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## Rice Terrace Degradation in Ifugao: Causation and Cultural Preservation

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# **Rice Terrace Degradation in Ifugao: Causation and Cultural Preservation**

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## RICE TERRACE DEGRADATION IN IFUGAO

### Abstract

The Cordilleran rice terraces of Northern Luzon, Philippines, are a testament to Filipino ingenuity and remain an important social-ecological system within highland indigenous communities. Ifugao, one of six Cordillera Administrative Region (CAR) provinces, is best known for its expansive and World Heritage Site recognized rice terraces, and has been a popular tourist destination in the Philippines for the past twenty years. According to local rice farmers, though, the terraces in Ifugao are quickly becoming degraded, as a series of external and internal factors have placed pressure on the indigenous community. Drawing from anthropological, ecological, and historical sources, I examine the history and current state of the Ifugao rice terraces. I analyze the effects of tourism and rural out-migration to pinpoint the root causes of terrace degradation, examining Ifugao traditional knowledge (TK) alongside Western values of productivity and industry. Ultimately, I find that the best path forward in ending terrace degradation requires both Ifugao and Western thought, and I argue that the commodification of heirloom rice varieties in Ifugao best embodies this framework. I further argue that IRRI's HRP has the funding and framework to successfully and sustainably commodify heirloom rice, assuming that IRRI employs community-driven development (CDD).

# RICE TERRACE DEGRADATION IN IFUGAO

## Rice Terrace Degradation in Ifugao: Causation and Cultural Preservation

### Introduction

*“Are you a farmer?” I inquired, already knowing the answer and feeling ridiculous for having to ask. “Yes of course,” he said with a chuckle. “Right, right,” I answered while fumbling with my notebook, “just trying to start with the basics.”*

For me, this project has been an effort to decode a confusing narrative that I was briefly written into for two months during the summer of 2018. Through an internship program at my university, I was given the opportunity to intern at the International Rice Research Institute (IRRI) in the Philippines, a surprise that urged me to use the trip as a chance to conduct my first anthropological fieldwork. I was assigned to work in the Sustainable Impact (SI) division of IRRI, a platform that “identifies strategic research to meet current and future needs and opportunities, fosters multi- and inter-disciplinary research amongst IRRI scientists and partners, and maps out plausible impact pathways leading to outcomes and impact” (Sustainable Impact). Some of the key-research areas listed on the SI webpage include sustainable rice technology, gender equity within agricultural societies, and solutions towards pest management. As with every IRRI platform, the SI division houses a series of different projects, and I was assigned to the Heirloom Rice Project (HRP), a three-phase effort to revive and preserve heirloom rice varieties grown in the Cordillera mountains of Northern Luzon.

Heirloom rice is a member of a broader categorization of “heirloom plants,” a status that, though contested, generally refers to a plant variety that has existed for around 50-100 years and is open-pollinated, meaning it reproduces naturally. Most often, heirloom varieties are cultivated by indigenous communities, where commercial agriculture has been slower to reach and the careful preservation of the varieties is a necessity for the well-being of future generations. In Ifugao, one of the six Cordillera Administrative Region (CAR) provinces, heirloom rice refers to a multitude of unique rice varieties cultivated by CAR communities (Figure 1). Due to the steady



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decline of heirloom rice cultivation in the CAR since the 1980's, the HRP was established in 2014 to revive and protect these varieties. Phase One of the HRP was concerned with lab classification of the varieties as IRRI scientists gathered field samples from the CAR and analyzed them. Permission was also granted by CAR communities to store many of these heirloom varieties within IRRI's famous "gene bank," a collection of over 135,000 varieties from around the world. During my time at IRRI, Phase Two of the HRP was underway with a focus on developing a framework for the marketization of heirloom rice through network building between different stakeholders and the development of a Geographical Indication (GI). Phase Three would entail the actual application of the framework projects developed in Phase Two, with the hope of successfully implementing sustainable protection of heirloom rice in the CAR. The current progress of the HRP is unavailable to the public, and will only be transparent once IRRI releases the data at some unknown time in the future.

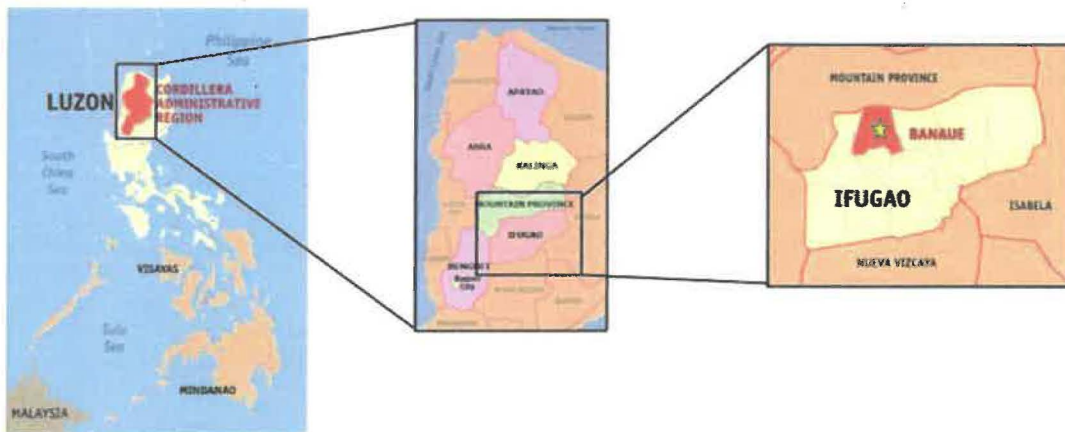
Though my research before the trip was limited, I knew that I wanted it to be closely linked to my internship, so I decided to focus on what I call Heirloom Rice Preservation Initiatives (HRPI), initiatives like the HRP that are devoted to the revitalization of heirloom rice in the Philippines. To understand the impact that HRPIs were having on Ifugao, I interviewed five Ifugao farmers. I was interested in getting their inside perspective on the problems within their community, and I found that the disappearance of heirloom rice was not the primary concern of these farmers. Rather, the forefront anxiety shared by all five farmers was the accelerated degradation of the Ifugao rice terraces. This focus on the local perspectives of the farmers illuminated a series of inconsistencies and debates for me, such as: IRRI's focus on heirloom rice commodification but not terrace rehabilitation, the generational disagreement between the traditional older Ifugao and the modernized younger Ifugao over agriculture as a source of livelihood, and the conflict between commercial high-yield rice and traditional heirloom rice. It became clear to me, then, that a large part of the problem behind terrace degradation is, in its broadest sense, based on a tension between traditional knowledge (TK) and Western knowledge. Accelerated terrace degradation in Ifugao is not just a result of an isolated case of out-migration and industrial tourism, but rather it reflects a global trend towards

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modernization that has been transforming and swallowing indigenous and non-dominant cultures all across the world for hundreds of years. Unsustainable Western values such as industry and productivity are the culprits, and destructive tourism and out-migration are the symptoms. In terms of identifying a solution for terrace degradation, I argue that there must be a combination of Western and traditional thought, with an emphasis on Filipino TK, which, as Cruz et al. (2015) say, “rises above the expectations of scientific methods” (p. 73). In this paper, I consult my primary sources, the farmers, to understand their perspectives on heirloom rice and rice terrace degradation. I then examine the history of the rice terraces of Ifugao, their current state, and the primary reason behind their accelerated degradation. I argue that the commodification of heirloom rice through IRRI’s HRP is the most promising solution for ending terrace degradation, assuming that IRRI incorporates community-driven development (CDD) into the HRP’s framework.

### Research Methods

During my time interning for the HRP, I was given the opportunity to visit Banaue, arguably the most famous rice-growing municipality of Ifugao, and the place I conducted ethnographic interviews with five small-holder rice farmers (Figure 1). Prior to going to the Philippines, I received IRB approval to conduct these interviews, with permission to employ visual ethnographic methods such as videotaping and photographing if the participant allowed. Each interview was conducted for an hour and was later transcribed for research purposes.



*Figure 1. The Cordillera Administrative Region (CAR) consists of five different provinces: Apayao, Abra, Kalinga, Mountain Province, Ifugao, and Benguet. Ifugao consists of eleven municipalities, Banaue being the most visited and well-known.*

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### **Ifugao Farmers' Perspectives**

The cultivation of heirloom rice has been in decline in the CAR ever since IRRI began to introduce new commercial varieties with which heirloom varieties were unable to compete. One drawback of heirloom rice is that it has low yield, and in fact, its colloquial name in the CAR is “tinawon,” which means “once-a-year” (Glover & Stone, 2017, p. 3). As higher yielding varieties began to take over lowland paddies during IRRI’s “Green Revolution” beginning in the 1960’s, the highland farming communities, too, started to leave the lower yielding *tinawon* for varieties such as IRRI’s famous 1966 IR-8 variety (Stone & Glover, 2017, p. 90). Higher rice yield meant a greater promise for year-round food security, as there was both more rice to eat and more rice to sell to buy other food, as farmers sometimes sell the rice they grow to buy cheaper rice for consumption. Combined with disease and drought resistance attributes, it is no surprise that many farmers began to switch heirloom varieties for the commercial ones. This agricultural shift in the CAR, and the province of Ifugao more specifically, from heirloom to commercial varieties, has more recently been viewed by IRRI as problematic. In response to the issue, IRRI developed the HRP in 2014 in the hopes that this program would lead to the revitalization and preservation of heirloom rice in the CAR.

Interest in preserving heirloom rice did not begin with IRRI and the HRP. Rather, the first largely integrated HRPI was the Cordillera Heirloom Rice Project (CHRP), a collaboration between RICE Inc., an NGO founded by Filipina Vicky Garcia, and Eighth Wonder, a company developed by US Peace Corps volunteer Mary Hensley in 2005. RICE Inc. is a non-profit corporation “with a mission to preserve heirloom rice and the culture of community rice production that surrounds it,” focusing on the revitalization of support for terraces and farmer co-op relationships, indigenous traditional knowledge of rice and terrace cultivation, increased awareness of the CAR, and development of entrepreneurial initiatives to support farmers (Eighth Wonder). Eighth Wonder, Mary Hensley’s company, has the goal of “making traditional rice varieties...a source of economic opportunity” (Eighth Wonder). Hensley, a Montana native, first discovered the beauty of the CAR in 1976 during her time there as a Peace Corps volunteer. She fell in love with the area, “a place where landscape and culture were woven seamlessly

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together,” as she describes it, and for the twenty-seven years after this initial trip, she yearned to return and help a community that she recognized was rapidly changing (Hensley, 2009, p. 88). Hensley returned to the CAR in 2001, and by 2005 had founded Eighth Wonder, the first company to introduce Filipino heirloom rice to the international market. Hensley viewed the commodification of heirloom rice as a sustainable way to both bring money into the CAR farming communities and to preserve the heirloom rice.

The collaboration between Hensley’s new company and Garcia’s grassroots non-profit RICE Inc. was a natural partnership. Garcia had, through years of volunteer work in the CAR community, developed strong relationships with farmers, and Hensley had the framework to bring these different stakeholder relationships together. Since 2005, Eighth Wonder has exported over ninety-seven metric tons of rice to the United States (Glover and Stone, 2016, p. 8). Anne, one of the farmers I interviewed while visiting Banaue, commented on Hensley’s role in promoting heirloom rice internationally, saying:

“Mostly we are planting here the heirloom rice, and then we are very happy because our heirloom rice here is really outstanding, because of the buyer that Ms. Hensley from Montana, who came and then helped us, and then we were able to sell some and then it was brought to other countries and then that is what we are proud of...Our rice is outstanding, it had reached other countries. But our only problem is the restoration, yeah, restoration of the rice field” (Interview of 7/22/18).

Here Anne expresses pride in the heirloom rice she grows and has been growing her entire life, and comments that Hensley’s work in the community has led to international legitimization of heirloom rice. Anne spoke further about how lab analyses on rice from Ifugao in the U.S. conducted by Hensley found that many of the varieties were high in iron and nutritionally superior to other commercial rice on the market. Anne’s high praise for the rice is expected, as she is one of the few farmers that still farms heirloom rice, something she explains as “the means of livelihood of our forefathers” (Figure 2). Anne’s approval of the CHRP’s efforts to

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commodify heirloom rice is shared by another heirloom rice farmer I interviewed named Jimmy. Jimmy is a leader of the Rice Terraces Farmers Cooperative (RTFC), a farmers' group that has worked closely with the CHRP and its mission to revitalize heirloom rice. The other three rice farmers that I interviewed, two men and one woman, cultivated commercial varieties, the most common one being California rice, which has two annual yields. All three of these farmers at one time farmed heirloom rice, but switched as the commercial lowland varieties became more popularly used, reasoning that the commercial varieties are much more beneficial given their higher yield. John, one of the non-heirloom farmers and the oldest of the three, explained that he believes it would be best to one-day switch back to the heirloom varieties, though, regardless of their low-yield. As he is a member of the RTFC, I was not surprised he had this opinion, given his closer proximity to the CHRP and their work with the RTFC. The other two non-heirloom farmers were more apathetic about the status of heirloom rice, and did not have much to say about it. Both farmers informed me that "heirloom rice is not grown around [Banaue] anymore," and expressed no desire to return to heirloom rice farming.

While Anne praised the commodification of heirloom rice during my interview with her, an implication that the CHRP has been successful in her community, she expressed concern for other things, such as the erosion of the rice terraces in Ifugao. Rice terracing, which I describe in more detail below, is the main method of rice farming in the CAR. This method requires massive terraces to be cut into stripped mountain sides like steps, with paddies pooled into each of these steps and walls of stone, wood, and dirt built to promote their stability. These terraces are what has made the CAR, and Ifugao more specifically, internationally famous, as they are some of the oldest and most extensive rice terraces on earth. Anne's anxiety about the degradation of the Ifugao rice terraces was echoed by the four other farmers I interviewed. When I asked John, for example, what the biggest issue in his community was, he said, "What we need is our rice terraces to be rehabilitated, if you could help us." He told me that the main reason he joined the RTFC was to help end terrace degradation, saying that the RTFC "would like to revive the destroyed rice terraces...in the province of Ifugao."



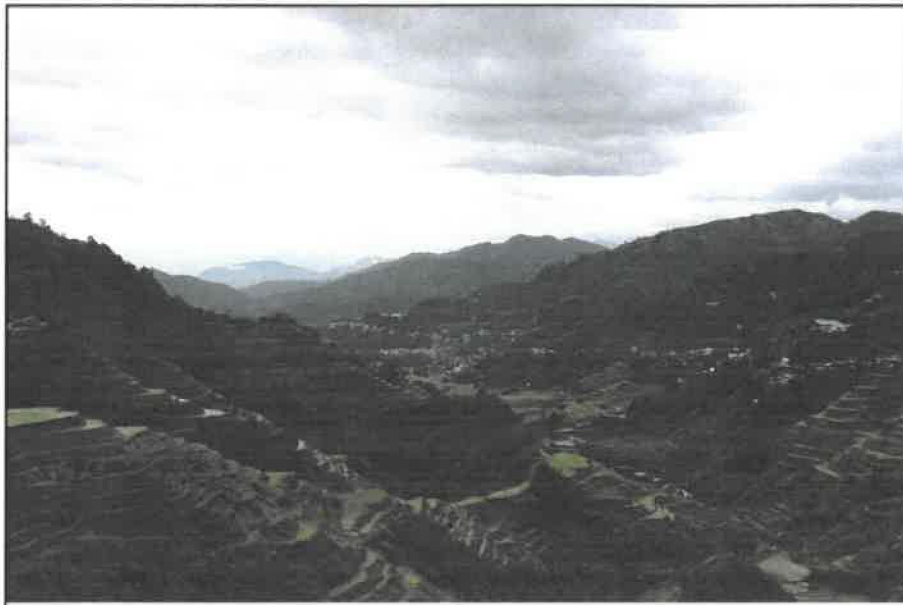
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Though I was initially focused on asking questions about heirloom rice, I soon discovered that the revitalization of heirloom rice was a periphery problem that already had active integrated solutions. Terrace degradation, on the other hand, seemed to be a forefront anxiety as it was explicitly mentioned by all five farmers and was often accompanied with direct requests for help. Two farmers, for example, requested that, upon my return to the US, I spread awareness of terrace degradation in Ifugao, and send money and volunteers to aid in terrace rehabilitation. As terrace degradation, not the disappearance of heirloom rice, became the most apparent problem plaguing the rice farmers of Ifugao, it became the central focus of my research. The next section of the paper discusses the terraces of Ifugao, examining their origin, their relationship to the cultural and ecological environment of Ifugao, and their current state.



*Figure 2. When I visited her home, Anne, an heirloom rice farmer, showed me a book about heirloom rice in Ifugao she had researched and compiled, an invaluable resource in the community. Anne strictly cultivates heirloom rice and in the past has sold her rice through the CHRP.*

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*Figure 3. I took this photo of the rice terraces during my first visit to Banaue, and was amazed by their beauty and complexity. If terrace degradation continues to accelerate, sights like this will disappear alongside Ifugao culture and heritage.*

### **The Rice Terraces of Ifugao**

Terracing is not unique to the Philippines. Practiced throughout Asia as well as Africa, the Mediterranean, and South America, this agricultural technique has been employed for thousands of years as an agricultural adaptation to living in regions with high slopes (Figure 3). Indeed, terrace creation is dependent on the presence of the slope. Unlike the flat corn and soy fields I see daily in my own home, the prairie state of Illinois, communities that first developed terracing were faced with the problem of cultivating agriculture in topologically extreme geographical regions. Planting food crops directly on a slope is generally not an option, as gravity pulls needed water downwards. For rice, this option is impossible, given the necessity of flooded rice paddies and the rice plants sensitivity to water shortages (How is rice grown). Thus, terracing was developed as a means of utilizing previously unusable farming land, often necessitated by growing populations.

The rice terraces of Ifugao were first created 700 years ago, according to recent archaeological, historical, and ethnographic data. When I asked farmers in Ifugao about their

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terraces, they told me that they are 2,000 years old. When perusing tourist pamphlets in Banaue and even Filipino textbooks, I found that 2,000 years is the age that is accepted by the majority of people in the Philippines, making data that suggest the terraces are “only 700 years old” a contested topic among Filipino academics (Figure 4). The later date of the terraces was first introduced by Stephen Acabado (2012), a Filipino archaeologist. Using radiocarbon dating techniques paired with history and ethnographic evidence, Acabado found that “the most reliable date for the existence of the terraces, at least in the Banaue valley, is calibrated to AD 1326-1469” (Acabado, 2012, p. 295). Further, Acabado argues that the first terraces, or pre-Hispanic terraces, were not extensive, and that the majority of the terraces we see today were created around 1600 AD as a reaction to Spanish Colonialism. During the Spanish Colonial era of the Philippines (1521-1898), the population in the Cordillera Mountains rose as lowland communities began an exodus into the harder-to-colonize highlands. This influx in population led the need for greater crop production, which caused the Ifugao to “rapidly modify their landscape to fill valley after valley with terraced rice fields within 200 years” (Acabado et al., 2014, p. 12). Thus, the majority of terraces in Ifugao were created around 1600 AD, with the earliest being 700 years old.



Figure 4. The image to the left is a photo I took of a banner at IRRI, stating that the terraces are 2,000 years old. The image to the right is a photo of a pamphlet I found at the hotel I stayed at when visiting Banaue, showing that the tourist industry in Banaue widely accepts 2,000 years as the age of the rice terraces.



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Acabado's revision of Ifugao terrace age has been met with much resistance. The original terrace age of 2,000 years old was first hypothesized by two anthropologists, Roy F. Barton and Henry Otley Beyer, and has, as Acabado (2012) argues, "become a kind of received wisdom that finds its way into textbooks and national histories" (p. 285). Indeed, even the United Nations Educational, Scientific and Cultural Organization (UNESCO) describes the terraces as 2,000 years old, using their antiquity as a selling point for their inscription as a World Heritage site in 1995. The perpetuation of misinformation concerning the age of the Ifugao terraces is most likely a result of access to information. Layperson access to the information that Acabado and his peers have researched and presented is most likely limited, something that I observed during my field research in Ifugao. Each farmer I asked told me that the terraces are 2,000 years old. Even the farmer who mentioned radiocarbon dating of the terraces and their supposed younger age told me that, regardless of these findings, he believes the terraces to be 2,000 years old.

That the terraces are only 700 years old conflicts with aspects of Filipino-pride and nationalism that fuel old terrace age theories. Even though the 2,000-year dating by Barton and Beyer "were not based on any archaeological or scientific evidence," as Acabado et al. (2014) point out, there is a tendency for Filipinos to gravitate to the older age due to its historical and cultural implications (p. 16). The CAR and its many indigenous communities are viewed by Filipinos as living representations of authentic Filipino-ness, and cultural survivors of many centuries of colonialism (p. 16). The terraces act as symbols of an untouched-existence narrative of CAR communities, making their old age ideal as it shows an unchanging landscape and preservation during a time of cultural genocide in the Philippines. This historical narrative explains why the 700-year-old date of the terraces is often rejected and dubbed as anti-Filipino.

In response to this rejection, Acabado et al. (2014) view the stereotyping of the indigenous highland peoples as "original Filipinos" ethnocentric, arguing that it "denotes unchanging culture through centuries of existence" (p. 16). Acabado et al. (2014) further argue that the revised age of the terraces should not be viewed as a mechanism that invalidates Filipino cultural heritage, but instead strengthens it, contending that the earlier terrace age reinforces

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understanding of the sophistication of the terraces and their creators, and their ability to create such engineered feats in a short span of 200 years (p. 12). Acabado et al. (2014) call for an end to the “antiquity debates” surrounding terrace age, and believe that it is more important that Filipinos acknowledge the threat of losing the terraces, and direct more focus towards preserving these “cultural and historical monuments” (p. 12).

From the 17th century period of colonialism-induced accelerated creation to the 20th century, the terraces remained relatively culturally and physically intact. Indisputably, the most extensive record of traditional Ifugao culture surrounding the rice terraces emerged with the 1980 publication of *The Ethnographic Atlas of Ifugao* (1980), by the eminent anthropologist Harold C. Conklin<sup>1</sup>. Prior to the publication of the *Atlas*, Conklin spent two decades meticulously studying Filipino indigenous culture, focusing more specifically on the emerging anthropological discipline of ethnobotany. The rice terraces of Ifugao were of obvious anthropological allure, and as such, his work in Ifugao led to the written preservation of Ifugao culture as it was beginning to rapidly change. Indeed, it was shortly after Conklin’s ethnographic work surrounding Ifugao and the rice terraces that this cultural landscape began to shift. Following Conklin’s death in 2016, Michael R. Dove (2016), writer of Conklin’s biographical memoir, notes:

Conklin may have arrived among the Ifugao at a point when their system of rice terraces had reached its peak of development, before off-farm work and out-migration had started to sap the labor force, and when the means to map it all in detail was at hand for the first time. Whether this was serendipity or calculation, or both, the resulting studies profoundly influenced the development of twentieth century anthropology, especially of the environment (p. 5).

In 1995, fifteen years after Conklin’s publication of the *Atlas*, UNESCO inscribed five clusters of rice terraces in Ifugao as official World Heritage (WH) sites. This decision, no doubt influenced by Conklin’s extensive work and promotion of Ifugao, was a national achievement

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<sup>1</sup> I did not have access to this original source; all information mentioned in this paper concerning Conklin’s *Ethnographic Atlas* is obtained through secondary sources.

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that led to a spike in tourism development in Ifugao, predominantly within the municipality of Banaue. Less than a decade later, in 2001, the Ifugao Rice Terraces (IRT) were placed on the “Endangered Sites” list, after a “reactive monitoring mission” was sent to Ifugao to determine the future development and preservation of the site. During this four-day assessment, the UNESCO team unveiled a series of reasons warranting the IRT’s placement on the endangered list, two of the most important issues being “the continued degradation of the terraced landscape and the difficulties surrounding tourism” (UNESCO, p. 7). In regards to terrace degradation, the mission pinpointed several causes, including: “limited governmental support of IRT protection task forces, high abandonment of rice terraces (25-30%), increased and irreversible terrace degradation due to abandonment and pests, and accelerated out-migration (UNESCO, pp. 3,8). The introduction of the report ends in a worrisome message, warning:

The Ifugao Rice Terraces are showing the early but unmistakable signs of deterioration, apparent both in the physical appearance of the landscape and in the cultural underpinnings of it. While the area is still remarkably beautiful, it is our view that there is at most 10 years to reverse current trends or the terraces will begin to lose their claim to WH status (UNESCO, p. 8).

For over a decade later, intensive changes were made within the Ifugao community as it became apparent that the terraces were in danger of losing World Heritage status. To ensure a collective cohesion between Ifugao stakeholders, UNESCO began to work closely with the local and national government, farmer cooperatives, NGO organizations, and Ifugao initiatives. Each year, UNESCO published a “State of Conservation” report in order to track progress in Ifugao. In 2011, for instance, UNESCO notes “the strengthened collaboration at the national, provincial and local levels and the participatory nature of many of the on-going initiatives” in Ifugao, and reports that 6 hectares of terraces and 8,000 cubic meters of walls were successfully restored (UNESCO, p. 15). The 2012 “State of Conservation” report recorded even greater changes with the restoration of nearly 30% of all damaged rice terrace walls in Ifugao (UNESCO, p. 12). This, along with other general improvements within the areas of “landscape restoration and

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conservation,” “protection and planning,” and “management,” led to UNESCO’s decision to remove the IRT from the WH endangered site, the organization stating:

The World Heritage Centre and the Advisory Bodies are of the view that the State Party [Ifugao local government] has fulfilled the requirements for achieving the desired state of conservation for the removal of the property from the List of World Heritage in danger.

They consider that Committee may wish to commend the State Party for mobilizing resources and commitment to undertake this significant amount of work over the past decade (p. 16).

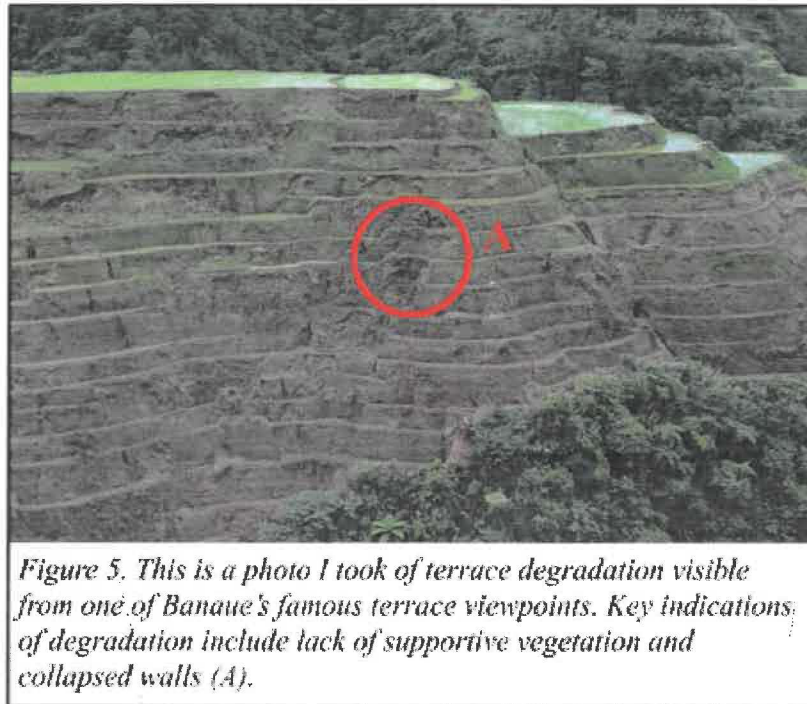
Though this removal from the list of endangered sites was obvious progress, UNESCO remained wary, warning:

The Rice Terraces remain vulnerable, particularly in the event of natural disasters such as typhoons. This issue will remain a challenge and will always require particular efforts and underlines the need to ensure adequate sustainable human and financial resources. Further progress must still be made with the development of an integrated tourism strategy and that the control of tourism related infrastructure development must be addressed and carefully controlled (p. 16).

Ultimately, while the IRT are no longer listed as endangered, UNESCO still recognizes that terrace degradation is an issue. To be taken off of the WH endangerment list required the development of a sustainable framework within the Ifugao community, but it is important to recognize the difference between developed systems with the *mission* of progress and systems successfully carrying out those set goals. Since 2012, one of the reoccurring problems recognized by IRT stakeholders was organization and communication, as there are simply too many stakeholders. In the “Ifugao Rice Terraces Master Plan, 2015-2024,” a mission designed by UNESCO to implement sustainable solutions to terrace degradation, UNESCO notes that one of the biggest problems facing conservation of the IRT is the lack of a central support system

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linking together all of the IRT stakeholders, leading to poor collaboration and, at times, “duplication of work.” Furthermore, poor infrastructure and funding of many of the smaller grassroots initiatives makes their presence short lived, creating more difficulty for major stakeholders such as UNESCO as they attempt to get a well-rounded understanding of the Ifugao community. In the “State of Conservation” report of 2018, UNESCO admits that progress in Ifugao had been slow the past year because “consultation and engagement with a diverse range of communities and stakeholders is a time-consuming process,” but comments that this slower process is “critical” for the implementation of sustainable systems within Ifugao (UNESCO, p. 17.)



### **Terrace Degradation in Ifugao**

Now that we know that terrace degradation emerged as UNESCO’s primary concern in 2001, I would like to generally explain what terrace degradation is (Figure 5). Rice terraces are incredibly complex agricultural systems, “evolved, living cultural landscape[s]” as UNESCO’s webpage calls them. Intuitively engineered, the IRT are sustainable structures, not by virtue but

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by necessity, as they most likely arose to accommodate indefinite population growth. Every part of the terrace cycle has its place. Woodlots located above the terraces help to regulate water and provide nutrients for the terraces below them as water flows downwards. The actual rice paddies are homes to many sources of food for the farmers, such as fish and snails. The complex irrigation systems of the terraces work to provide the growing rice a constant supply of nutrient-rich water without causing intense erosion (Castonguay et al., 2016, p. 1-2). Thus, the terraces were intelligently designed to sustainably fit within their overall environment.

The rice terraces of Ifugao are social-ecological structures, meaning that they are deeply embedded in Ifugao society and culture; that is to say, cultural markers such as tradition and ritual in Ifugao interact with the terraces. Ifugao society is heavily centered around the cultivation of rice, making the terraces invaluable structures and “the keystone of the Ifugaos’ culture and heritage” (Tilliger, 2015, p.892). Indigenous communities across the world tend to be profoundly connected to the systems that support their modes of production, and the Ifugao and their rice terraces are no exception. This interaction between society and environment is perhaps, best illuminated by observing the many rituals, traditions, and taboos practiced and observed by the Ifugao. As Ananayo (n.d.) explains, during the rice planting season, a chicken is sacrificed for the Skyworld deities before any seeds are sowed in the rice fields, an offering called *lokah* meant to ward off pest and diseases. Once sowing is completed, a ritualistic day of rest called *tungo* follows. During *tungo*, no one is allowed to visit the rice fields, and to do so is believed to provoke deities, thus endangering the growth of the newly sown rice seedlings.

Examining these traditions illuminates how the Ifugao use ritual to deal with everyday problems. Pest management, for example, is an important adaptation that the Ifugao imbue with ritual. In the instance of army worm infestation, Ifugao farmers practice a ritual known as *holok*, in which a selection of herbs are cut and combined to make a concoction poisonous to the worms. This process is of course completed in tandem with certain animal sacrifices and restrictions, making the growth of the rice a product of knowledge, skill, and religious observance.

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Taboos and restrictions are also important ecological strategies. In Camacho et al.'s (2016) analysis of Ifugao cultural ecological customs, the authors find that taboos are often implemented to sustainably support *muyong* forests such as woodlots and watersheds (p. 1). The cutting down of certain tree species such as *alimit* and *tuwol*, for example, is frowned upon by the Ifugao, as these species are important in watershed water conservation. Taboos reinforce the prohibition of tree cutting in watersheds, and the Ifugao warn of the negative effects from supernatural beings such as deities and fairies (UNESCO, p. 19). If these trees are cut down, the rice terraces are directly affected, and will not be functional areas for rice cultivation. When other trees are cut down, there is another taboo about felling trees in way that harms nearby residual trees (Camacho et al., 2016, p. 5). Similar taboos such as killing young animals or endangered animals further shows their implementation into Ifugao society to ensure ecological sustainability.

Whether it be rituals, taboos, or customary laws, Ifugao society is embedded with cultural practices that maintain environmental sustainability, showing an obvious understanding of the Ifugao of their environment. This deep body of knowledge and practices in Ifugao is known as traditional ecological knowledge (TEK), defined by Berkes and Berkes (2009) as “a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission” (p. 10). TEK is found in all indigenous communities, and is uniquely developed by these communities based on their environment and needs as a community. Terrace degradation is not just a disappearance of impressive agricultural structures, but the disappearance of TEK that the Ifugao have compiled after centuries of rice cultivation in the CAR. Thus, to lose the IRT means a loss of Ifugao heritage.

### **Causation of Rice Terrace Degradation**

Causation of terrace degradation is a complicated issue to address. First, it is important to understand that terrace degradation comes in two types: manageable degradation, and unmanageable degradation. Manageable degradation consists of natural degradation, or the type caused by erosion, and is curbed by active maintenance of the terraces. For example, the constant



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upkeep of the terrace walls ensures that they do not collapse under the force of gravitational erosion. Further, manageable degradation can consist of degradation caused by a more sudden catastrophic event, such as a typhoon in the case of Ifugao. These extreme and damaging events have been present in the CAR for as long as the Ifugao have been cultivating rice there, meaning that they can be expected and managed. Unmanageable degradation, alternatively, results in catastrophic damage to a terrace or terrace system that cannot be reversed. Both of these types of degradation are found in Ifugao, but because manageable degradation is a natural process and it ultimately does not permanently harm the terraces, unmanageable degradation is of primary concern. Looking at the issue with a narrow lens, there are two distinct issues that are linked to unmanageable terrace degradation: tourism and outmigration.

Tourism in Ifugao first emerged at an international level during the 1970s, when Philippines dictator Ferdinand Marcos declared that the terraces were of high national value, calling for the construction of Banaue's first hotel which became "a major breakthrough in tourism" according to the locals (UNESCO, p 10). By the 1980s, Banaue had become the tourist center of Ifugao as non-Ifugao Filipinos and international tourists were attracted to the terraces and the "exotic" culture of the Ifugao. Rising numbers of tourists led to the need for greater infrastructure in Ifugao, creating new work opportunities for the Ifugao. A 2003 survey found that only 69% of Ifugao individuals were farming as a main source of income, and that service, trade, and industry work accounted for the remaining 31% of Ifugao individuals (UNESCO, p. 4). Trade and industry income mostly comes from the manufacturing of cultural crafts and tourists gifts such as textiles, woodcarvings, and clothing. Service jobs generally include working within tourist accommodation spheres such as hotels, restaurants, and guide companies (UNESCO, p. 4). As more tourism led to more labor opportunities in Ifugao, so too did it begin to impact the environment and culture. An influx in infrastructure such as roads and tourist accommodation centers disrupted the preexisting ecological systems and land distribution models so carefully designed by the Ifugao over the course of hundreds of years. Resource usage shifted to accommodate these changes, leading to problems with forest and water management. As traditional Ifugao woodcarvings became a popular craft for tourist consumption, over



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harvesting of local forests led to deforestation. Since the forests provide critical watershed for the rice terraces, deforestation led to irrigation problems in the terraces, causing many terraces to be abandoned as they could not cultivate rice.

Rural out-migration is yet another force driving accelerated terrace degradation. The problem of youth rural exodus from Ifugao is well documented, and, according to Canlas and Pardalis (2009), is a national trend in the Philippines, with a recorded 15% decrease of Filipino youth working in agriculture from 1988 to 2006, and a continued drop over the past decade (p. 5). More specifically in Ifugao, only about 22% of junior and senior high school students surveyed had interest in an agricultural job, problematic for a society that historically relied on every able-bodied person to be involved in agriculture (Dizon et al., 2012, p. 54). According to the Ifugao farmers that I interviewed, young people are leaving agriculture because they want to pursue a higher education, because they want better paying jobs, and because they are lazy or apathetic towards farming and the terraces. What do the young people have to say, though? Dizon et al. (2012) found that the high school students mentioned earlier had positive perceptions of the rice terraces (p. 54). Dizon et al. (2012) note that the participants “expressed strong agreement with the statement that every Filipino should be proud of the Ifugao Rice Terraces...,” and further found that the students “expressed a strong disagreement with the statement which says that the students do not care if the Ifugao Rice Terraces will be removed from the UNESCO World Heritage List” (p. 55). Thus, to say that Ifugao youth are apathetic would be inaccurate. Lazy would be wrong, too, as 3/4ths of the students interviewed were interested in non-agricultural jobs, but jobs nonetheless. Why are Ifugao youth seeking different jobs, then? As is the case with many other indigenous communities facing rural out-migration, the rationality is based on the search for more lucrative work, and often tied to that, better education.

Beyond the practical desire for leaving agricultural work, though, there is also a cultural shift towards more “alluring” work for young people in Ifugao. As Manalo and Fliert (2013) find when interviewing young people from the province of Aurora, “education is...very important even if the pragmatic benefits are not always realized [for young Filipinos]” (p. 71). That is to

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say, education is becoming valued as a whole by greater Filipino society, regardless of whether it could actually lead to a lucrative job or not. This “allure factor” is important in this context, because intermixed with the practical need of obtaining a “better paying job” is a cultural shift of the younger farming Filipinos towards different sources of livelihood. Dizon et al. (2012) found that high schoolers of a family with greater income had less interest in agriculture, whereas one might have expected students from a low income family to be the ones out looking for better jobs to support their families, rather than being the individuals remaining with agriculture (p. 55). This suggests that young Filipinos in farming communities may be seeking higher education and nonagricultural work not just as a way to increase financial stability, but as a way to define their generation’s sense of livelihood. Though there is no singular reason for the outmigration of young people in Ifugao, the farmers believe that this problem is the root cause of accelerated terrace degradation.

Tourism and outmigration, the two drivers of accelerated terrace degradation in Ifugao, though presented as distinct issues, are of course deeply interlinked. As such, the issue of unmanageable terrace degradation in Ifugao needs to be viewed with a much wider lens. The threats facing Ifugao society are not unique, but rather mirror a painful trope that has been witnessed throughout indigenous communities across the world for centuries. Tourism and outmigration, while respectively complicated, are symptoms of Westernization, and, by effect, urbanization and industrialization. While studying the effects of Westernization on indigenous communities in Canada, Colin Samson (2018) describes this very issue, saying:

The idea of progress is integral to Western modern thought...In their various works, Enlightenment figures such as Locke (Arneil 1996), Hobbes (Kraynak 1983), and Kant (Fidler 2001) depicted humanity as moving from a prior state identified as "barbarism" or "state of nature" toward "civilization."...With the growth of capital, heavily dependent on the exploitation of work and forced colonial labor, by the nineteenth century industrial production and machine technologies were added to the list of signifiers of civilization. Because colonization was thought to bring these qualities to peoples lacking them,

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colonialism itself could be depicted as a humanitarian agent of improvement of backward peoples by Western powers...The problem was how to culturally and economically transform subject populations in such a way that colonialism could be seen as an improvement. This in some measure meant devising wage labor schemes for Indigenous populations. Industry was, and I shall argue still is, a crucial part of the purposeful replacement of one way of life by another, and as such it is integral to the idea of progress (p. 2).

This cognitive error within Western thought and ideology was manifested in the movement towards cultural universality that so dangerously fueled colonialism. Ethnocentricity within dominant Western society validated the idea of one “right” dominant culture, and the swallowing of other non-dominant cultures was viewed as cultural philanthropy rather than the cultural genocide that it truly was. Industrialism and urbanization are symptoms of Westernization that the Ifugao are currently struggling to address and adapt to.

### **Proposed Solutions to Rice Terrace Degradation**

Because the accelerated degradation of the IRT is a result of broader problems such as Westernization and industrialization, the solution must be of equal breadth. I argue that previous attempts to “save” the Ifugao have been born from the same models of thinking that first led to the loss of Ifugao culture. Indeed, as the journalist Alan Robles notes, “Colonialism created the Philippines, shaped its political culture and continues to influence its mindset. The 333 years under Spain and nearly five decades under the USA that decisively moulded the nation” (The anti-democratic legacy) Westernization is now forever embedded in Filipino society, and its residual mode of thinking has tainted efforts to help the Ifugao. Colonialism first opened up Ifugao to the world, and while their culture famously remained intact after Spanish occupation, urbanization, technology, and industry inevitably spread from the lowlands to the “culturally untouched” ethnolinguistic groups of the mountains. By effect, Ifugao was not spared from the damages of Westernization, but is instead experiencing its repercussions much later than the rest of the Philippines has. The Western perceptions of progress and industry have informed “rescue

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efforts,” as the Filipino government and other Ifugao stakeholders have viewed the increasing poverty and cultural instability of the Ifugao as a reason warranting the need to “update” Ifugao society to better mirror the rest of the more modernized Philippines. The hypocrisy of this situation, of course, is the fact that the “saving” of Ifugao culture is expected to be accomplished by changing Ifugao culture.

Before I lay out what I argue to be the best path forward to ending terrace degradation, I would like to recognize the reality of this issue. Because of the decades of Westernization, Ifugao society is a hybrid culture, pivoting between its historical and traditional past and its current urbanizing self. The slow creep of Christianity and its antagonism with the traditional Ifugao worldview is a testament to this reality. Ifugao is no longer “untouched,” but it is also not fully Westernized. Thus, I argue that the solution for ending accelerated terrace degradation must incorporate both aspects of Western thought (industry, capitalism) and Ifugao thought (traditional knowledge, sustainability). Trying to fix issues within Ifugao by using just a Western lens has historically only led to more problems. When Ifugao first emerged under the international spotlight, it was viewed as a relic and a hidden culture tucked far away in the Cordillera mountains, untouched by colonialism. A *Scientific American* article from 1912 titled “Savage Irrigation in Luzon” describes the Ifugao people as “practically unknown,” and characterizes their culture as “savage” and “absolutely primitive” (Wright, p. 108). As reports of the Ifugao people began to emerge alongside the ethnographic works of anthropologists and explorers, Ifugao began to rapidly change. The “savage” nature of the Ifugao was viewed negatively by outsiders, and there were new attempts to change the Ifugao’s “uncivilized” society to mimic the newly modernized Filipino cities of the lowlands. In his book, *The Half-Way Sun* (1930), anthropologist Roy Franklin Barton describes the agenda of the provincial government in Ifugao during his field research, specifically examining the governing of the Philippine Commission, the members of which were appointed by the then-president of the United States. He notes the Commission’s desire to plant the seeds of modernization in Ifugao, beginning with the Bureau of Education’s mission to educate the Ifugao, an effort Barton viewed as futile, saying, “Geography, history, and English could hardly do much to better [the Ifugao]

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even when supplemented by...industrial training...” (p. 28). Barton mentions such industrial “stunts,” describing the Commission's attempt to teach the Ifugao how to build a stone schoolhouse and government building out of stone. He explicitly expresses his distaste for these attempted changes in Ifugao, humorously remarking that “the American people were bent on educating, just as the Spaniards were always bent on Christianizing” (p.28). Christianity was still an issue for the Ifugao at this time, though, as missionaries viewed the Ifugao as viable converts and began to introduce Christian teachings.

Whether it be industry or religion, though, the changes beginning to take hold in Ifugao were attempts to “help” the Ifugao move from a “savage” state of existence to a “civilized” one, a misconception based on ethnocentric Western ideology. Barton, touting the anthropological axiom of cultural relativity throughout his ethnographic work of the Ifugao, argues that they are better off living untouched by outside forces, and that attempts to modernize the Ifugao will do nothing but harm to their culture. He encapsulates this sentiment in one frank request to modernizing forces in Ifugao: “Let the Ifugao live their own life in their own way” (p. 115). Inevitably, his warning was ignored and the Ifugao way of life began to experience its first major changes. In the 1960's, IRRI's Green Revolution of rice in the Philippines, or the release of “professionally bred” rice varieties, changed the landscape of agriculture in the Philippines (Stone and Glover, 2017, p. 90). Stone and Glover (2017) note that the Green Revolution was based on the Western value of “productivism,” or the idea of production for the sake of production, and as such the Green Revolution was focused heavily on the scientific breeding of rice with high yield capabilities (p. 89). The high yield rice varieties produced by IRRI played a central role in the Philippines' transition to the global market of rice exportation, and today the Philippines is one of the largest producers of rice in the world. Unfortunately, though, this shift negatively affected the Ifugao, as they were encouraged to begin using commercial varieties instead of heirloom varieties. IRRI's scientific obsession with high yield rice essentially forced the Ifugao to switch, as they originally had no desire to switch but needed the higher yield to combat the poverty that increasing modernization had left them in. Thus, Western

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solutions are not on their own viable for rice terrace rehabilitation, as they are too imbued with Western values, such as progress, industry, and productivity.

While it would of course be preferable to fix the problem of accelerated terrace degradation solely through the methods of the Ifugao, this too is not possible, as I do not think that this is realistic considering how already Westernized the Ifugao culture has become. UNESCO, one of the most important stakeholders of the IRT, echoes my sentiment, saying:

...the sustainable management of the site in the long term requires the fundamental acceptance of the fact that IRT management is all about safeguarding a conservation culture which has evolved through centuries of trial and error by a people who have continuously responded to the ever-changing challenges over time. As such, it has to be managed to meet the changing needs of the twenty-first century. As a living culture imperiled by global trends, its existence depends heavily on the survival of the living repositories of indigenous knowledge. Therefore, safe-guarding and sustaining these knowledge resources has become an urgent priority. Any conservation effort of the IRT has to understand these conditions (UNESCO, p. 17).

Thus, I argue for a middle ground, by de-emphasizing the already prevalent Western thought, and emphasizing Ifugao thought, when developing a solution for terrace degradation. Specifically, a solution that incorporates Ifugao TEK has the potential to be the most promising path towards ending terraces degradation, as TEK is inherently sustainable, and because the Ifugao have the most educated understanding of how their environment functions. While analyzing the local perceptions of climate change in the IRT, Soriano et al. (2017) find that both “Indigenous and Western science are equally valid” when attempting to develop solutions for problems in Ifugao, and stress the importance of TEK, saying that “understanding traditional knowledge...is a valuable exercise in designing adaptation and/or conservation strategies for

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indigenous communities” (p. 1457). The balance between Western and indigenous thought yields much promise for the IRT.

A solution for IRT degradation that I believe embodies this framework, and has been successful in other indigenous communities facing the threat of cultural extinction, is cultural commodification. Cultural commodification is the process of placing value on culture, and is a growing phenomenon within indigenous communities. Perhaps the best model for cultural commodification is the establishment of a marketable cultural product, in which a craft or food uniquely produced by a society is turned into a product meant to be sold on the international market. Cultural commodification is, according to the Food and Agriculture Organization (FAO), a “major step towards sustainable rural development,” and is a process that links places, of the United Nations, stakeholders, and products to create “origin-linked products” (FAO, p. xix). An origin-linked product is one that has special “quality attributes,” or aspects of the product that are embedded in its region and mode of production. Origin-linked products, being so unique, tend to emerge from indigenous communities, where the origin-link product has been produced for enough time to ensure its synthesis with the culture and geography surrounding it. When an indigenous community is under pressure, origin-linked products, through the process of commodification, “can contribute to biodiversity preservation, cultural heritage protection, sociocultural development and rural poverty reduction” (FAO, p. xix). These positive impacts to the community are possible because of the “origin-linked quality virtuous circle,” a term coined by the FAO to describe the sustainable nature of cultural commodification. First in the virtuous circle is the process of identification. During this step, the actual origin-linked product is identified alongside its production process and the resources needed to make it. This step ensures that the product has the potential to be successful on the market.

The second step in the virtuous circle is qualification, the phase in which “society (consumers, citizens, official bodies, other stakeholders in the value chain etc.) is put in a position to recognize the value attached to the origin-linked product” (FAO, p. 4). This step is focused on validating the origin-linked product by developing a code of practice (CoP) to ensure

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that the product meets the quality of production desired by the stakeholders. The most important part of the qualification phase is the implementation of a Geographical Indication (GI). A GI is an intellectual property right designed to protect products and their production processes from “copy-cats” attempting to steal them. A GI consists generally of a law-protected symbol that is placed on a product on the market, that symbol indicating to the buyer that the product is authentic.

The third step in the process of commodifying an origin-linked product is remuneration. Now that the origin-linked product can be considered a “GI product,” it is on the market, and money is beginning to enter the value chain. Within the phase of remuneration, this new income is used to “break-even” by covering the initial costs of the first round of production. To ensure that there is enough profit for stakeholders and to be fed into the production system, market value is set to be both lucrative and sustainable. In the final step of commodification, the reproduction of local resources, profit is fed back into the production process. During this phase, the “resources are preserved, renewed and enhanced all around the circle in order to ensure long-term sustainability of the system producing the origin-linked product, thus guaranteeing the very existence of the product” (FAO, p. 5).

In Ifugao, I believe that the process of commodification, when applied to heirloom rice, has the potential to end accelerated terrace degradation. For heirloom rice to be successful on the market, it needs to be marketed with emphasis on its “heirloomness,” the main strength that heirloom has on the market over other varieties of rice. To showcase the “heirloomness” of heirloom rice on the market, Ifugao heirloom rice must have a GI that indicates and assures this “heirloomness” to the customer. In order for heirloom rice to be “eligible” for a successful GI, it needs to be deeply linked to its region of production, possessing unique qualities due to its origin. Once those links are established, the geographically and culturally unique processes of production must be recognized, sustainably standardized to some extent, and valued as an important link in the production chain. Because the Ifugao rice terraces are one of the most important parts of the heirloom rice production chain, and because heirloom rice would lose its



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main selling point of “heirloomness” without them, the terraces must be valued and protected as the environmental basis of this production process. As heirloom rice begins to bring money into this system of marketing, revenue can then be reincorporated into the terraces to ensure their health and sustainability. Heirloom rice commodification will bring a sustainable source of community income into Ifugao, encouraging young people to remain in the Ifugao community instead of leaving to find fortune elsewhere, or, to return from where they may have gone. This focus on “returners,” as Manalo and Fliert (2013) call them, is important because it ensures that a generation of Ifugao who were previously embedded in the culture may re-incorporate themselves. Manalo and Fliert (2013) note that 80% of the young people surveyed in Aurora, a province also facing rampant out-migration, had no desire to completely sever ties with their families upon leaving the community, and hoped to one-day return (p. 69). While inevitable increased income in the Ifugao community due to heirloom rice commodification has the potential to bring back young Ifugao folks searching for lucrative work, commodification may also help bring back those that have left in search of a more modern livelihood. Commodification of origin-linked products creates new types of employment opportunities as it brings together new stakeholders. While a young Ifugao might not be interested in working in the terraces, they might be drawn to jobs that involve technology, HR, finances, and agri-engineering, a short list of some of the new types of work that will emerge as heirloom rice is integrated into the global market.

Along with helping curb out-migration, the commodification of heirloom rice could help to end the problems caused by conventional mass tourism (CMT) in Ifugao, by encouraging ecotourism and, more specifically, agritourism. Ecotourism, a type of low-impact alternative tourism, is “a form of travel in which the natural environment is the primary focus” (Wearing and Neil, (2014), p. 6). Ecotourism has become the fastest growing facet of the tourism industry, and is, when properly implemented, inherently sustainable, as the ecological environments that draw tourists, in theory, need to be protected and maintained to ensure they continue to draw in tourists (p. 6). I argue that the commodification of heirloom rice could help encourage efforts to switch from CMT to a more sustainable model of tourism such as agritourism in Ifugao. Agritourism is a specific type of ecotourism, and is tourism centered around, generally, organic

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farming activities, very often in rural communities. If heirloom rice were to become a popular rice commodity within the international market, the protected processes of its production, such as the terraces, would be reframed in the tourism industry as living agricultural structures, rather than structures of antiquity similar to tourist hotspots like the pyramids of Giza and the Great Wall of China. Nae-Wen et al. (2006) find that agritourism has other benefits, noting that it has the potential to “create additional value of organic agriculture,” and that it can create a relationship between producers of organic products and the consumers of the products (p. 238). Many communities have experienced the benefits of agritourism, and Nae-Wen et al. specifically reference Taiwan, noting that agritourism has played a large part in preserving the agricultural practices of the country’s rural areas (p. 238). As Despotovic et. al (2017) note, “Agri tourism is becoming an important factor for survival of small agricultural holdings that are not able to compete under conditions imposed by market globalization” (p. 47). Therefore, commodification of heirloom rice has the potential to lead to the development of an agritourism framework in Ifugao, and agritourism in turn will aid in protecting the traditional processes of heirloom rice production.

IRRI has emerged as a vocal stakeholder in the preservation of Ifugao rice culture ever since the development of the HRP in 2014. As described earlier, the HRP is an HRPI devoted to the revitalization of heirloom rice in the CAR. Currently, the HRP is working to develop a GI for the whole of heirloom rice varieties in the CAR. Developing a GI for heirloom rice is one step in the HRP’s overall goal to trade heirloom rice in international markets. I argue, then, that IRRI possesses the framework and the funding through the HRP to make heirloom rice commodification a sustainable solution for ending terrace degradation. IRRI’s agenda and impact are questionable, though. Stone and Glover (2017) note the irony of IRRI, “the very institution that...aimed to replace rice landraces with disembedded ideotypic rice [commercial rice],” having anything to do with heirloom rice (p. 98). Indeed, IRRI’s promotion of higher yielding rice varieties is in part the reason why heirloom rice began to disappear in the first place, so creation of the HRP automatically appears to be a form of damage control meant to alleviate the harm caused by these decades of promoting commercial varieties. Stone and Glover (2017) express even worse

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assumptions, stating that, “the reasons behind IRRI’s new appreciation of pre-Green Revolution seeds and practices are partly financial,” stating that IRRI’s funding has been declining and that “researchers have had to become more entrepreneurial” (p. 99). Though the HRP’s motivations are difficult to discern, the most important problem I can see with the HRP is that it has no explicit goal to fix the most prominent problem facing the farmers of Ifugao: terrace degradation. While the actual goals of the HRP are commendable, it is unsustainable for IRRI and any other type of HRPI to be focused primarily on the preservation of heirloom rice when terrace degradation is such a rampant problem in Ifugao. I argue, then, that the HRP’s mission to expand heirloom rice’s market value could be a solution to terrace degradation, assuming that the HRP: 1) modifies its brand and mission to encompass the problem of terrace degradation, 2) incorporates farmers as the key stakeholders of heirloom rice and the IRT, and 3) emphasizes collaborative community development.

I believe this process of commodification has the potential to bring money and people back to Ifugao, while also placing value on the terraces and the cultural heritage they represent. The commodification of heirloom rice in Ifugao needs to be carried out alongside the three aforementioned changes to the HRP’s framework, the most important of which being IRRI’s focus on community-driven development (CDD) when formulating the heirloom rice value chain. CDD models share the premise “that communities should be at the forefront of their own development,” meaning that the Ifugao farmers would have the ability to create the heirloom rice value chain according to their own agenda and perspectives (Enhancing, 2016, p. viii). CDD does not exclude other stakeholders such as IRRI, but rather allows more central stakeholders, such as members of the Ifugao community, to have more control, as they directly benefit from or are harmed by major changes that occur. When implementing CDD methods to combat terrace degradation in Cyprus, Zoumides et al. (2016) found that community-based rehabilitation was incredibly successful, saying that it benefited from “the integration of local and scientific knowledge,” and further noting that “participatory process can enhance the self-confidence and organizational structures of local communities” (p. 95). Just as CDD was successful in the rehabilitation methods of mountain terraces in Cyprus, I believe that it can profoundly benefit

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Ifugao's own progress. If IRRI attempts to develop a value chain for Ifugao heirloom rice with an emphasis on CDD, the rice terraces and the culture that surrounds them have a better chance of survival. If heirloom rice commodification fails to be the main impetus in restoring the rice terraces, it is likely that, as one farmer warned me, the terraces will one by one disappear, as the open mountainsides of Ifugao "turn into forest."

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