Yapese Environmental Philosophy and Food Sustainability[1]

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Abstract

This paper explores traditional Yapese fishing techniques, especially the tidal stone-wall fish weirs, called *aech*. These fish weirs provide a classic example of a traditional sustainable fishing practice that promotes food sustainability. To study Yapese environmental philosophy is to examine Yapese sustainable food practices. The aim of this paper is to illustrate how Yapese maintain balance and harmony in acquiring their major staple, fish. The paper extracts a food-sustainability virtue ethics from Yapese traditional ecological knowledge, fishing practices, and agroforestry.

Key words: Micronesia, Yap, food sustainability, virtue food ethics, existential commitment; environmental philosophy.

Introduction

Environmental philosophy provides a gateway to develop a heuristic model to understand Yapese cultural philosophy. Because Yapese philosophy is contained in oral traditions and various practices expressed in cultural rituals, forms of life, mores, habits, attitudes, beliefs, and thoughts, we attempt to explicate Yapese philosophical values from rituals, beliefs, agroforestry, and especially fishing techniques, regarding the environment as they relate to sustainable food practices. We present the use of fishing techniques especially the tidal stone-wall fish weirs,

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[1] A shorter version of this paper was presented at the 2020 Asia Pacific Society for Agricultural and Food Ethics Conference (APSAFE 2020) held online from December 3-16, 2020, Japan.

Declarations: Funding**,** Conflicts of interest/Competing interests, Availability of data and material**,** Code availability, all are not applicable.

called *aech*, as a classic example of a traditional sustainable fishing practice that is being rejuvenated. To study Yapese environmental philosophy is in large part to examine Yapese sustainable food practices. The aim of this paper is to illustrate how Yapese maintain balance and harmony in acquiring their major staple fish, and implement agroforestry techniques, in association with their traditional ecological knowledge, and the spiritual world. The contemporary challenge is that when the cash economy replaced subsistence living in the Twentieth Century Yapese thinking about the environment shifted to an anthropocentric or practical approach to exploit the environment in unsustainable ways, for economic gain (John Runman, personal communication, 2008) Hence, the need to return to traditional sustainable environmental practices is even more urgent.

Location of Yap

In Western Micronesia, the arch of islands extending from just North of Indonesia to South of Japan, that is the Palau-Yap-Mariana island chains share important material goods and spiritual values. Through the spiritual (magical) power and natural resources of Yap, some of its shared values and trade goods moved eastward through the Caroline atolls. Yap, or Waab, the traditional name, is located 840 km south-west of Guam, and 1,850 km east-south-east of Manila in the Philippines. It comprises four high volcanic islands, Maap, Rumung, Marbaa, and Gagil-Tomil. Combined, the islands are 24 km in length, north-south orientation, and 10km at its broadest, east-west, with a total land area of about 95 square km and the highest elevation is 174 meters above sea level. The high islands are referred to as "Yap Proper" and together with seven small coralline islands and about 130 atolls that form the "Outer Islands," they comprise Yap State, one of the four States of the Federated States of Micronesia (FSM), the other three states are Chuuk, Pohnpei and Kosrae (Fig. 1).

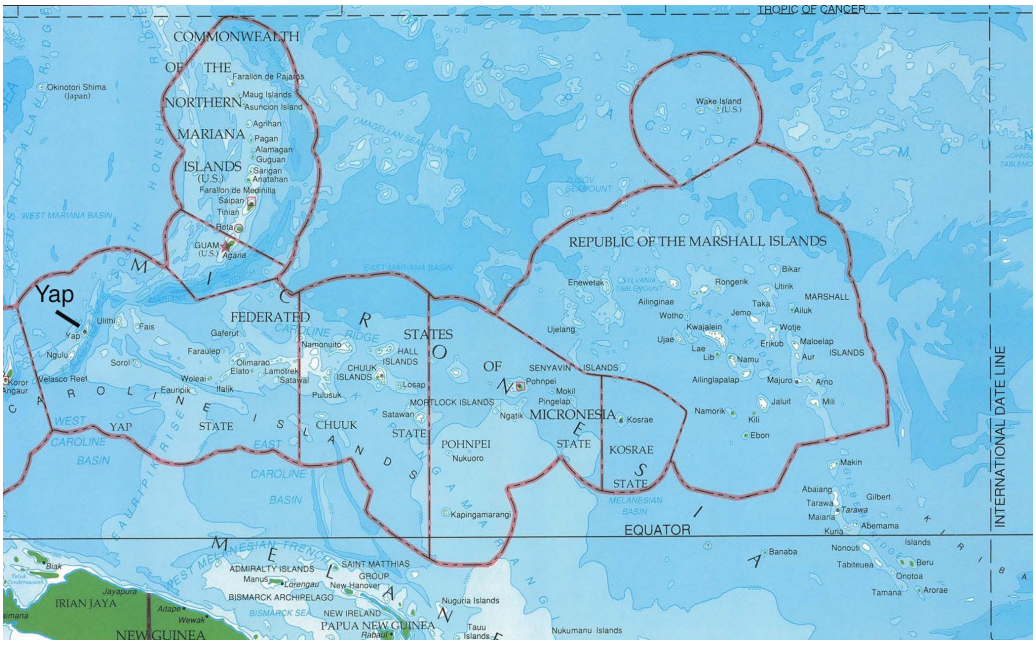

Figure 1: Yap Locality Map (USDA-NRCS National Cartography & Geospatial Center, *Pacific Basin Area*, 1:20,000,000, Fort Worth Texas, 1999)

The population of Yap today is about 11,700, immediately after the World War II it was estimated to be 2,400 (Takeda 1999: 4), and before western contact the population was estimated to be in the range of 20,000 (Hunter-Anderson 1981) to 40,000 (Takeda 1999: 3). Yap is divided into ten municipalities and 134 village communities that are ranked into nine classes under three paramount chiefs from Gagil (Gachpar village), Tomil (Teb village), and Rull (Ngolog village). While there are complexities, variations and alliances that influence the ranking of many villages, what this established was a system of higher-class and lower-class villages, i.e., lower-class villagers that served the higher-class Yapese, and higher-class villages that supported lower-class villagers at certain times, especially at seasonal rituals (Dobbin 2011: 160-61). Land, and the adjoining submerged land "sea-plots" (and in some cases, beyond the reef flat) was owned by various family estates from within the village. Lower-class villagers could not own land, it was owned by a "landlord" from a higher-class village. These villagers sought access to food grown on the land and within the sea where they could be granted limited access to certain types of food and fish.

Traditional Fishing Methods

Fish were and continue to be a major source of protein for the Yapese and they developed several fishing techniques incorporating cultural and social practices (see Falanruw 1992; Hunter-Anderson 1983; Suriura 1939; Takeda 1999). The types of fishing practices include the use of various types of nets, line fishing, spear fishing, fish traps, bamboo, and stone weirs on the reef flat, using a bamboo raft or canoe. The various fishing practices can involve just a few men or many men working together. Rites and magic are used in many practices, as when fishing outside the reef, and where villagers of the lower class are prohibited from fishing (Suriura 1939: 2; Pitmag 2008 personal communication). In some practices, men would gather beforehand in the *faluw* (men's meeting house) at the times of the year that is conducive for catching the fish sought after. Group fishing provides for the sharing of the catch with participants and others in accordance with local customs, and if just a few people carry out the fishing, contributions, gifts, and tribute need to be made to others in accordance with local customs (Suriura 1939: 4).

There were several traditional fishing methods used on the reef flat, and the most lasting example is the tidal stone-walled fish weirs (*aech*), of which it is estimated there were a total of 700-800, and they are all privately owned (Fig. 2). Yapese talk about the first seven *aech* being built by spirits. In an interview conducted by the Historic Preservation Office in 2002, a relative of an owner of an *aech* in Gagil, stated that this *aech*, being one of the initial seven was built by the ghost of a man named Mer many years before European contact, to "learn from and for catching fish…in a sustainable manner" (Jeffery and Pitmag 2010). Fish were caught at prescribed times, for a few days only, then the *aech* was opened up, "to let fish come and go, so as to make them feel at home" (James Lukan, personal communication, 2008). Those around seagrass beds caught rabbit fish, goat fish, emperor, or needle fish; while those built further out on the reef flat caught parrot fish, surgeon fish, trigger fish, giant trevally, barracuda, shark, grouper, stingray, and turtle (Jeffery and Pitmag 2010:116-117) (Figs. 3 & 4).

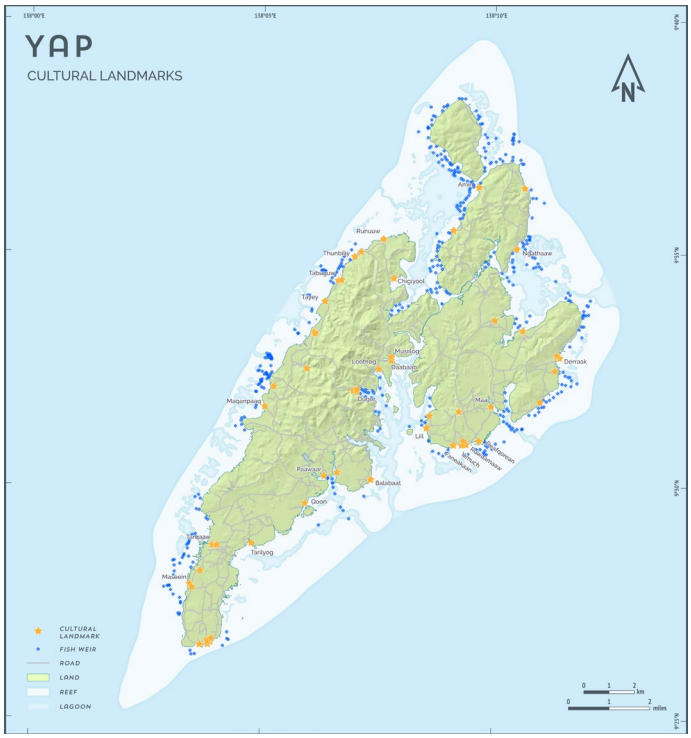

Figure 2: Yap Proper, the reef flat and location of about 450 *aech* (www.islands.fm/atlas)

Figure 3: The arrow-shaped *aech* adjacent to the coastline (Bill Jeffery)

Figure 4: An *aech* placed adjacent to a blue-hole, located away from the coastline (Bill Jeffery)

Results

As a result of a 2008-2009 project that documented 432 *aech*, it found an overwhelming cultural landscape created by the *aech* and the associated cultural practices, which reflected Yapese cultural identity. The cultural landscape highlights Yapese ingenuity and the harmonious, spiritual, and sustainable relationship they had with the marine environment. The traditional council of chiefs, the Council of Pilung, regard *aech* fishing as "sustainable fishing methods utilizing traditional ecological knowledge and practices." (James Lukan, personal communication, 2008). Today, they want to revive the use of the *aech*, revitalizing the cultural practices, and to reduce the number of fish taken by unsustainable, so-called modern, fishing practices (Jeffery, 2013).

Discussion

In this section we explicate Yapese philosophical values from rituals, beliefs, agroforestry, and especially fishing techniques, regarding the environment as they relate to sustainable food practices based on our study of Yap culture and environmental ethics (Sellmann 2012, 2020a, 2020b). The subsistence life-style, as affluent as it was, keeps people in contact with the natural environment. Indigenous Pacific islanders

recognized that the islands are alive, developing and growing either by volcanic activity on the high islands or the growth of coral on the atolls. As such Yapese describe their world in dynamic, living terms. Pacific myths describe the islands as the remains of a primordial ancestor-giant, or other narratives describe how culture heroes fished the island out of the sea or build the island on top of a submerged reef (Lessa, 1987, and Poignant 1967: 70-82) The hylozoistic world is abounding with creative energy, life power, spirit power, and the ancestors' spirits. Micronesian languages have their respective terms, denoting a concept like the Polynesian concept of *mana* (the ontological life force permeating the universe and linking people to their ancestors and the land). In Yap, the power is called *kael*. In Pohnpei and Chuuk it is called *manaman*. Ancestor spirits carry on the creative life force. The creative, life sustaining power of nature, consists of a balance of two opposing yet interrelated energies, such as the sky-above/island-ocean-below, male/female, upper-caste/lower-caste, light/dark, right/left, life/death, and so on. The interpenetration of the forces or correlative pairs generates the creatures, plants, and things of the world. Depending on the amount of life power (*kael* or *manaman*) perceived or believed to be dwelling in the person, creature, plant, or thing establishes that person or thing in a hierarchical order, granting it a superior or inferior position. In human society the life power dictates the social, economic (land-ownership), political power, authority, and status of the upper caste (chiefs, land-owners, navigators, warriors) over the commoners and lower castes.

Yap environmental philosophy is derived from peoples' experience of both living in harmony with and living in conflict with the forces of nature. Ideally the totems, taboos, and the medicine practiced maintain a balance among the forces of nature, and a balance between those forces of nature and the people. Storm magic, the alleged ability to summon or divert storms, was especially valued, and used for any number of reasons, such as broken taboos, the healer's lack of skill, or for no apparent reason at all. Yapese people find themselves trying to live-well, while at the same time they perceive or believe that they are being threatened by the forces of nature, a nature spirit, or an ancestor. They need fish but do not catch any. They seek a certain current, wind, or star for navigation but cannot find it. Their crops need rain, but drought persists. They are threatened by

storms, typhoons, waves, relentless wind and rain, thunder and lightening and so on. Trying to balance between harmony and conflict with the natural environment, Yapese shape their lives and their worldviews. Their cosmology is value laden. There are no bare *facts*. Things always have value built into them. Ideally, they want to live in harmony with the forces of nature to enjoy eating and cohabitating at leisure, but they may find themselves struggling to stay alive—starving without fish or fruit, drowning in the ocean, being blown off course or adrift without a breeze, and so on. When the forces of nature are in balance with each other and when humans abide by the taboos, then harmony prevails. When the forces of nature are out of balance or when human needs or desires are out of balance with the forces of nature, then conflict is apt to arise.

Philosophy at the Edge

Pacific island environmental philosophy can be further explicated by employing the Permaculture model. The environmental and ecological philosophy known as Permaculture developed the concept of living on the edge. Permaculture is based on the notion of sustainable agriculture (permanent agriculture) that is sustainable food production. It was transformed and expanded to become a model and philosophy for promoting permanent culture. Employing Bill Mollison's (1988) work, Louie Hena, and Kurt F. Anschuetz (2000: 40) discuss how the concept of permaculture developed from an agricultural value to become cultural practices. In permaculture the concept of the edge denotes the environmental power that creates productive energy and unique opportunities for human life on the edge, that is, the edge is found at the zone of contact between ecological niches (Hena and Anschuetz 2000: 38). The concept of the edge also caries various interesting connotations. Hena and Anschuetz define the edge in permaculture:

> Edge is a key idea used in this discipline to convey how interfaces between unlike niches enhance the concentration of productive energy through the interaction of diverse but complementary parts. Such interactions are essential for creating and sustaining the healthy functioning of a system (2000: 38).

Yap is a vibrant and productive place because it maintains productive energy on the edge of the ocean and the island, the edge of the atmosphere and the mountain top.

Beach Philosophy

Living on an island, the first edge a person encounters is the edge that exists between the ocean and the island itself. The reef and beach provide a dynamic ecosystem for island life. We observed that the area above the reef is an abundant fishing area, especially with the *aech*. Just behind the beach the island forest or agroforest takes root. The trees provide shelter for other plants, crops, and for humans to find refuge from the sun and elements. Island cultures typically distinguish between the ocean side or beach, versus the inland or mountain side location. The inland villages are responsible for harvesting the resources of the land, forest, or agroforest, and the villages along the coast are responsible for harvesting the resources from the ocean. Fishing is a challenging endeavor. Fishing in the ocean is both difficult and life threatening. Fishing on the reef is not very dangerous, but it is still difficult to get the fish on the hook, in the net or basket. The difficulty of fishing puts people in conflict with nature. Building the *aech* makes it much easier to find and catch the fish--reestablishing harmony with nature. Conflicts in the community can be resolved by giving people fish, especially turtle or turtle shell. There is a ritual-custom in the outer islands of Yap, in Woleai atoll, in which the women are given the head of the fish. Usually, the fish head is given to the male chief. That kind of reversal ritual helps maintain balance and harmony in the community (Maluwelmeng 2002: 67).

Mountain Philosophy

All high islands, that is those islands that are not low-lying coral atolls, have some elevation. Land is one of the most valued possessions in Yap. The island mountain ecosystem is a vibrant place where the wind, rain, trees, and the ascent of the mountain create fertile niches for life to thrive. The island mountain valleys provide very fertile habitats for crops

to grow and where people can live-well. The traditional practice of food and plant cultivation is a type of agroforestry, allowing cultivation of multiple food crops in a limited land area. Such crops include but are not limited to fruit-bearing plants such as breadfruit, coconut, papaya, banana, and root crop cultivars such as yam and dry-land taro. Such farming techniques existed before modern agriculture came to name them agroforestry (Manner 2008).

The growing of crops served the fundamental human physical need for nourishment. Subsistence farming, being the basic source of the peoples' livelihood, promotes not only healthy living practices by way of appropriate nutritional eating habits, but also requires extensive hours of physical work. The efforts involved in planting, nourishing, and propagating crops are so intensive, requiring patience, perseverance, and dedication, that such crops both reflect and determine one's manhood in recognizing the maturation of boys becoming adult men due to their farming or fishing success.

Parity and the Existential Commitment

To reclaim a sustainable agricultural relationship with nature, what is needed is a food virtue ethics in which self-interest and other-interests are mutually determined and co-terminus. The organismic elements in traditional Yapese philosophy coupled with Kantian and Rawlsian considerations of justice could provide such a virtue ethics. When each particular object or creature is placed on a continuum of existential parity with every other thing and parity is understood to be a temporal concept, changing over time, then we can better protect biodiversity. Particular things and creatures as different as they are, because of their temporal interaction with each other, ameliorate those differences, and simultaneously enhance those differences in a dynamic, dialectic harmony. Parity does not mean identical sameness; it means that each creature or object contributes its uniqueness, but the particulars are not mathematically equivalent. Parity is not an equal opportunity; some people will naturally take advantage of opportunities more skillfully than others, and they should be the leaders, if and only if they overcome self-interests and act with the spirit of public-interest, especially assisting

those who are least well-off, the poor. Parity provides an existential perspective from which equal consideration of interests could be reconceived and defended.

This concept of existential parity develops a moral corollary—the **existential commitment**. The existential commitment is the moral attitude of responsibility and obligation to show concern and provide care for the life of others. The ontological and cosmological understanding of the interrelatedness of particulars leads people to acknowledge their moral obligation to promote the interests of other people, animals, and even things. Within the perspective of existential parity, the value of others must be understood as having significance for oneself. This notion of existential commitment is like many traditional religio-philosophical positions, claiming that people have a basic responsibility for others. For example, consider the Hindu, Jain, and Buddhist concept of d*harma* (social responsibility), or the Judeo-Christian-Islamic concept of the brother's keeper. The existential commitment is informed by the respect for persons concept developed from Immanuel Kant through Ronald Dworkin—one of the most basic forms of social responsibility is to respect others (Kant 1965; Dworkin 1986). The existential commitment is a stronger position. It is not merely a Kantian social contract or convention, nor is it a Dworkinian theoretical starting point. It is a fundamental characteristic of existing in a world of interrelationships.

Conclusions

The aim of this paper is to open a gateway to understand how the Yapese maintain balance, harmony, and sustainable food practices in acquiring fish in association with their ecological and spiritual knowledge. Traditional Yapese environmental philosophy under the subsistence economy was based on a way of life that entails an environmental ethics, promoting sustainable food production in fishing and agroforestry. Catching fish on the tidal reef flat employing the *aech* was implemented using Yapese ecological knowledge of the marine environment, in association with ancient cultural practices, as shown to them by their ancestors or the spirit world. These practices contributed to achieving a sustainable food source in balanced harmony with the natural and the

spiritual world. Modern fishing techniques have created social conflict, and they are proven not to be sustainable. In recent years, Marine Protected Areas have been declared at the village level, with state and federal government support to incorporate traditional ecological knowledge for their management. These protected areas provide a relatively new approach for conservation with community collaboration, that is now expanding across Oceania. In living on the edge between harmony and conflict, a person can move in either direction. There is an ethical concern to promote human balance and harmony with the forces of nature and within human society. This might be called the ideal Yapese environmental ethics. However, there is also what can be called the practical or anthropocentric Yapese environmental ethics that is exhibited when people find the forces of nature or the human interaction with nature are out of sorts such that imbalance and conflict arise. This practical ethics pits humans against nature. It may well explain why some contemporary Yapese embrace an anthropocentric view of environmental ethics, and they accept the self-interest benefits of capitalism. When environmentally minded people or eco-tourists discover that some Yapese property holders want to build hotels, oil refineries, or develop a fishing industry on the islands despite the environmental degradation that will result, then they may be mystified because they simply think that the only cultural value is harmony with nature. The experience of conflict, however, gives an alleged credence to another value of domination and exploitation. Yapese living on the edge between harmony and conflict with nature are currently shaping and re-shaping their cultural ocean-scape and landscape.

References

Dobbin, Jay. 2011. *Summoning the powers beyond: Traditional religions in Micronesia*. Honolulu: University of Hawai'i Press.

Dworkin, Ronald. 1986. *Law's empire*. Massachusetts: The Belknap of Harvard University Press.

Falanruw, Margie. 1992. "Traditional use of the marine environment on Yap," Paper presented at the Science of Pacific Island Peoples Conference, Suva, Fiji.

Hena, Louie & Kurt F. Anschuetz. 2000. Living on the edge: Combining traditional Pueblo knowledge, permaculture, and archeology, *Cultural Resource Management Beyond Compliance Tribes of the Southwest*, National Parks Service, 23/9.

Hunter-Anderson, Rosalind. 1981. "Yapese stone fish traps," *Asian Perspectives,* 24(1): 81-90.

Jeffery, B. 2013. "Reviving community spirit: furthering the sustainable, historical and economic role of fish weirs and traps," *Journal of Maritime Archaeology*, 8: 29-57

Jeffery, William, & William Pitmag. 2010. "The *aech* of Yap: A survey of sites and their Histories," Yap State Historic Preservation Office. Yap, Federated States of Micronesia.

Kant, Immanuel. 1965. *The Metaphysics of Morals*, trans. John Ladd. Indianapolis: Bobbs-Merrill Educational Publishing.

Lessa, William A. 1987. "Micronesian religions: an overview," includes Katharine Luomala, "Mythic themes," in *The encyclopedia of religion*. Edited by Mircea Eliade. New York: Macmillan Press.

Maluwelmeng, Simon S. 2002. *Cultural significance of fish on Woleai: A symbolic code for social order on a small coral atoll*. M.A. Thesis. Mangilao: University of Guam, April.

Manner, Harley. 2008. "Directions for long-term research in traditional agricultural systems of Micronesia and the Pacific Islands," *Micronesica*, 40 (1/2), 63–86.

Mollison, Bill. 1988. *Permaculture: A designer's manual*. Australia: Tagair Publications.

Poignant, Roslyn. 1967. *Oceanic mythology*. London: Paul Hamlyn.

Sellmann, James D. 2020a. "Is Guåhan Going Green? Applying Four Theories of Environmental Philosophy," *Micronesian Educator*, vol. 27 no. 1, April 2020.

Sellmann, James D. 2020b. "Micronesia, Guam, Commonwealth of the Northern Mariana Islands; the Fed. States of Micronesia (Yap, Chuuk, Pohnpei, Kosrae); Palau, Marshals." In "*Database for Religious History: Religions of Micronesia*," DOI, 10.14288/1.0391869.

Sellmann, James D. and Robert Andreas. 2012. "Pacific Island Environmental Philosophy," in the *Encyclopedia of Sustainability:*

The Americas and the Pacific, Massachusetts: Berkshire Publishing Group.

Suriura, Kenichi. 1939. "Fishing in Yap," *Journal of Anthropology*, 54(2): 1-12

Takeda, Jun. 1999. "Fishing-gleaning activities on reef flats and/or reef margins in coral ecosystem in Yap, Federated States of Micronesia (FSM*),*" Manuscript with Yap Historic Preservation Office.

Personal Communications

Lukan, James. 2008. Former Yap State Historic Preservation Officer.

Pitmag, William. 2008. Former Survey Technician, Yap State Historic Preservation Office.

Runman, John, Former Ethnographer Yap State Historic Preservation Office.