Traditional Ecological Knowledge and Practices: A Strategy to Understanding Conservation of a Heritage Site

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***Abstract*— Studies on the preservation of Living Cultural Heritage Sites worldwide have made a strong case for the role of Traditional Ecological Knowledge and Practices in preparing for, coping with, and resolving issues and problems related to conservation and sustainability of a Heritage Site. This paper describes the ecological knowledge and practices among the Ifugaos in Banaue, Philippines. Based on data gathered from key informants, the study revealed a strong nexus among the human, non-human, and the supernatural in the cultural landscape. This interconnectivity is manifested in the rich cultural tradition of the Ifugaos. The interviews demonstrate a very high respect for their land, environment and their natural resource. They acknowledge the power of nature and culture in shaping their lives but not leaving their destiny on them. They make negotiations by performing rituals and follow the signs and threats of nature. This research provides an analysis to comprehend the complexities and interplay between nature and culture. Consequently, this paper contributes to the understanding of how world heritage sites are to be managed and restored in the cultural and current social context.**

Keywords— ***Ifugao, Traditional Ecological Knowledge, rice terraces, heritage sites***

I. Introduction

Traditional ecological knowledge is a concept to describe the knowledge inherent to the local people of an area about the continuity, maintenance and up keep of indigenous resources and practices. It would be very helpful to look back on how ancient societies managed their communities and respected their environment in the process of planning for development in indigenous peoples' communities (Hughes, 1975). Through this, we can learn insights from history in order not to repeat what have been the mistakes in the past. Hughes further said, "No wise environmental policy can be based on ignorance of the workings of nature" (Hughes, 1975).

Henry Huntington (2000), added that 'traditional ecological knowledge should be promoted on its merits, scrutinized as other information is scrutinized, and applied in those instances where it makes a difference, in the quality of research, the effectiveness of management, and the involvement of resource users in decisions that affect them'. Turner (2000) further said that, "in looking for answers and solutions to ecological dilemmas that we face, such as loss of biodiversity and imperatives for restoration of degraded lands, it is important to respect, recognize, and apply traditional ecological knowledge and wisdom of indigenous peoples, with their full participation and collaboration." The development planners have to consider and ensure the participation of the local people at earlier stage of the development project. This is to meet and blend the local and global knowledge that each party possesses, by negotiating common objectives and values (Diduck, 2004). Ignoring indigenous people and their knowledge systems is not a sound economic strategy (Sillitoe, 2002:92). As native cultures disappear there is also a loss of knowledge of a way of living in a balance with the earth (Risiro, et al., 2013).

The Dilemma : The Rice Terraces Today

The Ifugao rice terraces are still there but the quintessence of their existence is no longer the same. The early Ifugaos have venerated and taken care of the terraces for survival – for their existence as people (Andres, 2004). It has been a normal practice for Ifugaos to maintain the terraces' productivity and vibrancy. To the Ifugao, the upkeep of the terraces is their social and spiritual responsibility. Today, however, is different. The perception is tainted with commercialization because of tourism. Most of the modern Ifugao farmers are no longer the self-reliant Ifugao farmer with a sense of community cooperation. They are now dependent on the government's aid or actions for the maintenance of the terraces. The modern farmers treat the terraces differently due to foreign influence into the area. At this standpoint, we can now compare how the Ifugao ancestors managed the environment and the terraces with respect and utmost care. Accordingly, West (2006) expressed the commodification of values and in the case of the Ifugao rice terraces farmers, this is through the influence of Christianity, tourism, education and the way the government implement development. Now, the modern Ifugao see the terraces merely as a source of rice for the daily food intake of the family. The essence of the relationship between men and the environment is no longer given importance by the modern farmer. The social responsibility to maintain the irrigation canals is no longer voluntary but dependent on the

government's funds and employees assigned to clean the canals and maintain them.

The Banaue area has been invaded by modern practices. The usual responsibility or division of labor between men and women are becoming weak. Women, who are usually are the ones taking charge of the cleaning of the rice terraces, are going to university and the younger females prefer doing lighter jobs avoiding the work in the rice terraces. As a result, the quantity of harvested rice is affected. There are very few women maintaining the cleanliness of the rice terraces. Before, it was the women who clean the rice paddies and the men to do the heavier work of maintaining the physical aspect of the rice terraces per se - from the repairing and expanding of terraces to the tilling of soil or "mun ga-ud." Traditionally, the man, upon finishing his job, were the ones who stayed in the house to cook and take care of the children while the female/woman goes to clean the rice fields. Today men, on the other hand, are not as enthusiastic as the Ifugao ancestors. The maintenance of the irrigation is no longer a social responsibility but a task.

Demographic factors like the increased of family size significantly determines the attitude towards the IRT. The population has increased and the food coming from the terraces alone is not sufficient to feed the family. This is because their family is expanding with the number of children. The male Ifugao is often forced to go to other places to look for jobs and better income to support the family. Ifugao parents are sending their children to the university for a better future. Today, it is only the Ifugaos elders and out-of-school- youth are left alone in Ifugao to continue with the terrace farming. There are some young people who are not interested going in school and they are the ones helping their parents continue with the tradition. However, the youngsters' perception and treatment of the terraces is not as how the earlier Ifugaos have valued them. Also, native houses are rarely seen nowadays. Houses today are mostly made of concrete and galvanized iron roof. This became one of the seen problems by the government and the locals. They called it as an "eye-sore".

The purpose of this article is to contribute to the discussion of how indigenous peoples or communities manage their environment and heritage. This paper is focused on the case study of the Ifugaos particularly in Banaue Heritage sites.

II. METHODS

The Key-Informant (KIs) interview was employed with elders who own the terraces. This is to gather primary data on their rituals and indigenous farming practices, which were passed on to them by their forefathers. Six (6) KIs were interviewed in order to crosscheck and validate the gathered information. This is to gather primary data on their rituals and indigenous farming practices, which were passed on to them by their forefathers. KIs were interviewed in order to crosscheck and validate the gathered information to know how the restoration process in the IRT is being implemented. The interview process have used an interview guide where follow-up questions, as appropriate were asked during the actual interview. This was employed to probe deeper in order to capture the answers.

Focus Group Discussion among farmers, stakeholders like business group, the Non-government organizations in the restoration, and the barangay officials, has also been undertaken. Observing and recording their perspectives on how the heritage site should be managed and restored. The indigenous farming practices and beliefs were also recorded during this process. Through their interactions and discussions, perceptions of their environment and the heritage site have been revealed. The procedure was tape recorded and transcribed. This method was accomplished through the help of the Barangay Council headed by the Punong Barangay. The focus group discussions were held in Barangays Bangaan and Batad in the Municipality of Banaue.

Secondary data, i.e., documents and reports, were also gathered in the Municipal Government of Banaue with the help of the Municipal Mayor and his staff. These documents like old photographs and Memorandum of Agreements (MOA) served as a reference for the observed and collated facts.

III. RESULTS AND DISCUSSION

Traditional Faming

Since time immemorial, the Ifugaos have been known for their traditional farming practices as depicted/practiced in the famous rice terraces. The local farmers were able to maintain the traditional rice terraces farming to this present period where modernized and mechanized agriculture is widely practiced. They were open to new farming technologies but then the techniques were not applicable and amenable to their belief and practices. One of my respondents said that they are not using inorganic fertilizers because it will just destroy the fertility of the soil.

> Respondent No.1: *Hinewe nan ibagak kihe^ a an achi ami mun usar hi fertilizer te nan belief mi ya nu mun usar tah fertilizer very robust nan tanom ngem ma-spoil nan luta (*This is what I will say to you that We are not using any inorganic fertilizer because we believe that when we use an inorganic fertilizer, our plants are very robust and healthy but then this kind of fertilizer spoils/destroys the soil).

To this century of mechanized farming, the Banaue rice terraces farmers still do practice the farming practices being introduced by the Department of Agriculture for a better harvest was not accepted by the local farmers. This is because it does not apply in their belief and in their rice terrace farming. They believe that using inorganic fertilizers will just destroy the normal acidity and fertility of the soil. For the local farmers, the preservation of the soil's texture and wealth is important. It is where the success of their harvest relies on. It is important for them to take care to maintain the fertility of

the soil in order for them to have a good harvest. Once destroyed, they will also lose their source of livelihood by having a poor harvest, which means less food for the year. For centuries, they have been practicing their own kind of soil fertility maintenance by putting weeds and rice stalks to the rice ponds by stepping it down inside the soil to be rotten ready for the next planting season. One of the respondents said when asked how they take care of the soil fertility through the years,

> Respondent Number 2: *nan atonmi ya umecha gabutan nan walls amin an ruut ya mapan idiay padi that serves as the fertilizer. Ma id chi commercial an fertilizer an usaron mi. Organic mo nae nan holo^ hiyah chewe an usaronmi an fertilizer(*what we are doing to is that they will weed the terrace walls and put all the weeds inside the paddy that will serve as the fertilizer for the terrace soil. We do not use commercial fertilizer).

In between harvest to planting, there is what they call the *udol* or the earliest harvest. This is the planting of small patch of rice field in order to catch up with the rice reserve they have kept until the harvest season. This is practiced in order to avoid any rice shortage while waiting for the harvest period. In this way they will have a continuous supply of rice all year through. This can also be augmented by the food planted in the *uma* or Swidden farm in the unterraced slopes where root crops, fruits and vegetables are planted.

Indigenous Stonewalling technique

Accordingly, the terraces found at the base of the mountains were the oldest one and the rice terraces on the upper level of the mountain slopes were more recently done by the present Ifugao farmers. There are parts that were not stonewalled but have never been eroded because of constant maintenance by the Ifugao farmer. Also, it can be observed that the terrace walls are slanted where the base is made wider than the top. For the Ifugao, this is done in such a way that erosion can be prevented. Informants during the focus group discussion have demonstrated and described lucidly how stonewalls or the *tupeng* are constructed:

> **Informant Number 3**: *Nan pun-ammah hnan topeng ya achi apuradu te i-fit an ustu nan batu. Ihama^ nan mayat chi fitting nay a ahi hinodhod. Had-on goy puntakenana ya ahi go tuluyan an topengon.*(The Ifugao way of stonewalling is not time bounded because one must look for stones that fit the other stones to make it sturdy then cement it with soil pounding it hard and let it stay for some time to make the soil steady then continue it afterwards).

During the interview, informants who participated in the focus-group discussion mentioned of the restoration projects of the eroded terraces where stonewalls collapsed after a month or two because the people who made and the Engineer who implemented and inspected were not aware of the indigenous way of stonewalling. Instead, they have followed the project specifications and targeted calendar days:

> *Informants 4,5,6,7: Wacha nan nagibfu an topeng ngem ugge pay immey hin tawon ya nagche fun eheto ngamin nan nun topeng ya igge cha sinurut nan ustun pang-ammah h'nan batu ya luta.Pinnaspas hi nagat cha tapnu achi ahnu ma-overdue.*(There is one finished rip-rap project but it did not last and it crumbled because the people who constructed are not from the place. They did not follow the right technique of stonewalling, it was very quick and conscious of the calendar days specified in the project work-plan due date).

Indigenous House Construction

For the restoration of Native houses respondents mentioned:

> Farmer 8: *"Wacha nan Engineers chi probinsiya an ipilit na nan design an aton ngem ipilit mi po nan design ya pangat hinan native houses hiya an sinurut na."* (There is this engineer from the Province who tried to insist their design in the construction of native houses but we also insisted the native way here so he followed in the end)

> Farmer 9: *"Fun man athinay pangat mi*". *Ipilit mi po nan ustun pangat heto* (that's not how we do do it here, we insist on the way we used to construct a native house here)

Indigenous Water Governance

Irrigation in the terraces is continuously supplied and maintained all year round. The Ifugaos constructed canals in every terraced paddy where water can be supplied through a small inlet and canal to control the flow of the water. The water is extracted from the river that supplies water to almost all the rice terraces. The Ifugaos have managed to create their own irrigation control system in order to have a regular flow of water without flooding. During the dry season, the irrigation system is carefully managed. Water content of the rice terraces was able to be retained the whole year round to prevent it from drying. Men's tasks were to maintain the structure of the terraces and the water flow in each paddy by constantly channeling a large quantity of water to the terraces to maintain the soil moisture. Women on the other hand, do the weeding throughout the year. After the rice terraces were planted with rice seedlings, rituals were performed in order to "ward off damage to terraces or crops" (Conklin, 1980: 1).

The Ifugao people have practiced the *'ubbu'* or some kind of a social responsibility to maintain water irrigation and source for their own good. This degree of social control, social organization, and responsibility, which they posses and practice obediently, gives them a very trouble-free culture.

> Informant Number 10: *"Nan tamu cha. Hinnod cha umeda lang menmentenaron nan watering. Continuous an cleaning nan loba- nan paddy hina en nan wall hiyah diye. organic mo nae nan holo^ hiyah chewe an usaronmi an fertilizer."(*The work of the farmer is that they are just going to maintain the water. There is a continuous cleaning of the rice terraces and put all the weeds to the rice paddies. That is why we use the weeds from the walls and throw them all to the rice paddies and that serve as the fertilizer).

In the maintenance of the irrigation, informant 2 mentioned that farmers took turns to fix every little or big dysfunction or problem in the terraces. It was an automatic response of the local farmer to do it without any assignment or force enforce to them. To them, it is a give and take behavior among the farmers even it does not affect their own terrace farm. Everybody will join the repair or whatever works that is related to the maintenance of the rice terraces. Accordingly:

> Informant 11: "*nu achi tumulung nan ohan farmer mid chi ume an tumulung tu ihiyan nu waday tiempo an kasapulan na chi tulung hinan payo na (*if a farmer does not help in times of terrace maintainance, he is expecting that nobody will not help him in his time of trouble). This is the reason why there is what we call the *ubbu* where everyone can accept or return whatever help needed from their fellow farmer.

Metaphysical-human-non-human-environment Nexus

The Ifugao forefathers have a rich tradition of animism. The surroundings have greatly influenced them. With an environment enclosed by surrounding mountains, the Ifugaos have considered their natural environment as a giver of life. They were dependent on the natural phenomenon and were able to create and engage in rituals in order for nature to provide more by having a good harvest, good weather, etc. The indigenous people believe that all things that exist in their environment have soul and feelings with the ability to serve or inflict pain to people. This is a guiding principle among local people, which served to provide a harmonious state with their natural world. Failure to respect the sanctity of their environment will give them negative feedback in return where they would have to suffer the consequences (Hughes, 1975). They have developed their resilience through the employment of their native methodologies at their own pace and time in order to survive as a people without any infusion of outside practices. These people are maintained to be in harmony with their environment. "The regulation of resource use, rationing or limiting pressure on resources, mobilization of community and focused group action which helped in the sustainable use of natural resources in mountain areas in the past, were greatly facilitated by control of local resources by communities" (Berkes, 1998:306). The rice terraces can support this claim. They have been carved by the early Ifugaos with their bare hands and with the aid of simple tools such as wooden and stone implements. "The walls of the terraces consists of big stones taken from the riverbeds and placed accurately one on top of the other with clay to fill the chinks" (Andres, 2004:14). They have been an output of the Ifugao people's identity and survival. The beauty is not very important. They value the fact that it is a representation of the Ifugao entirety. To the Ifugao, "the terraces are a sacred trust, a constant reminder of the veneration due his forbears, of the toil and the sacrifices that went into the creation of each terrace-of his ancestors' faith in the future generation" (Andres, 2004:15).

When Christianity was introduced among the Ifugaos, the rituals especially the "baki" began to slowly fade to this day though there are still "mumbaki" who are still alive and their interested descendants are learning how to "baki" once again.

> Informant Number 12: *Some are still doing the traditional rituals before during and after planting. Ngem napigsa nan effect di Christianity in fact I am one of the pagan persons before. I have been doing those rituals. Ngay difference before ya ad uwani? Nunpachung hi maknongan ya hi God ngem athitu, haon an ohan hi ulitaum ya nun achala^ ya lallakay an nam-in they were the one who were teaching us the rituals. They did not tell me that I will soon have our life someday and now that I found God there is the word that you will have eternal life after death. So I followed that* (Some are still doing the traditional rituals before, during and after planting but then the influence of Christianity is strong. In fact, I am one among the pagan persons before. I have been performing those rituals. They are both saying about God but then the difference of the rituals and Christianity is that Christianity assures me of eternal life after death which the ritual does not say, so I followed that).

According to Hughes (1975, p.148) 'Judaism and Christianity, helped to form our habitual ways of thinking about nature. It is evident that the modern ecological crisis is to a great extent the result of attitudes which see nature as something to be freely conquered, used and dominated without calculation of the resultant cost to mankind and the earth." It was said that the 'departure' from animism to human rationality has caused this crisis in our ecology today. Ecology is now treated as an object or subject for human perusal.

Rituals and beliefs attached to the indigenous farming of the Ifugaos

The Ifugao way of farming is a ritual-laden practice. Every farming activity is commenced or finished with a ritual

called baki done by the mumbaki. The baki needs animals to be butchered for the baki to take place. A carabao, pig, or chickens can be butchered depending on the social and economic status of the person who will sponsor the ritual or what the occasion to be celebrated. Usually the mumbaki will see the bile of the animal to determine whether the baki of the activity will be a success or not. If the bile is very healthy and full, the activity will be a success but if the bile is not good and wrinkled, the activity will not be a success so another baki will be undertaken to appease the gods and ask for their blessings for the said activity. The mumbaki will sit and chant/recite the baki which contains the genealogy of the family and the different gods and spirits for their guidance and blessings. The farmers cannot start their farming activities without performing a ritual through a "baki." During the "hopna" or planting of the seedlings, a "baki" is performed in order to ask for the blessings of "kabunyan" for a good and healthy plant until the harvest season.

During the harvest time, a celebration is made called the "gotad" as a means of a thanksgiving for the good harvest. People will be beating their gongs and dance – and also drink "baya" or rice wine, made and fermented specially for the occasion. The people will take turns in twos, to pound rice to feed everybody until the harvest is finished. This will be what they call the rest day for everyone in the community. People from the nearby village will not be permitted to go in. Putting a sign on the boundary using a dongla or other plants signifies this. In this manner, the neighbors will understand that they are having their rest day. If it is an emergency, the neighbor will wait until the night. This is because the Ifugaos believe that a visitor from another village may spoil the good luck in the village. This will also be done in other villages.

IV. CONCLUSION AND RECOMMENDATIONS

Today, there is an apparent upward trend of studies on the rice terraces. Philippine national and regional daily newspapers reinforce it by their reports that the Banaue rice terraces are endangered due to the erosion of the stonewalls, a dried up irrigation system, the invasion of giant earthworms and the introduction of the golden apple snails. The Philippine Star newspaper states that, "rice production has dropped despite government efforts to introduce high-yielding varieties and encourage harvest twice a year" (Carlos Medina, 2003). In contrast to this statement and to the government's effort, the introduction of new technologies was significant in the degradation process of the terraces. The farming innovations caused the start of the problem followed by the local tourism industry.

Some were direct and some were long-term effects of these activities. The case of the Banaue Rice Terraces as a World Heritage Area has caused an impact on the ecological management of the place. In effect, degradation and erosion of the stone walls have caused them to start to crumble. The media is inflating the issue and causing alarm to development planners both from the government and private sectors. The management of the government and different projects from different NGOs has created a strain on the farming system.

The introduction of the golden apple snail, red algae, and inorganic farming inputs has caused low rice productivity. Moreover, the cutting of trees used in woodcarving and the construction of buildings within the terrace area, to accommodate tourist needs have contributed to the drying of the source of water for the irrigation system. Guimbatan and Baguilat (2006) said that the Ifugaos were instructed by the national government to abide by the principles of international values in order to achieve the end of tourism. The government thought that shifting from the indigenous way of farming to technology-based farming and intervening in the farming practices, would result in improving the Ifugao terraces. The opposite however, has been the result.

The government and development planners have imposed their plans without getting down to the community level to really find out if a project is in congruent with the culture. According to Gonzalez (2001:17), "Priority areas for development have had to be accepted by the Ifugaos as presented to them by the Ifugao Cultural Heritage Office (ICHO) without the benefit of consultation. The result is an alienated, hand-out-dependent (though still paid) work force that sometimes complete below-quality work in expectation of another round of externally generated and funded projects." The project planners and implementers were not there to see if the project was applicable in that area. They were not able to understand that the Ifugaos created the terraces in order to meet their socio-cultural and economic needs. "It should be remembered that rice terraces are a creation of the unique Ifugao culture. Thus the disintegration of the social organization that maintained the structure for generations represents a basic threat to terrace sustainability" (Gonzalez, 2001:17). A certain technology or innovation which is very successful for a certain place is not necessarily effective or applicable to other areas. Societies and cultures are complex and dynamic. According to Stephen Edwards "the conditions that will promote sustainability of wild resource uses derive from the context in which the use is being made" (2001:v). The environment and people have to be looked at as a symbiotic relationship. Development planners and implementers should endeavor to comprehend the expertise and skills learned from the participant-observation approach employed and apply this in the program implementation. We have to realize that we are "one of nature's members rather than as striving to be in control of it." (Cajete, 2004:47).

The result of this study has shown that people's perception becomes dynamic through time. The values that have been considered sacred and culturally relevant are no longer perceived by the younger generation as the ancestors. Government agencies and other development implementing agencies cannot also see the relevance or importance of such to the people. However, in some instances, there are cultural values, which are really deeply attached and important to the culture of the people. However, these at present time are

practiced occasionally. Most of the government projects and programs have changed much of the farmers' indigenous technology especially the young farmers of today where values and tradition were not seen as vital to the cultural continuity. The Department of Agriculture and Department of Tourism (DoT) for example have been the major factors in the physical erosion of farmers' socio-cultural practices in the rice terraces. These two government agencies played a big role by introducing technologies thought to be beneficial to the rice farmers but the reverse effect was received. Tourism has made the people maintain the Banaue rice terraces in order to attract tourists and to maintain the heritage area title without considering if what they are implementing is abusing their culture or spoiling the tradition in any sense. This made the actions of the farmers unnatural and being tied with the dictates and the expectations of the government (tourism) from the local farmers. The DA introduces hybrid seeds and fertilizers without finding it out if it is feasible and acceptable in the area or not. Or whether it is deleterious or advantageous to the people. They introduced successful experience in the lowlands and introducing it to the highland farming. Also, the ICHO were the ones maintaining the canals and irrigation in order for the terraces will not be destroyed. These programs of the government therefore have interrupted the natural flow of voluntary behavior of the local farmers in the terraces.

The above government agencies were not able to consider the socio-cultural aspect of the people. They have not implemented development programs in the context of the place. As Berkes (1998) have said, the local people are the experts in their own area/place. They have been there for so long and they know what is best for them through experimentation and experience through the changing times. This is also what Linda Smith is putting forward to all indigenous people and to developers to adapt a culture-friendly model in dealing with the indigenous people. Further, Paige West (2006) is also trying to correct this methodology because this will only be detrimental to the cultural perception of the local people by ignoring their importance to them and just seeing them as commodities with no cultural relevance. This paradigm, which is commonly happening today, is making the indigenous peoples' practices devalued by the people themselves or to some, this strategy creates chaos and turmoil within the cultural web. Paul Sillitoe (2007) made mentioned that ignoring indigenous people's knowledge and participation is not a "sound economic strategy"(p.92) because it will not be a successful story because in the end the people will be going against it. As Nancy Turner (2000) has said these indigenous peoples have a certain kind of wisdom and traditional knowledge that should be considered and respected by western science and developers. This is according to her with the peoples' participation in the planning and implementation (p.1276).

The local people know what they need and they know what is good for them. They have been the caretakers of their environment for their own land and so, they must be consulted in whatever plans or programs the government or any agency will do in their locality.

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