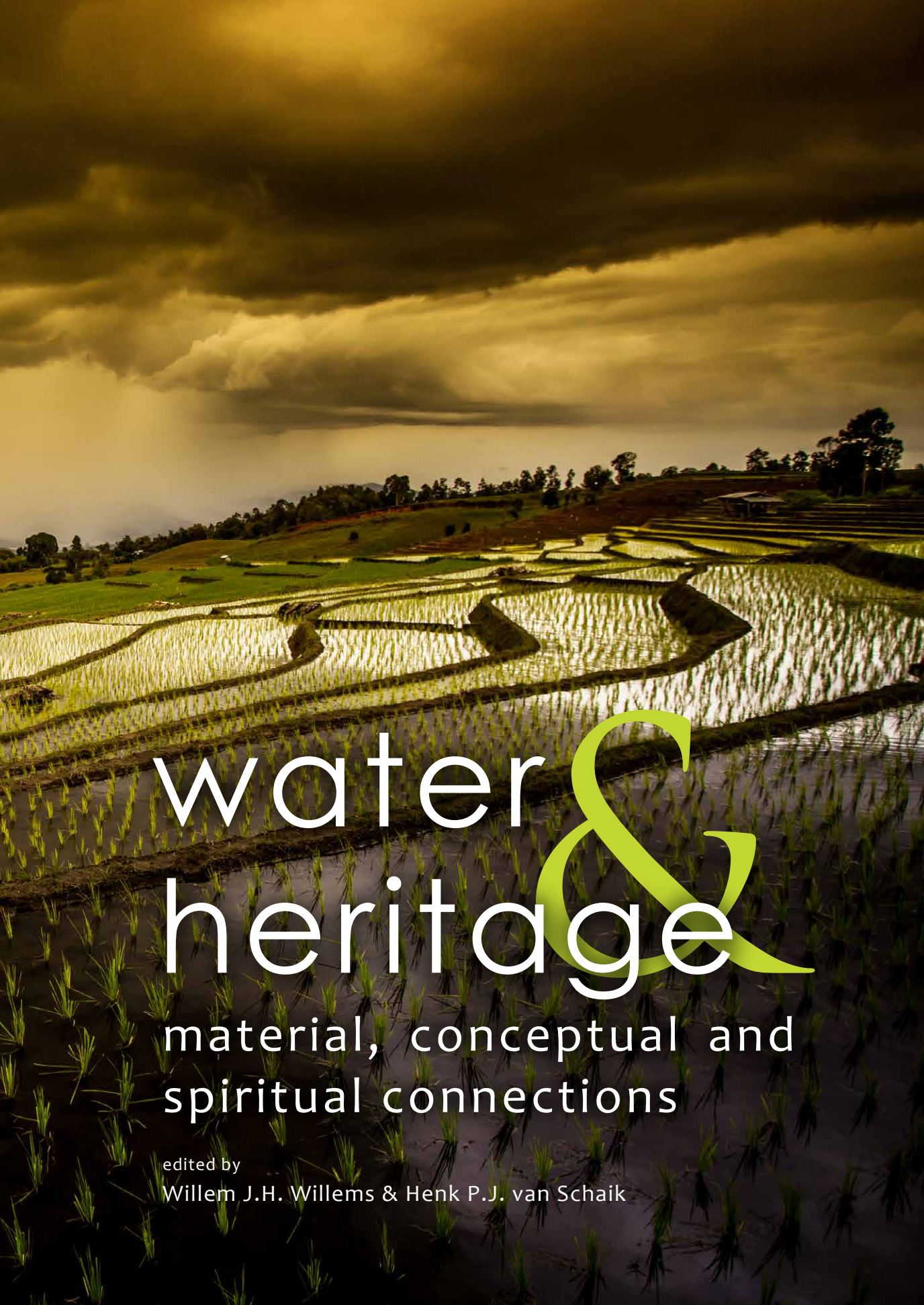

water & heritage

material, conceptual and spiritual connections

edited by
Willem J.H. Willems & Henk P.J. van Schaik

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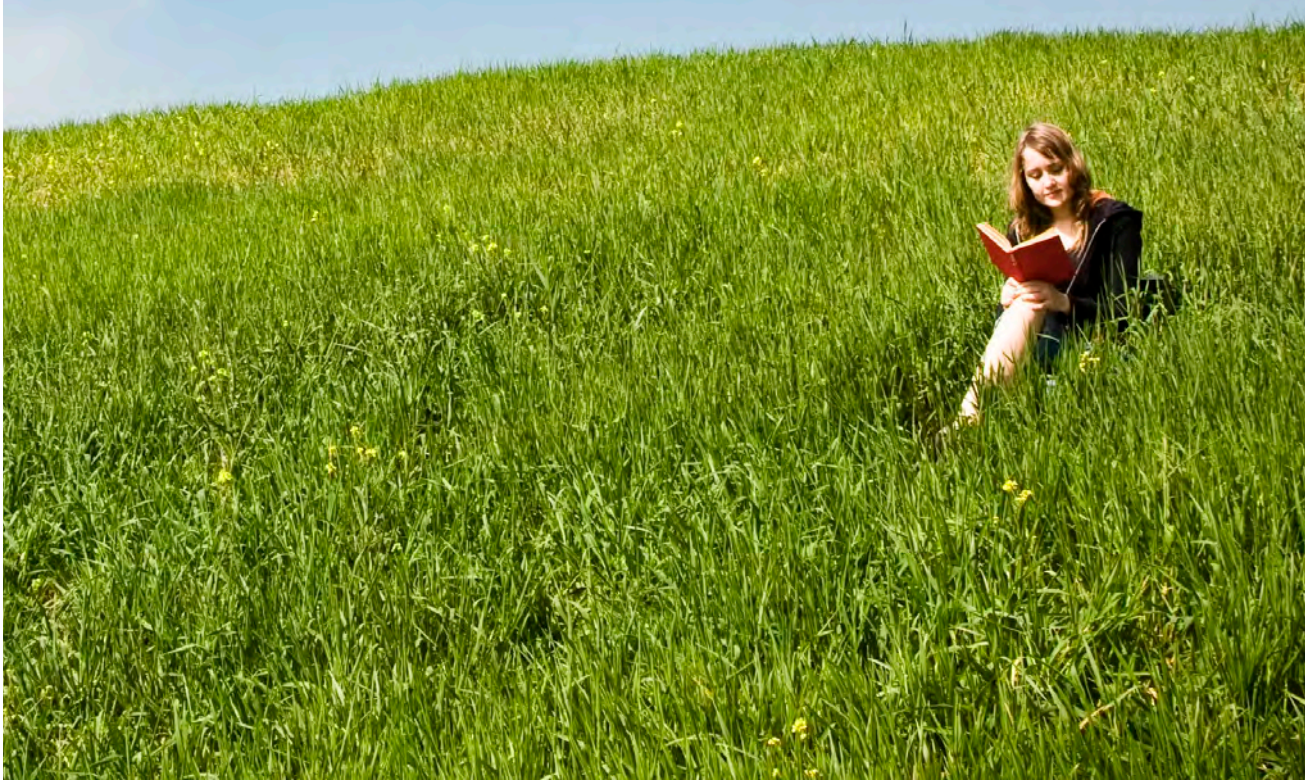

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water & heritage

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Contents

Between pragmatism and cultural context

Continuity and change in Ifugao wet-rice agriculture

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Abstract

This paper looks at the processes that affect the conservation of the Ifugao rice terraces, a UNESCO World Heritage Site. We focus on the increasing dominance of non-local rice varieties, particularly, lowland, commercial rice varieties and investigate the role of farmers and Ifugao communities in the continued existence of the terraces. We also define the Ifugao rice fields as *habitus* and the nexus of Ifugao social relationships. We argue that conservation programs change the way they look at living cultural environments since farmers and communities make practical decisions whose ultimate intention is the continuity of their cultural norms. The paper's main goal is to understand why Ifugao farmers do what they do.

Keywords: *Ifugao, habitus, conservation, Philippines.*

Introduction

Recent trends have witnessed the increasing participation of local communities in heritage conservation (i.e. Anderson 2001; Brokington 2004; Reti 1999; Vernon et al. 2005;). Of particular interest are the conservation programs at UNESCO-listed cultural heritage sites, where top-down approaches have been utilized to protect the degradation of the sites. With the realization that sustainable conservation programs are mostly effective if stakeholders are actively involved, academics and heritage conservation workers have clamored for a larger participation of communities directly affected by site conservation programs (Clark 2001; Lennon 2003; Bandarin 2003; Edroma 2004; Hampton 2005).

In the UNESCO World Heritage Site of the Ifugao Rice Terraces (IRT), Philippines (Figure 1), Ifugao communities have been actively involved in the conservation of both the tangible and intangible heritage (SITMo 2008; Acabado et al. 2014). For the most part however, and due to funding and economic pressures, conservation programs in the region are top-down, with national government agencies (e.g. Department of Agriculture, Department of Environment and Natural

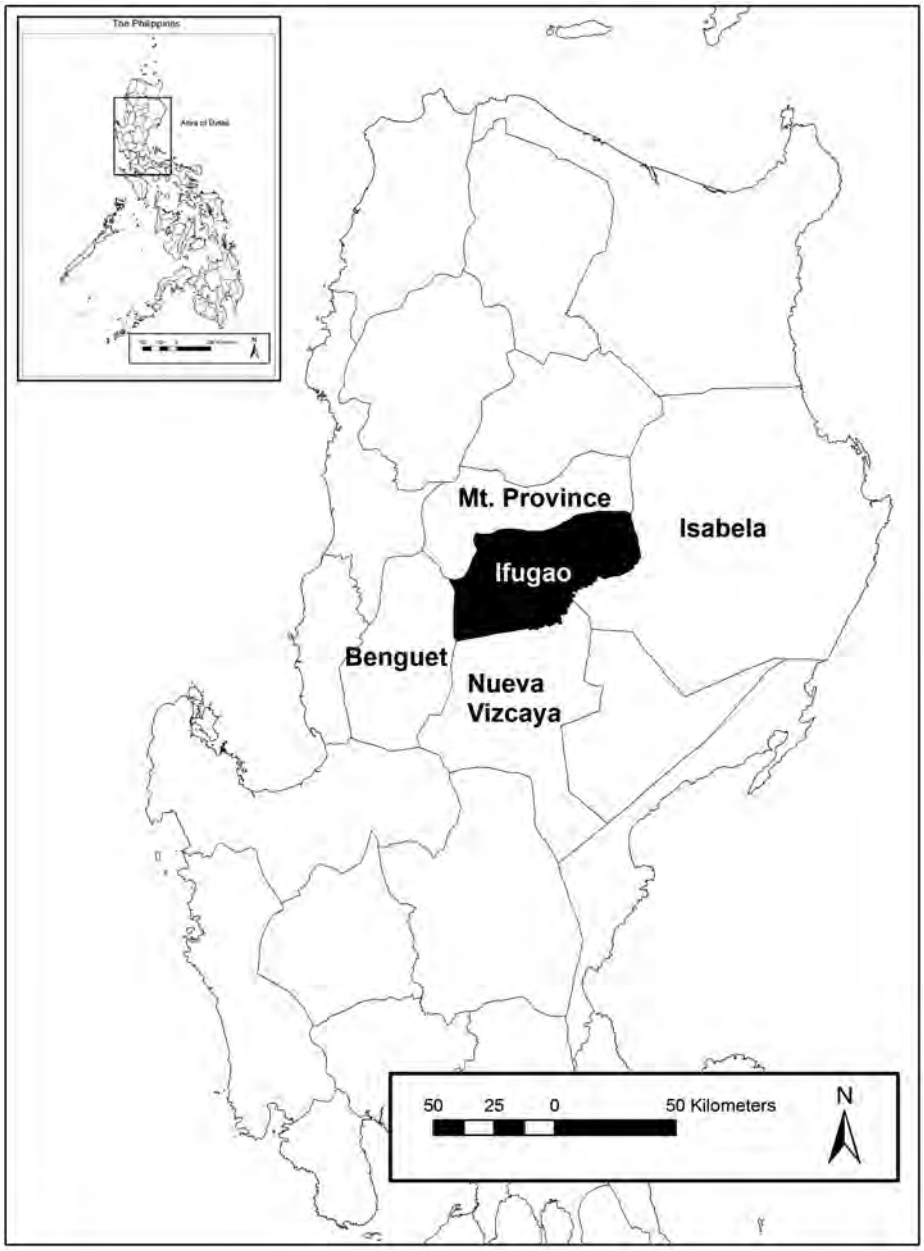

Figure 1. Location of Ifugao Province, Philippines.

Resources) spearheading the projects. Community narratives have emphasized the shortcomings of these projects since local beliefs have been ignored.

This paper aims to show the dynamic nature of heritage conservation in Ifugao where water management, the agricultural system, rituals, ecological knowledge and gender relationships are intertwined. They are part of a system that needs to be accounted for in conservation and development projects in the region. We argue that the Ifugao agricultural system can be thought of as a *habitus* (Bourdieu 1977) and the nexus of Ifugao social relationships where individuals situate themselves in the larger social environment. *Habitus* is defined as "… systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures" (Bourdieu 1990: 53). The concept is useful in looking at production shift in Ifugao and how farmers make decisions. As the market economy exerts its influence on Ifugao communities, conservation programs have to take into account the ability of the Ifugao farmer to make practical decisions.

We further contend that practice theory (Bourdieu 1977, Giddens 1984) is a helpful tool in conservation programs in living cultural environments such as the Ifugao rice terraces. As Ortner puts it, practice theory helps to understand *why people do what they do* (1984).

Practice as a theoretical orientation (Ortner 1984: 127) that emerged as one of anthropology's guiding principles in the last 5 decades. It looks at how individuals react to challenges, particularly, power shifts. We maintain that continuity of the Ifugao rice terraces and the structure that allows the system to flourish is founded on the Ifugao's ability to situate themselves into differential power relationships. With the pressures exerted by the market economy, the intention to produce rice has changed from prestige to monetary gains. The ongoing negotiation between prestige and market production is redefining the Ifugao identity. A nuanced understanding of this negotiation will allow conservation planners and policy makers to develop a more meaningful conservation program in Ifugao.

Ifugao farmers' decisions in maintaining their customary lifestyle – and the agricultural system – have been widely affected by the increasing assimilation of the Ifugao in the larger Philippine society and the pressures brought by market forces. Their decisions however, have been deliberate. Even as we see the adoption of new agricultural practices (and with them, the disappearance of what have thought of as customary rituals) and introduction of commercial rice varieties, new social relationships emerge. Our paper looks at this phenomenon by focusing on the Ifugao farmers' adoption of lowland rice varieties and the impact of the agricultural shift in Ifugao ecology. We also look at customary Ifugao water management system. It is important to note that major disruptions in the Ifugao water management system dispel further degradation of the terraces.

Observations and narratives collected by Marlon Martin (an Ifugao and a heritage conservation worker) and Acabado's ethnography of Ifugao agriculture form part of the dataset used in this paper. We also utilized data obtained by the Save the Ifugao Terraces Movement, Inc. (SITMo) under Ms. Jacy Moore's supervision to look at seed selection and the number of non-local rice varieties in two Ifugao municipalities (Kiangan and Hungduan). As suggested by Moore's

Figure 2. Rice terrace systems in Banaue, Ifugao (Photo credit: A, Javellana and H. Conklin).

data, the rice fields continue to be the nexus of Ifugao social relationship, even with the pressures exerted by the market economy.

Our goal in writing this paper is to emphasize the dynamic nature of Ifugao social and agricultural systems. Changes are inevitable, especially with the increasing influence of political economy in Ifugao culture. Understanding Ifugao farmers' choices necessitates a consideration of the role of agency in peoples responses to shifts in political economy and ecology. The Ifugao are able to meet these challenges by utilizing community cohesiveness and continual negotiations among community members.

The Ifugao

The Ifugao are one of several minority ethno-linguistic groups in the northern Philippines. They are also known for their rice terraces that were enshrined in UNESCO's List of World Heritage in 1995 (Figure 1). This listing recognizes the "…absolute blending of the physical, socio-cultural, economic, religious, and political environments…indeed, it is a living cultural landscape of unparalleled beauty" (UNESCO N.D.). Not only are the rice terraces a testimony to the ingenuity and intelligence of the Ifugao in their transformation of this mountainous landscape, but they also represent an enduring balance of the environment and the cooperative ability of the entire Ifugao community to develop and sustain the terraces. The terraces are not just productive habitat for village sustenance, they are also the site for ritual practice that integrates and sustains the social fabric of the Ifugao. Moreover, they are also the anchor for a diverse and productive environment that involves communal forest lands, taro and other wetland crops,

and a complex agro-ecosystem that includes multiple cropping of herbs, a finely tuned annual cycle, zoning and planning, and livestock production as part of a system regulated by religious rituals and cooperative social organization.

At the turn of the twentieth century two prominent figures in Philippine anthropology began an intensive investigation of the Ifugao (Roy Barton and Henry Otley Beyer). Both scholars proposed a 2000-3000 year old origin for the Ifugao rice terraces, using observations and qualitative speculations on how long it would have taken the Ifugao to modify the rugged topography of the area. This 'long history' has become a kind of received wisdom that finds its way into textbooks and national histories. On the other hand, several scholars have proposed a more recent origin of the Ifugao rice terraces (i.e. Keesing 1962, Lambrecht 1967, Acabado 2009, 2012a). Using evidence from lexical information, ethno-historic documents, and archaeological data, these studies suggest that the terraced landscapes of the Ifugao are the end-result of population expansion into the Cordillera highlands in response to Spanish colonization. Lowland-mountain contacts even before the Spanish arrival might have facilitated the movement of lowland peoples to the highlands when the Spanish established bases in their locales.

The Ifugao has been subjects of several studies that have become classic examples in ethnography and landscape studies. Their terraces and intangible heritage has also made it to the UNESCO's List of World Heritage. However, their complex water management is still poorly understood, especially when it comes to the managerial requirements of both the agricultural system and irrigation.

Traditionally, the Ifugao are agriculturalists who have cultivated their locale for at least 300 years. Their agricultural system is governed by integrated patterns of mixed farming that include the management of private forests (*muyong*), swidden cultivation of sweet potatoes, pond-field cultivation of rice, inter-cropping of many secondary domesticates (i.e. sweet potatoes, potatoes, cabbage, and other cash crops), and the raising of pigs, chickens, and other forms of livestock. The pattern of agricultural system of the Ifugao is complex. Ecological, social, and cultural factors, including indigenous knowledge of how these factors are linked to each other and efficient utility affects this pattern.

The Ifugao water management system parallels those of other systems in Southeast Asia (i.e. Bali), where communities that use the same water channel share irrigation management duties (Lansing 1991; Lansing and Kremer 1993). Lansing's (1991) work in Bali introduces a model where cooperation emerged due to a "need to balance multiple agro-ecological concerns in a crowded landscape of terraced rice fields that could feasibly have been responsible for the emergence of Bali's yield-enhancing autonomous 'complex adaptive system' of agriculture-managing water temple congregations" (Schoenfelder 2003: 35). We argue that this cooperative and reciprocal management is also advantageous for the ecology of the Ifugao agricultural system. Our archaeological and ethnographic study among the Ifugao offer new insights into the rules that structure pondfield management system which requires collective participation at the community level that resist hierarchical control.

The sociopolitical organization of the Ifugao informs discussion regarding the managerial requirements of complex agricultural and irrigation systems. As mentioned above, autonomous groups rapidly constructed the Ifugao rice terrace systems. As the systems expanded, however, these autonomous groups could have faced conflicts regarding access to water, availability of labor, and cross-contamination of fields. Ethnographic data regarding agricultural production-related rituals, suggest that the Ifugao avoided such conflicts utilizing rituals as a form of activity synchronization. This system, however, has degraded because of the assimilation of the Ifugao in the larger Philippine society.

The Ifugao social organization is considered as ranked, with the elite (called the *kadangyan*) owning most of the productive rice fields. Those who do not own rice fields, and thus, do not have access to rice throughout the year are called the *nawotot* (the poor). Other members of the community who owned rice lands but do not have enough prestige to be considered as *kadangyan* are called the *tagu*. The nature of Ifugao social organization has been described in previous ethnographic studies (Barton 1919, 1922, 1930, 1938, 1955; Lambrecht 1929, 1962; Conklin 1967, 1980; Dulawan 2001; Pagada 2006; Medina 2003; Kwiatkowski 1999). Dulawan (2001, 5) and Conklin (1980, 5) illustrate the Ifugao social world as being guided by a bilateral kinship system. The structure of the Ifugao culture underlies an abiding concern with the competitive development of land for terracing and rice production, elaborate traditional rituals that on all occasions involve interaction with deceased kinsmen, and a deep interest in status and rank as well as in the inherited wealth that the latter customarily requires (Conklin 1980, 5).

District	Land Area (m2)	Yield (bundle)	Yield (kg)	Population (1970)*	Rice Requirement (kg)
Amganad	451,891	75,650	109,693	530	193,450
Bannawol	1,920,254	321,466	466,125	3,255	1,288,075
Bayninan	281,382	47,106	68,303	390	142,350
Hengyon	931,944	156,015	226,222	689	251,485
Kababuyan	2,135,471	357,495	518,368	2,295	837,675
Kinnakin	800,262	133,970	194,257	575	209,875
Lugu	339,177	56,781	82,332	370	135,050
Nabyun	129,309	21,647	31,389	160	58,400
Nunggawa	400,726	67,085	97,273	222	81,030
Ogwag	406,548	68,059	98,686	401	146,365
Poitan	1,084,772	181,600	263,319	1,310	478,150
Pugu	497,748	83,327	120,824	270	98,550
Tam'an	248,395	41,583	60,296	60,296	109,500

Table 1. Estimates of rice production from 13 agricultural districts in Banaue, Ifugao, vis-à-vis rice requirements of the population. Estimates are based on a family of five, requiring at least 2.5 kg of rice per day. Rice production numbers are based on Conklin's (1980) estimate from Bayninan agricultural district between 1962 and 1970. Estimates for other agricultural districts were based on a one-to-one correlation between cultivated rice land area and production numbers from Bayninan (From Acabado, in press).

Customarily, the ranking in Ifugao society is important in their agricultural system. The *kadangyan* owns the rice fields and they control access and distribution of rice as food and ritual item. The *nawotwot* would need to work in the fields of the *kadangyan* for them to receive rice as a form of payment for their labor. The *nawotwot* are also associated with swidden cultivation, where they obtain most of their carbohydrate needs, particularly from sweet potato. Indeed, the term *nawotwot* literally means *root crop eater*. Acabado's (in press) previous work has suggested that rice produced in the rice fields of Ifugao is not enough to feed the whole population (Table 1).

Ifugao social structure is an essential component of rice cultivation and swidden farming. Cooperation among kin during terrace building, planting, harvesting, repair of walls and irrigation channels, and different rituals requires precise coordination. As an example, the existence of cooperative work-groups *uggbu* and *baddang*—which are regulated by kinship and territorial affiliation—is responsible for community-wide cooperation, a necessity in the Ifugao landscape and agricultural system.

The sustainability of the terraces in the modern world depends on this ritual community life just as much as it has for several hundred years. But the future of the terraces is endangered by challenges in the form of declining labor force, competition for wage labor, modernization, and the modern industrial agriculture that has transformed the Philippines in the last few decades into a major producer of commercial rice and other agricultural products. Ifugao province is one of the poorest in the Philippines with a poverty rate of 47.5% of the population, second highest in the Cordillera, and sixth highest in the Philippines generally. This rate of poverty, the outflow of Ifugao youth in search of opportunities in the general economy, and the degradation of the environment by the introduction of modern agricultural practices including high yielding rice varieties, chemical fertilizers and pesticides threaten the existence of the Ifugao culture and in turn the sustainability of the terraces as they are integrally connected with traditional community knowledge and practice. Furthermore, World Heritage recognition has introduced a tourist economy into the region that although has some benefit for employment and small business development, also contributes to undermine the fabric of cooperative community organization required for the maintenance of traditional rice farming.

The construction, use, and maintenance of Ifugao irrigation system is governed by cultural strategies that seek to minimize conflict. As a primary resource for rice production, effective water management is paramount to the conservation of the Ifugao rice terraces. Radical means are necessary to revive communities and cultural practice within which the rice terrace landscapes are embedded.

Ifugao agricultural system

The Ifugao subsistence strategy is based on the complementary systems of irrigated rice-terraced fields, swiddens, and agroforestry (Acabado 2012b). Currently, the Ifugao agricultural system is guided by integrated patterns of mixed farming

that include the management of private forests (*muyong*), swidden cultivation of sweet potatoes, pond-field cultivation of rice, inter-cropping of many secondary domesticates (i.e. sweet potatoes, potatoes, cabbage, and other cash crops), and the raising of pigs, chickens, and other livestock (Conklin 1980: 36). Although rice terraces dominate the Ifugao landscape, their agricultural system is a complementary system (Rambo 1996) that includes swiddening, agroforestry, and irrigated rice pond fields.

A cross-section of a typical Ifugao agricultural system is presented in Figure 3, demonstrating some Ifugao agricultural strategies. Within a particular watershed, several types of land-use categories make up the agricultural system: two types of forest cover – '*inalahan* (upslope community-owned forests often composed of open-access communal areas) and *muyong* (privately owned woodlots managed with definite boundaries); *habal* (swidden; unirrigated slopeland, cultivated with root crops, usually, sweet potatoes); *labangan* (house terraces; residential sites); *na'ilid* (drained fields; levelled terraced areas for cultivation and drainage of dry crops such as sweet potatoes and legumes); and *payo* (irrigated rice fields; leveled, terraced farmland, bunded to retain water).

An important aspect of Ifugao agricultural terrace ecology and maintenance is the land-use category of *muyong/pinugo*, or privately owned woodlots. These woodlots serve as the watershed of a particular terrace system and are invaluable for terraces whose primary source of water are the springs located in these woodlots. Although hydrologic studies (Hamilton and King 1983; Bruijnzeel 1990; Saberwal 1998) in the last three decades suggest that heavy forest cover actually results in more groundwater usage, these woodlots protect low-lying fields from runoff and erosion, maintain the supply of surface and irrigation water (through cloud-intercept), stabilize relative humidity, and improve the soil's nutrients and physical

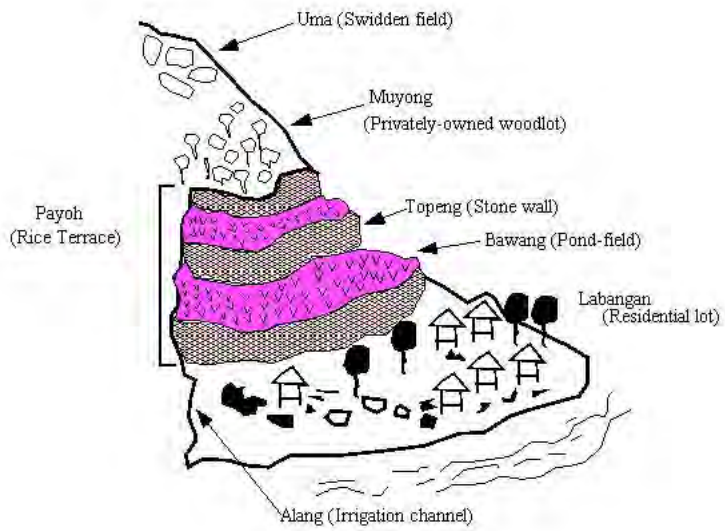

Figure 3. Profile of an Ifugao agricultural terrace (adapted from Conklin 1980).

and chemical properties (Conklin 1980: 8). Indeed, more logging in the vicinity of Banaue in the early 1980s accelerated runoff and evapotranspiration, exacerbating Ifugao's water shortages during the dry season (Eder 1982).

Muyongs also exemplify a sustainable agro-forestry and assisted natural regeneration system making them an indispensable component of Ifugao economy. Timber for construction and woodcarving; rattan, cane and bamboo for basketry, fruit crops and other forest products are sourced from the *muyong* through a highly regulated custom of selective harvesting.

Historical Roots of Ifugao Culture

The Ifugao rice terraces were thought to have been built over 2,000 years ago in very ancient Philippines culture (Beyer 1955) but are now known to have been a response to both the incursion of Spanish colonization in the Cagayan Valley lowlands to the northeast in the 17th century (Keesing 1962; Acabado 2009, 2010, 2012a) as well as an adaptive response to climate change and growing aridity in the Cagayan lowlands during the Little Ice Age in the 13th to the 19th centuries (Peterson and Acabado, in press). The rice terraces may have been developed in already pre-adapted pond fields originally developed for taro and other wetland farming (Acabado et al. 2012). Other components of this complex community farming system include the maintenance of communal forests in the highlands, common lands for other highly bio-diverse plantings of forbs, and integration of swine and water buffalo into the subsistence and ritual patterns of the community.

Radiocarbon dates from terrace studies indicate the antiquity of rice farming in the terraces no earlier than the late 16th century (Acabado 2009, 2010a, 2010b, 2012a, 2012b, 2012c) and that fields in the early settlement of Kiyyangan (Kiangan, Ifugao) were most likely wetland agricultural pondfields for the cultivation of taro. These pondfield systems nonetheless prepared terrain and waterways for the development of rice terraces at two critical junctures in the region: 1) Adaptation to the effects of the AD 1300 event that would have stressed western coastal terrain and eastern valleys from drought, while providing adequate rainfall in the rain shadow of the cordillera for highland farming; and, 2) Accommodation to Spanish control of the people and resources of the region by escaping into mountain refugia.

The Spanish colonial government was not able to establish a long-term presence in Ifugao (and the whole Cordillera region). The end of the Spanish regime however, saw the arrival of the Americans in the Philippines. William Henry Scott's portrayal of the relationship between these new colonialists and the "natives" was an amicable one (Scott 1974). These friendly relations could have been a product of a different administrative strategy that was employed by the Americans.

The arrival of the Americans also signaled the rapid assimilation of the Ifugao in a wider Philippine society. The 300+ years of Spanish presence in the Philippine lowlands seemed to have provided a false impression that the upland peoples (including the Ifugao) were different from lowlanders. This impression persists in present-day Philippines, where Cordillera peoples (including their agricultural strategies) are deemed inferior to lowlanders, when in fact, centuries of rice

terracing show that they have been practicing sustainable forms of intensive and extensive agriculture.

The imposition of state policies, which are based on lowland realities, has unintended but dire consequences for Ifugao farming. For instance, non-formal cooperative farmer groups (based on reciprocal relationships) previously handled irrigation management, but since the Philippine state has policies on irrigation, this cooperative system has broken down and disrupted Ifugao customary practices. The introduction of commercial rice, in the guise of higher yielding varieties, has also negatively impacted Ifugao terrace ecology since commercial rice tends to require synthetic and harmful fertilizers and pesticides. Also, since rice seedlings for commercial rice are readily available from seedling banks, the role of the elder female farmer, who has knowledge of traditional heritage *tinawon* varieties, has been drastically diminished. More importantly, the cooperative nature of Ifugao farming is severely impacted by monetary needs.

Cooperative Nature of Terrace Farming and Water Management

Terrace farming emerged from a long history of community practice and belief that has been highly adaptive in the development and maintenance of farming landscapes in the Cordillera. The lifeblood of the terraces derives from the traditional knowledge of the local people honed through generations of trial and error. From this traditional knowledge, customary law, spirituality and community values evolved specifically to address local needs and sensibilities. It is this *localized development* that makes the terraces resilient to development changes that are coming from the outside but that also is fundamentally important to their sustainability. These external influences are the same that are now threatening the integrity of the Ifugao Rice Terraces as a world heritage site and a living testimony to the genius of Ifugao generations gone by. Without maintenance of these cultural and community practices the preservation of the landscapes is threatened.

Development and modernization of the terraces need to be copacetic with conservation principles and systemic approaches that have emerged from a long and resilient tradition. The maintenance of rice terraces is dependent upon cooperative groups called *baddang*. The *baddang* is a reciprocal work group where farmers tend to others' fields with the expectation that the other farmer will help in the labor requirement of the former. However, due to the market economy, and the premium that has been placed on monetary values, this cooperative work has degraded. Rituals associated with the agricultural cycle have also suffered immensely, to the point that only two, out of the hundreds of agricultural districts (*himpuntonaan*) in Ifugao apply the practice that is called *puntonaan* (ritual plot or parcel).

The concept of *puntonaan* and the existence of *tomona* (village ritual heads) in customary Ifugao society offer a perspective toward understanding Ifugao ecological knowledge. This practice synchronizes agricultural activities within an agricultural district (fields within a valley, usually sharing an irrigation source). *Puntonaan* is a plot or parcel in the "center" of an agricultural district (*himpuntonaan*) owned by the *tomona.* The *puntonaan* is traditionally the first to be cleaned, planted, transplanted, harvested, among other activities related to terrace agriculture.

These activities are signified by specific rituals sponsored by the *tomona*. Once a *tomona* has performed the ritual and initiated a particular agricultural activity, other members of the *himpuntonaan* can start to work on their fields. Otherwise, larger, fields owned by the elite, *kadangyan*, might be worked on first because of labor requirements.

This practice has largely disappeared in Ifugao agricultural rituals. Owing to the expense associated with a *tomona*-sponsored ritual (which includes pigs and chickens to feed the village and visitors, rice, and wine), only two agricultural districts have retained this practice. Maintenance of fields, rituals, and basic social relationships previously revolved around the rice agricultural cycle. The cultivation of *tinawon* varieties is central to this Ifugao social life. Heritage varieties are central to ritual practice as they are locally adapted to cordilleran conditions and annual farming cycles have co-evolved around their seasonality. Since commercial rice does not follow the same cycle as the *tinawon* varieties, its increasing use has disrupted both the social and environmental aspects of Ifugao society.

The practice of *puntunaan* and *tomona* applies to the ecology of Ifugao agricultural terraces. Mutual support among farmers within a terrace system is integral to the effectiveness of drying or flooding of fields as a method of pest control. A single farmer's attempt to reduce pests on a field without the coordination of other farmers would be futile because pests will simply migrate from field to another field. However, if all fields in the system are burned or flooded in coordination with the rest of the fields, pest populations can be reduced. Synchronization of activities related to pest control would make both kinds of fallow (burnt or flooded) effective for reducing population of rice pests. Just as individual farmers manage their paddies by controlling the flow of water, so do larger social groups control pest cycles by synchronizing irrigation activities.

Gender roles are also an important component of the Ifugao agricultural system and have been disrupted by economic and political changes in the region. In a time when gender issues have become a universal concern, the customarily gender-equal Ifugao society took a step backward as far as the sexes are concerned. Take for instance the role of women in the terraces. In earlier times, the planting of the *tinawon* was an accepted domain of women, a practice logically based on the compatibility of the sensitive *tinawon* seedlings and the gentler hands of women. The change to hardier, less pressure-sensitive lowland rice allowed the men to do the transplanting themselves. As men can do transplanting faster than the women, they are hired to do transplanting by rice field owners. The woman, if ever hired for transplanting work, earn a daily wage lower than the men (P200.00 for women, P250.00 for men in the central Kiangan area.) This discrepancy can be clearly observed in the Nagacadan World Heritage Site in the upper Kiangan district where both lowland rice and the traditional varieties are planted side-by-side. The seasonal maintenance work in the *muyong* is also disrupted as men spend longer time in the rice fields.

The customary fallow period that comes after the harvest season, a time for the soil to replenish itself, is no longer observed due to the shorter growing season of the higher-yielding varieties. The intensive use of terraced ponds after several years

of planting the new rice has depleted soil nutrients resulting in low harvest yields. This has necessitated the use of synthetic fertilizers to augment naturally occurring soil nutrients. Furthermore, the new rice, being an introduced species, is highly susceptible to pests and has no natural resistance to viral or bacterial diseases. So the government has introduced chemical pesticides to combat these. The results are devastating. Edible mollusks, shellfish and fish that used to supplement the Ifugao diet have died off en masse in the terraces due to toxicity caused by industrial chemicals. The golden apple snail (*Pomacea canaliculata*) on the other hand, introduced by the government's Department of Agriculture supposedly to augment the protein source of farmers, has turned out to be a voracious omnivore devouring everything in its path including rice plants, smaller snails, fish and other amphibian eggs. Once again, pesticides have been introduced to control this pest.

Ifugao intangible culture has also suffered from introduction of modern farming practice. The role of ritual and the centrality of belief systems that involve *tinawon* varieties is disregarded. Since the introduced commercial varieties have no ritual value whatsoever, rice rituals have ceased to be practiced. One no longer hears the chanting of the *hudhud* epic during planting or harvesting of the *tinawon* rice. This UNESCO-declared Masterpiece of the Oral and Intangible Heritage of Humanity is currently being taught to children in primary schools as a last-ditch effort in intangible heritage conservation. Without the customary practices that necessitate their accompaniment, the rich and complex oral tradition of the Ifugao will cease to exist sooner than later. Non-contextual performance of cultural rituals for tourism only reflects the desperate state of conservation in the province. Communal practices that revolved around the traditional agricultural cycle have lost their meaning resulting in sudden changes in the socio-cultural makeup of terraces communities. Customary labor practices and gender roles changed as a result of the changing of rice varieties in the terraces, an effect never perceived by any of the development agencies involved in the shift to lowland rice.

The changing nature of Ifugao water management

The Ifugao water management system is a community-based irrigation system where farmers sharing a common irrigation source coordinate their activities and share in the maintenance of the irrigation infrastructure. The system also illustrates the complementary nature of swidden fields, forest cover, and irrigated terraces. Swidden fields and communal forests are considered common property, while irrigated terraces and forest cover on top of a terrace system is considered private property. Irrigation infrastructure is a commons property. The presence of both commons and private property in Ifugao explains the apparent stratification and access to land in Ifugao society, a concept termed Common-Pool Resource (CPR) by Ostrom (1990). A *CPR* is a resource system that is available for all members of a community to use (Ostrom 1990:30). These resources are usually limited, therefore, agreed upon rules are instituted that all joint users understand. Customary water management in Ifugao is predicated in this agreement.

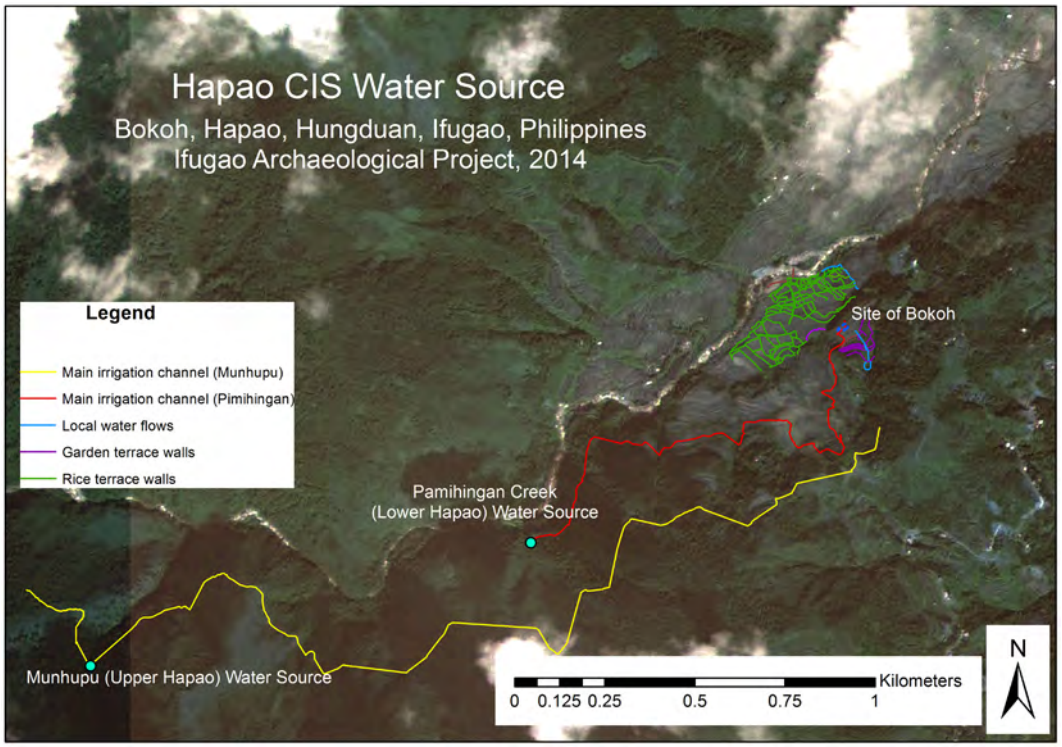

Figure 4. Main irrigation channels in Brgy. Hapao, Hungduan, Ifugao. These irrigation canals have been converted to concrete structures by the National Irrigation Administration.

The assimilation of the Ifugao in the state system and market economy, however, has degraded the Ifugao water management system. Previously, fields that share the same irrigation source conduct annual maintenance work based on cooperative work groups. They also engage in reciprocal labor exchange and contribute expenses associated with the maintenance work. If a farmer is unable to participate in the actual maintenance work, he (maintenance work is customarily a male-centered activity) is obligated to provide an agreed upon bundles of rice to feed the work group. In addition, a fine is meted to a farmer unable to participate or contribute to the endeavor.

In recent decades, the National Irrigation Administration, a state agency, has taken the lead in the maintenance of irrigation systems in Ifugao. This activity is associated with funds provided by the national government. Although it is still the farmers who carry out the repairs and maintenance of the system, they are paid monetarily by the project. This has immense implication in the sustainability of the Ifugao agricultural system as the basic socio-political dynamic that has regulated the social and ecological fabric of the Ifugao has eroded. As a case in point, the National Irrigation Administration sponsored a project to convert the Ifugao irrigation system into concrete structures in Hapao, Hungduan (Figure 4) in 2003. The principle behind the structural change was conceived by engineers who thought that concrete irrigation channels require less maintenance than earthen

structures. Most of the workers who were hired to help with the constructions were local farmers. They were paid monetarily, based on the prevailing wage standards. However, a few weeks after the completion of the project, a typhoon caused several small landslides that buried segments of the system. The local farmers could not muster enough workers as farmers were waiting for the national government to pay them to repair the damaged portions of the system. In the summer of 2014, the system is still inoperable.

Water distribution has also become a source of conflict among Ifugao farmers. Previously, the customary Ifugao socio-political organization has controlled the synchronization of water distribution among fields sharing a common water source, but because of the erosion of the cooperative principle, it is now normal to see farmers guarding their irrigation channels with guns.

New Rice Varieties

The Ifugao, as a people, were not colonized by the Spanish and were only placed under state control during the American occupation in the early 1900s. Rapid economic and political transformations started during this era. Implementing development initiatives in IRT communities involves understanding of the terraces not simply as structures of antiquity but as a living system of people, environment and customary practices. Modern development conflicts with the sustainability of the rice terrace landscapes and community farming practice and contradict the preservation of these living relics of the fading past.

In the 1970's, the Philippine government launched its own Green Revolution Program to boost the agricultural sector and wean the country from its dependence on agricultural imports. Rice, as the staple food of Filipinos, was prioritized for maximum production. New varieties of commercial rice, products of intensive research by the International Rice Research Institute (IRRI) based in the Philippines, were distributed for cultivation all over the Philippines. The Ifugao Rice Terraces were not spared from this "revolutionary" development initiative. Heirloom Ifugao rice varieties, the *tinawon*, harvested only once a year, were substituted with the new high-yielding varieties promising double or even triple the usual harvest volume. The campaign by the government was so effective, most traditional farmers readily shifted to the high-yielding varieties. The initial years of HYV cultivation delivered as promised, but the negative results of HYV cultivation will be felt only after several years after the demise of the local culture within which *tinawon* varieties are embedded. The accruing effects of chemical fertilization, pesticides and disruptions of biodiversity are already apparent, and will contribute to a degrading environment in the rice terraces.

Currently, there is an urgent need to document the vanishing 7 rice (tinawon) varieties that are known to be cultivated in the Ifugao Rice Terraces. Several authors (e.g. Harold Conklin, Maria Stanyukovich, Roy Barton) have emphasized the centrality of rice in Ifugao social and political life. Indeed, rituals and social relationships have customarily been revolving around rice and rice production. As a case in point, there is a specific ritual associated with each step in rice production. This, however, have changed since the introduction of commercial

Commercial Varieties	Tinawon Varieties
52	Binogon
82	Botnol
222	Iggamay
C-12	Imbannig
C-2	Imbuukan
C-4	Madduli
C-4 red	Mayawyaw
Diamond	
Halaylay	
Ingaspar	
Ingaspi	
Korean	
Migapas	
Minmis	
Mukoz	
Mulmug	
Munoz	
NSCI-208	
Pakulsa	
Oakland	
Oklan	
Oklan Minaangan	
Pangasinan variety	
PJ-27	
PJ-7	
RC-218	
RI-152	
RI-238	
Romelia	
RP 224	
Super 60	
Taiwan	
Thunder	

Table 2. Known and named commercial and local rice varieties cultivated in Kiangan and Hungduan Municipalities.

rice (developed by the International Rice Research Institute) spearheaded by the national government through the National Food Authority (Table 1). As noted, more and more younger Ifugao would rather work in the lowlands rather than learn the farming techniques that their ancestors have practiced, and the commercialization of Ifugao rice has changed customary gender roles whereby elder Ifugao women were once the sole bearers of seed selection information, but men and wage laborers are increasingly handling these traditional cultural roles. The changes to farming practice to support the new commercial rice varieties have already had a significant impact on customary culture, and arguably will hasten the

decline of community systems that are integral to preservation and sustainability of the terrace landscapes.

The increase in the number of commercial rice varieties in Ifugao has swamped the terraced rice fields of Ifugao, particularly, those of the rice terraces in Kiangan (Figure 5). Moore (2014) has gathered data that indicate the dominance of non-local rice varieties in at least two agricultural districts that she investigated. We surmise that this is partly influenced by the proximity and elevations of Kiangan compared to Hungduan –higher elevation sites are still too cold for most commercial rice varieties.

It has been more than 40 years since green revolution (commercial) rice varieties have been introduced in Ifugao as part of the Philippine government's Rice Sufficiency Program (Salas 1985). Although they have negatively impacted Ifugao culture and terrace ecology, it has also brought economic stability to Ifugao farmers. Since *tinawon* varieties are not commonly traded because they are prestige food, the shift to commercial rice varieties have provided a source of income to Ifugao farmers. The challenge now is to include this shifting agricultural system to the conservation programs of the Ifugao rice terraces.

Water management and heritage conservation

The conservation of the Ifugao rice terraces is tied in with the conservation of tangible and intangible Ifugao heritage. The context where rice terracing is embedded revolves around the centrality of rice in Ifugao culture. From gender dynamics, to cosmology, to identity formation, rice and its production and consumption shapes the Ifugao worldview. Water plays an important part in this

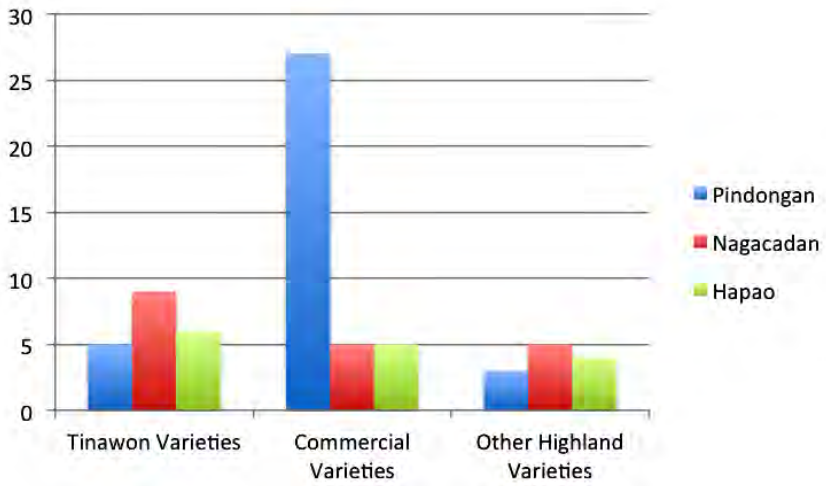

Figure 5. Rice varieties cultivated in three villages investigated by J. Moore. Note: Other highland varieties are rice varieties developed by other Cordilleran groups (i.e. Bontoc, Kalinga).

process as water is also entrenched in the ecological and social aspects of the Ifugao agricultural system. Indeed, water is considered as both a destructive force and as a source of life. Barton (1919) recorded the *great flood* myth among the Tuwali-Ifugao of Kiangan. Barton surmises that the flood myth is a form punishment for wrongdoing and shame as well as rebirth (p. 111).

Water management is also paramount to conserving the Ifugao rice terraces: without water, rice and the terraces will disappear, and the Ifugao culture as we know it. There is a need to involve the communities responsible for the conservation of the terraces in all aspects of conservation programs. For the most part, top-down approaches bring adverse effects in the ecological and social aspects of rice production in the region. As mentioned above, the intention to produce rice in Ifugao in the past was not for trading and the intensification of production was based on social factors, rather than economic pressures (Acabado 2012b). A nuanced understanding of Ifugao production system and social dynamics need to be addressed by policy makers if they intend to develop a more sustainable conservation program.

We further suggest that in the conservation of the IRT, long-term plans have to be in place to ensure continuity not just of the physical but equally of the intangible aspect of this cultural heritage. Implementing development initiatives in IRT communities involves understanding of the terraces not simply as structures of antiquity but as a living system of people, environment and customary practices. The indigenous knowledge of the Ifugao on terraced agriculture, an all-encompassing system that includes rice fields, forests and people, is a major consideration in all development initiatives in terraces communities. UNESCO in its official description of the IRT states thus, "The maintenance of the living rice terraces reflects a primarily cooperative approach of the whole community which is based on detailed knowledge of the rich biodiversity of biological resources existing in the Ifugao agro-ecosystem, a finely tuned annual system respecting lunar cycles, zoning and planning, extensive soil and water conservation, mastery of a most complex pest control regime based on the processing of a variety of herbs, accompanied by religious rituals (UNESCO, ND)."

Central to all this is the Ifugao method of rice cultivation. It dictates the synchronized movement of labor, production and community rituals. It is the fulcrum that holds the system in place so much so that removing this from the equation causes a major disruption in its continuity. In Figure 5 above, Ifugao communities that maintain local varieties have remarkably more of the customary practices that meet UNESCO's criteria for a world heritage site. Other than the World Heritage Site criteria, communities that maintain indigenous rice production have retained more of the customary practices reminiscent of old Ifugao culture including the practice of the old religion and the prevalence of communal labor relations in the maintenance of the IRT. All other applications of traditional knowledge including forest conservation, organic food production, and traditional stone-walling and vernacular architecture are also ubiquitous in traditional rice areas.

The importance of traditional knowledge in the maintenance of the IRT has been recognized by local conservation organizations in Ifugao but lack the necessary support from the national government to make it an institutionalized program in the formal education sector. The passing down of indigenous knowledge to younger generations of Ifugaos is of extreme importance to the continuity of the rice terraces. In 2006, the Save the Ifugao Terraces Movement (SITMo) in partnership with the local Ifugao State University embarked on an ambitious project to institutionalize indigenous knowledge education in the formal education sector as an adjunct to the establishment of community learning centers in terraces communities. This strategy of transferring local knowledge in both formal and informal education level is a work in progress and seeks to save the terraces in particular and Ifugao culture in general, for generations to come.

Another conservation approach applicable in the IRT is to address the economic inadequacies prevalent in Ifugao communities that lead to terraces abandonment, land-use conversion or out-migration of farmers from farming villages. Traditional subsistence economies in Ifugao are becoming things of the past and communities will have to join the mainstream economic flow or get lost in the currents of the global village. The booming tourism industry, albeit an anathema to indigenous cultures, somehow holds promise if managed properly following the tenets of sound eco-tourism guidelines. The involvement of terraces communities in tourism activities will tap on the Ifugao's natural craftsmanship, off-farm activities based on traditional enterprise activities such as weaving and carving. Major assistance in marketing will be necessary. The value chain development of terraces community products such as woven textiles and wood carvings, made during the fallow period of the terraces, will greatly supplement farmers' income. Putting a premium on the Ifugao traditional rice can also make a breakthrough in the organic food market notwithstanding its marketability as a product of a World Heritage Site.

A community-led eco-tourism model pioneered by the Save the Ifugao Terraces Movement (SITMo) demonstrates the sustainability of culture-sensitive tourism through community involvement. The tours centered on the traditional rice cycle of the Ifugaos from land preparation, planting to harvesting. The different stages of the cycle are packaged as tourism attractions and visitors are invited to participate in them "hands-on". The Rice Cycle Tours, as it came to be known, necessarily involved the farmers whose participation made them direct beneficiaries of tourism revenue, a reversal of their roles in the usual tourism setup where they stand to benefit the least from tourist arrivals in the province. The tours showcased rice rituals whenever present and visitors participate with the community in the work being done in the terraces. In 2013 alone, SITMo registered a total of US$50,000 in eco-tourism revenues for the heritage municipality of Kiangan, a relatively great improvement compared to zero income in tourism by the same community before the tours started. Payments are made directly to farmers, farmers' organizations and other community groups that are involved in the tourism activities including tour guiding, homestay accommodations, local transport services, cultural shows and sales from terraces products.

The rice cycle tours however did not limit itself as an enterprise initiative but expanded to become a catalyst for cultural "revival". Rice rituals that were nearly forgotten were again performed in their proper context, albeit undoubtedly, tourist entertainment became a value added purpose. It also encouraged farmers to go back to planting traditional varieties as the tours can only include fields planted to the native varieties. Tourism and cultural conservation sounded oxymoronic at first but making the enterprise community-led and guided by the sound principles of eco-tourism made it promising as far as conservation and community benefits were concerned.

Why farmers do what they do

Conservation programs in Ifugao are heavily focused on infrastructure repair (irrigation canals, collapsed terrace walls, and road improvement) and recently, developing markets for *tinawon* varieties. Indeed, the national government, through the Department of Public Works and Highways has allotted US$19 million for infrastructure development in the Municipality of Kiangan alone (US$72 million for the whole province). The cultural foundation of agricultural production has been largely ignored, and the unintended consequences to Ifugao customary culture have been magnified.

As *habitus*, the Ifugao agricultural fields become the arenas where status and power are played out. Since the Ifugao base their status on the amount of rice land holdings that they own, the shift to market production empowers the non-elite to gain economic power and prestige through monetary wealth. The non-elites also now have control over labor since the cooperative labor groups have been replaced by wageworkers.

The increasing dominance of commercial rice varieties in Ifugao indicates that the primary concern to produce rice is to gain monetarily, even in areas that are included in the UNESCO World Heritage List. The terraces have become a source of income, thus conservation programs should focus less on the infrastructure, but more on Traditional Ecological Knowledge that will be lost because of the changing nature of production.

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