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# Maritime Anthropology and the Study of Fishing Settlements in Archaeology: A Perspective from the Peruvian North Coast

Gabriel Prieto[1]

[1] Universidad Nacional de Trujillo

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## Abstract

Maritime anthropology is a sub-field devoted to the study of coastal cultures from an anthropological perspective that was popular in the mid-1970s (Casteel and Quimby 1975; Smith 1977a; Spoehr 1980; Acheson 1981). In other areas of the world, such as the American Northwest, Southwest California, the Pacific Islands, North Atlantic regions and the circumpolar zone, this field has identified the importance of marine resources and their role in the development of social complexity in the past (Casteel and Quimby 1975; Fitzhugh 1975; Dumond 1998; Kirch 1995; Arnold 1993; Arnold et al. 2004; Ames and Maschner 1999). Maritime fishing communities can be defined, from a functional perspective, as human groups who have an emphasis on the exploitation of maritime environments. They may not be exclusively dependent on the maritime environment. As a consequence, they have developed and adapted a unique technology, which is highly variable and open to rapid changes in order to optimize its function and costs (Yesner et al. 1980). From a social perspective, fishing settlements can be defined as groups who identify themselves as maritime people but who perform a highly variable and different set of activities according to the available resources. Thus, they could be part-time farmers, part-time traders or part-time craft specialists.

***Index terms—***

## 1 Introduction

aritime anthropology is a sub-field devoted to the study of coastal cultures from an anthropological perspective that was popular in the mid-1970s **??**Casteel and Quimby 1975;Smith 1977a;Spoehr 1980;Acheson 1981). In other areas of the world, such as the American Northwest, Southwest California, the Pacific Islands, North Atlantic regions and the circumpolar zone, this field has identified the importance of marine resources and their role in the development of social complexity in the past **??**Casteel and Quimby 1975;Fitzhugh 1975; **??**umond 1998;Kirch 1995;Arnold 1993;Arnold et al. 2004; Ames and Maschner 1999). Maritime fishing communities can be defined, from a functional perspective, as human groups who have an emphasis on the exploitation of maritime environments. They may not be exclusively dependent on the maritime environment. As a consequence, they have developed and adapted a unique technology, which is highly variable and open to rapid changes in order to optimize its function and costs **??**Yesner et al. 1980). From a social perspective, fishing settlements can be defined as groups who identify themselves as maritime people but who perform a highly variable and different set of activities according to the available resources. Thus, they could be part-time farmers, part-time traders or part-time craft specialists.

From a gendered perspective, despite the prevalent male connotation (fishermen), it is evident that families work together in order to maximize maritime production for subsistence, for surplus to be bartered, sold or used as gifts in reciprocal exchanges, and to participate in communal activities. From an outsider's point of view, male fishermen are the emblem of these groups. On the other hand, from an emic perspective, fishing

community members of both sexes are seen as a dual component in which the producer of fish is rarely present in a social-interaction context and his wife is the representative of the household and subsequently of the entire community (Acheson 1981). It is evident that in traditional fishing settlements there is a prevalence of adult male's participation on the seafaring and fishing activities (Lepowsky 1995), while adult women are more engaged in molluscs, algae and crustacean gathering and marine product marketing. At the same time, children as well as young males and females prior to marriage, share and help out their parents in many complementary tasks such as household activities (cooking, cleaning, child-care, etc.).

In traditional fishing settlements, men, women or children have to develop detailed knowledge of the zone in which they live, especially the behaviour of fish, birds, crustaceans, molluscs and mammals they are seeking-their breeding and spawning cycles, feeding habitats and more importantly migration patterns and their relation with seasonal changes **??**Acheson 1981: 291). Under this perspective, fishermen have to accumulate as much knowledge as a farmer, with the only difference that farmers move more slowly, whereas for fishermen, changes are so fast and unpredictable that if they make one mistake, then the food or the activities for the day are gone. Thus, I would argue that fishing settlements or maritime/fishing communities have to be constantly aware of changes in the environment in order to achieve their agendas. It has been argued that fishing communities cannot control the weather and location of fish **??**Acheson 1981: 277), but almost all ethnographic research done in these settlements confirmed the skill of its members to identify when fish is available and even what kind of species are going to be caught (Keegan 1986). I propose that the necessity of being aware of the environment resulted in a particular sensibility of these people who observe natural signs in order to predict what is going to be caught in the next hours or days.

# 2 II.

# 3 Defining Fishing Settlements in Archaeological Studies

How can we define a fishing settlement? For Andersen and Wadel (1972), cited in **??**mith (1977b: 12-13) there is a list of features that fishing settlements have across cultures. First they are usually small coastal settlements; there are no roadways linking the settlements, and the surrounding land is commonly unarable or, at best, suitable only for small gardens and production of feed for a few grazing stock. According to these authors, maritime fishing settlements have poor communication links with the outside; populations are small, culturally diverse yet relatively simple with regard to specialization and complexity **??**Smith 1977b: 12). The last statement is not necessarily true, due to the fact that almost all the cases that I have reviewed showed a high degree of interaction between fishing settlements and the rest of their immediate region. Moreover, in those places in which watercraft is used, contact occurs by sea (Feinberg 1995).

Different perspectives that emphasize the location of the settlements indicate that maritime coastal settlements are usually close to a high and diverse resource biomass. At the same time, a fishing settlement seeks an area with environmental stability and is close enough to spots where migratory species can be intensively exploited **??**Yesner et al. 1980).

In this light, it has been proposed that settlements are commonly scattered along the coastline to better control the catchment area. Thus, geographically, maritime fishing settlements tends to favor the following areas: protected and/or productive bays; areas with streams or lakes serving as additional habitat for waterfowl and fish as well as a source of fresh water, areas close to upwelling zones; strand flat zones where shellfish and other invertebrates are available; and good areas for beaching vessels **??**Yesner et al. 1980: 728-730). Linear settlements are popular along the Andean coast. In other regions, for example South Korean and Malaysia, fishing communities are nucleated instead of having a linear pattern (Firth 1966; **??**randt 1971). That is also the case of the Western Salomon Islands where houses are aligned around the edge of a promontory looking in towards the village **??**Flores 2009: 19).

# 4 III.

# 5 Defining Fishermen

There is a general tendency to consider fishermen as hunters (Acheson 1981). This idea departs from the simple definition of hunters as the people who pursue living animals for food or trade. For Andersen and Wadel fishermen are hunters, but they hunt a prey "which does not occupy the same environment as the hunter" **??**Andersen and Wadel 1972: 154). From an anthropological perspective, fishing is traditionally best considered as a kind of hunting activity **??**Leap 1977: 252). For Leap, the connections implicit in the hunting reference further strengthens the ecologically derived claim that fishing and hunting be viewed in complementary relationship **??**Leap 1977: 256). In Mesoamerica, specifically in the Yucatan peninsula, fishermen are also described as hunters **??**Delfin Quezada 1996: 14). In a study of the ecology and fishing practices of Lucayan Arawak of the Bahama Archipelago, it was proposed that fishing is a form of predator-prey interaction with capture resulting from the articulation of behaviours **??**Keegan 1986: 817). However, this group also relied on extensive manioc and maize cultivation (ibid.). In the cases previously cited, the "hunting" of fishermen was integrated as part of a number of subsistence activities that more or less complement and supplied the hunting of fish and other species. According to Firth, who studied in detail the case of Malay fishing community, fishermen can be described as

primary producers (Firth 1966). A good case of fishermen developing not only sea activities but other subsistence strategies are the groups living on the Swedish coasts along the North Atlantic and the Baltic seas. **??**ofgren (1979: 86) subdivided them in different categories, including farmer-fishermen. Lofgren adds that fishing alone was not sufficient to secure a livelihood. To secure a more stable subsistence, most of these new peasant fishermen started to clear small patches of land in the heather. These agricultural activities were often supplemented by several sheep or perhaps a cow that grazed in the heather or on the marshy fields close to the water **??**Lofgren 1979: 89).

In Catalan (Spain) fishing settlements many fishermen, with the general exception of the trawler men (who are a relatively modern activity in the area), own smallholdings (small cultivated areas), olive groves, vineyards, vegetable gardens and divide their time between working the land and fishing. In fact, Catalan fishermen can be seen as a variant of Catalan peasantry (Pi-Sunyer 1977: 42-3). In the Swedish case at least four different types can be identified, all of which are adapted well to social reality and historical events. However, that does not mean that this has to have happened in other places. Lofgren's description is interesting, because it brings up a number of categories that can be applied in each case. The variability of fishermen's status is ultimately the outcome of historical constraints, which shows that these communities were participating in and were affected by political and economic factors in their surrounding areas.

Kim Geheb, who studied the subsistence activities of people living around Lake Victoria in Africa, concluded that fishing and farming represent but two components of a survival strategy designed to ensure nutritional security in Lou communities **??**Geheb and Binns 1997: 91). Although this is a non-maritime case, it is useful because it shows how in other environments people adapt their activities in order to maximize their production and food provisioning. In fact, when environmental conditions are not optimal, herding, farming and fishing are no longer individually capable of providing the necessary subsistence and income. Instead, all three elements have to be utilized simultaneously in order to make up for declining productivity **??**Geheb and Binns 1997: 93).

In the most pure essence fishermen are primary producers engaged in a number of alternative productive activities. Fishing community members consider themselves fishermen because they concentrate their efforts in exploiting maritime resources. Psychologically it is a way to express their pride for their work in an environment that is not natural for humans. The maritime activities give them a source of identity and distinguish these groups as a separate social entity. However, this is a false perspective because in most cases fishermen are part of a larger social system in which other groups are scattered around the landscape exploiting other resources but complementing each other with their "exotic" products. This could be the case of the Moche valley in the North Coast of Peru, where Gillin recorded in the 1940s that the inland farming communities of Simbal, Laredo and Moche considered the people of the fishing settlement of Huanchaco located on the coastline as their "brothers" and part of a "Moche Community" (Gillin 1947).

# 6 IV. Household in Fishing Settlements

The classic example of a fishing settlement household organization is the one provided by Thomas Fraser (1966) for the case of the fishermen of South Thailand. Here, the nuclear family is the basic social and economic unit in the coastal Malay villages and is ruled by a bilateral kinship system (ibid.). According to Fraser, the husband is the main provider, engaging in the major occupations of fishing, rice cultivation and plantation management. He also represents the family in the religious and political activities of the community. The wife has a secondary role in religious ceremonies and is the manager of the household economy as well as the distribution and marketing of fish. Usually, when a young couple marries, they form a subordinate unit in the household of one of their parents **??**Fraser 1966: 30). Although the nuclear family is the basic unit of the society, the most important unit is often the village or kampong (ibid.: 32). Thus, everybody is at some point related by ritual or blood kinship. That is what configures ethnicity among these groups. The only precise kinship distinctions tend to occur within the nuclear family unit in order to separate roles and to establish a status hierarchy. Events such as birth, naming, puberty, pilgrimage, marriage and death are celebrated as part of the religious calendar, and they are important in bringing together and formally involving a larger group of kinsmen than ordinary functions. In this light, the concept of household is closely related to the idea of community in which, through kinship relations or shared economic activities, its members have a sense of common identity **??**Munch 1977: 140). One characteristic of this system is that since kinship relations are recognized bilaterally, they do not result in the formation of clearly defined and mutually exclusive groups like patronymic "clans" **??**Munch 1977: 142). The latter statement is not necessarily true for all fishing communities but is more or less a general tendency among these groups.

V.

# 7 Gender and Fishing Settlements

As I mentioned above, the term "fishermen" tends to separate or to obviate the female component of these communities. However, in the last 20 years with the emergence of issues related to gender in anthropology and archaeology (Preucel and Hodder 2008: 415, 420-422; Trigger 2006: 458), more attention has been paid to the role of women in fishing communities. Modern western assumptions about the division of labor are typified by phrases such as "Women, the shell gatherers" and "Men, the fishermen." Women's role in fishing communities was therefore reduced to just the collection of shells during low tides **??**Classen 1991; **??**oss 1993: 632;Meehan

1982). Thus, in archaeological interpretation is not common to see proposals emphasizing the role women played in fishing community activities (however see Chapman 1987: 269, Table **??**). Based on a survey of modern Peruvian fishing communities, I realized that women played a crucial role in the economy and in the maintenance of the household **??**Prieto 2013).

This is also the case on other parts of the world. Based on the importance of women in shark fishing in Fiji, Acheson pointed out that women may often be more knowledgeable about particular technical or ecological aspects of a project than men in the community **??**Acheson 1981: 283). However, in general, women's fishing is more restricted in exploitable areas, and usually they do not use elaborate technology. The important point here is that women do fish, which is something has never been taken into account in analyzing archaeological cases. In fact, in American Samoa, women contribute 32% of the total fishing yield of the community in a single year; the quantity is similar to Western Samoa. A similar situation has been proposed for the coast of Huatulco in Oaxaca (Mexico) where women had a prominent role in marine resource exploitation and processing **??**Pankonien 2008: 108). Malinowski observed in the Trobriands that women not also played a major role in the economy of the villages but they also had a very high social position, giving them certain privileges in gardening work, sorcery and prominent roles during events of ceremonial food division **??**Malinowski 1932: 54).

In other words, women's activities and role in the fishing communities are important as offshore fishing done by men. Offshore fishing presents a number of risks and problems. During periods of stormy weather when men are unable to go out fishing, the products gathered and fished by women support the household. Also, women's fishing is important where men's fishing is seasonal due to competing subsistence commitments. In New Ireland, during the months of September and October when men are completely committed to gardening, women´s fishing provides a valuable source of protein until the men can return to their fishing activities **??**Acheson 1981: 277). On the other hand, in the Pacific Islands the type of fishing in which almost all women in the region participate actively is reef gleaning (walking with a stick and collecting whatever is found) **??**Chapman 1987: 268).

Another case is Tanzania where women are usually restricted to intertidal areas for a limited time of a few hours per day (Jiddawi and Ohman 2002: 521) but they are crucial for trading and marketing the household surplus. That is also the case of Malay fisher wives or mothers of the crew who unload and distribute the fish **??**Fraser 1966: 11). Due to marketing activity, Fraser considered that women have a more cosmopolitan daily outlook and thus are more informed about the political and economic situation of the region **??**Fraser 1966: 38). This information flows in a context of the marketplace, which was "a festive occasion on which women from many different villages could congregate once a week to gossip and compare ideas on a variety of village activities" **??**Fraser 1966: 39). In Newfoundland, women are also in charge of marketing fish **??**Faris 1977: 239). In Ghana, females have always controlled the sale and processing of fish after the fishermen landed the catch on the beach **??**Christensen 1977: 71-2). In this part of the world, every fishing town or village had a woman known as a konkohen (selling or retailing chief or head) who was elected by the women involved in buying, smoking and selling fish **??**Christensen 1977: 78). A fisherman usually would turn his catch over to his wife or to a sister or some other female in his family. The control over the economy by women in Ghana's fishery was so great in the late 1970s that market women were the major source of capital for financing equipment to the local fishermen.

In the Pacific Islands some fishing communities believe that women hold a wealth of information about marine ecology and biota and have intimate knowledge of the natural order as well as changes and fluctuations in the system. In fact, women keep much of the traditional ecological knowledge (Mehan 1982). In Europe, in the Scottish East Coast, fishermen prefer to have their wives prepare their bait and mend the gear because they have more skill **??**Baks and Postel-Coster 1977: 30).

A similar situation is present among the traditional maritime communities of the North Coast of Peru. My own ethnographic data confirms that the women of the communities (wives, daughters, sisters) are in charge of the economy of the household (Prieto 2009 **??**Prieto , 2013)). Usually the women are the ones who exchange or sell the marine products in the market place or to the middlemen who come to the beach to buy fish and other products. In Huanchaco a modern traditional fishing settlement of the North Coast of Peru, the wives of the fishermen go to the marketplace in Trujillo (located five miles southeast of Huanchaco) every day to sell their husband's fish. They are also in charge of the economy of the household. An old woman in Huanchaco once told me, in a remarkably telling comment, that the fisherman is just a mediator, who passes the fish from one female hand into another female hand. In the local belief system of Huanchaco, the sea is a woman and therefore her fish is caught by the fishermen but then returned to another female, in this case his wife to be cooked or sold to other woman who will prepare it for food (Prieto 2011). Ethnographic accounts from modern fishing villages north of Huanchaco confirms that women were in charge of the distribution and other economic transactions concerning the fish and other marine products obtained by the household (Schaedel 1989;Sabella 1974).

# 8 VI.

# 9 Sea Tenure

In its most elemental explanation, sea tenure must be understood as well-defined rules of access to specific spots in the ocean. In this light, sea tenure is closely related with the responsibility to learn the cycles and seasons of the sea's area in order to maximize its exploitation, control and accessibility that a given individual, kin group or community has on a shoreline or offshore. The former refers to the control of the resources on the beach and

the shallow submarine subsurface. The latter is considering a specific portion of sea where a single person or a given group can exploit for its own benefit.

It has been argued that individuals of fishing settlements do not have access to private property or at least control over a demarcated territory to fish. Usually private property in fishing communities is reduced to boats and fishing equipment **??**Nasson 1975: 20). This last statement is not necessarily true and sometimes fishing areas are owned by individuals as is the case among the Salish and in the Baltic Sea. In parts of Oceania fishing rights are owned by groups although access to them is controlled by leaders. However, in most parts of the world fishing areas are owned communally (Acheson 1981). For Durrenberger and Palsson (1987: 508-9) the sea is not a common resource. Since rules of access are parts of larger systems of social relations, and not just aspects of catching fish from boats, these authors argued that the discussion of access to resources should be in terms of the place of such rules in the larger system. Thus, for the case of private property in the sea, no conceptual distinction exists between land holdings or land tenure and sea holdings or sea tenure (ibid.).In this section I will focus on the cases where maritime people developed mechanisms to control territories and its production for its own benefit. The better case is perhaps the lobster fisheries of Maine. James Acheson is a pioneer on the study of sea tenure from an anthropological perspective. In Maine, local fishing territories are the rule and usually this pattern is encapsulated in a political system or in other words is a system within a system **??**Acheson 2003: 24). Despite the fact that now "fishing territories" among lobstermen are regulated by state rules, it used to be a sort of "informal" control of territory only valid by the people directly linked to it. Due to the fact that it walls cannot be built upon the sea, the way to mark the territory is along the shore, and the boundaries are marked by such small features as coves, trees, houses, rock formations or islands. Offshore, the boundaries are recognized by more visible landmarks or underwater features **??**Acheson 2003: 25). However, the most effective way to delimit a territory is through the use of a piece of ocean where a number of lobster traps will be sunken in order to catch this valuable resource **??**Acheson 1979(Acheson , 1981)). What it is more interesting is that the mechanism to defend the boundaries is basically by destroying the intruding lobster-traps. Moreover, by removing traps not only removes the symbol of someone else's incursion into your territory; it also limits the intruder's ability to reduce the defender's catch, which is the prime goal of this action **??**Acheson 2003: 28). Acheson identified two types of defended areas which differ in the amount of boundary permeability permitted and the ease of entry into gangs. Thus, the perimeter-defended areas are territories defined in terms of the peripheral boundaries. In these areas the sense of ownership remains strong out to the perimeter of the territories. On the other hand, nucleated areas have far larger territories and the gangs controlling them have more fishermen than those in perimeterdefended areas. Thus, the territorial system of Maine's lobster industry is a threat system used to regulate access to ocean territory. It is an informal system of rules, which are unenforceable by third parties such as the state. Two sets of rules should be distinguished: boundaries rules defining where different groups of fishermen have rights regardless of how temporary and rules of the game defining how these territorial rights are to be defended or new territories generated. The territorial system in Maine at present is the result of a long historical process in which some territories have remained intact, while other have been consolidated into larger nucleated territories. The way this system evolved is the result of changes in the factors affecting the costs, and benefits of territorial defense and incursion **??**Acheson 2003: 40). In the past, ownership of fishing areas was tied to legal ownership of land. Almost certainly these small areas were adjacent to the fisherman's own property and legal ownership over the land was extended to include nearby waters; "... these areas were owned by one man or small groups of kinsmen" (ibid.). The control of sea spots by Maine's lobstermen is a case that could be considered modern because it was developed by European migrants in the north east coast of the United States (Acheson 1981). However, it departs from a generalized contradiction known in anthropology as the tragedy of the commons(Hardin 1968). For McCay and Acheson (1987: 1) the tragedy is a result of irreconcilable contradictions between individual and system interests. Then the concept of private property arises and individual control over land, sea and its resources began. However, it is difficult to generalize at this point because every case will depend on the political and economic circumstances. In the case of the Maine's lobsteries seems that the case was an increasing specialization of the fishermen in lobster fisheries due to an emergent demand of lobster in America's restaurants and homes.

In more traditional societies like the Eskimos/Inuit the Tinglit and the Yahgan, notions of the source control ranged from nuclear-family "ownership" of fish camps or shellfish beds and the motivations for territoriality is more closely related to issues of social prestige, ideological concerns, etc. **??**Yesner et al. 1980: 732). In Japan each fishing community enjoyed exclusive rights to well-bounded and demarcated fishing grounds; these rights were owned by the feudal rulers of Tokugawa and given to specific occupational communities in return for specific taxes. In Newfoundland fishermen group according to types of gear try to keep those with other kinds of gear away from certain areas and reserve them for themselves.

Here there seems to be no concept of individual territories to defend or to be owned, only places reserved by regulations of various kinds of gears. There are local variations in restriction to access (species fished, factors of community connectedness ashore, gear used, or cultural differences). Durrenberger and Palsson suggest the explanation might best be developed in terms of the particular articulation of relationships between the localities on the one hand, and markets, firms, and the state on the other (Durrenberger and Palsson 1987: 512). In the South Pacific Islands, although Crocombe is referring to the tenure of land, he proposed that human beings do

not own the land itself, what they own is rights to land. Thus, the concept of tenure (sea or land) is a notion of exclusion (Crocombe 1972: 220).

In my survey among the fishermen of Huanchaco on the north coast of Peru, I found that fishermen have developed a concept of sea tenure to exploit fish resources. Each head of the traditional lineages owns a spot on the sea. Usually these spots are specific areas where large shoals of fish concentrate to feed or to spawn. According to the "owners" of these fishing spots they have exclusive rights to fish in these places. The species that are within the waters and in the marine ground of that particular area belong subsequently to the owner of the spot. What is more interesting is that each head of the traditional families owns the adjacent beach of the given sea spot. The boundaries of each spot is physically demarcated by a roofed area named cala which is a structure made with reed mats and wooden posts. In each cala the fishermen occasionally left their reed boats and their fishing gear, especially fish nets. Later, fish nets are used to catch fish from the beach and not offshore. When the fishermen are fishing on their respective spots in the sea, they can recognize them by a number of floats marked with their initials. Also they can orient themselves in using the landmarks that can be seen from the sea (a mountain, a ravine, a modern building, the tower of the church, etc.). This system of sea tenure seems to be very old and more research has to be done in order to fully understand this mechanisms.

# 10 VII. The Study of Traditional Fishing Settlements in Peru

The Spanish chroniclers of the 16 th and 17 th centuries as well as the travellers of the 19 th century wrote some descriptions on the coastal fishing villages and their customs, but nothing substantial regarding kinship, economy or religious practices. Remarkably, Maria Rostworowski has written extensive and well digested data of the 16 th -17 th century decribing fishing communities of the Peruvian North Coast based on judicial cases and legal documents written by the officials of the Spanish crown in Peru (Rostworowski 1970 **??**Rostworowski , 1980 **??**Rostworowski , 1981 **??**Rostworowski , 1997 **??**Rostworowski , 2004)).

The data gathered from ethnohistorical sources by Rostworowski can be summarized as the following: 1) the specialization of fishermen and coastal residents in general, who developed a system of exchange based on what they produced, 2) patterns of endogamy in fishermen populations, 3) religious beliefs associated with the cult of birds and 4) technology for the extraction and processing of marine resources. The concept of specialization of the fishermen is one of the most significant contributions of Rostworowski in this field. Based on testimony from many fishermen from the 16th to 18th centuries she proposed that because they had no land, they were therefore not subject to work in farming activities or annual operations of cleaning hydraulic channels. Many of the testimonies offered by Rostworowski emphasize that coastal inhabitants were dedicated only to fishing and then selling or exchanging their marine products. Some years later, Susan Ramirez analyzing documentary sources of the Moche and Chicama valleys found direct references to the fishermen who had no land but only had the sea to supply food and owned herds of llamas to transport their products for exchange with other populations (Ramirez 1995).

Ethnographically, the earliest known work ever written and published on a fishing community of the Peruvian coast is a short description of the fishing village of Huanchaco. This description was part of a large monograph devoted to the study of the town of Moche, a coastal farming community (Gillin 1947). The author included the inhabitants of the village of Huanchaco as part of what he called the "Moche Identity." Gillin conceptualized this phrase as the shared traditions, race and technologies of the towns/villages scattered in the Moche valley, North Coast of Peru. In his notes about Huanchaco, Gillin restricted his observations and descriptions to the study of fishing gear, the use of the traditional watercraft or reed boats as well as its construction. Also, he spent some paragraphs in describing the distribution system of the fish **??**Gillin 1947: 30-37).

The latter is perhaps the most important contribution made by Gillin to the field. He described that a crew of sailing boats was usually composed of four members, one of whom is usually the owner of the boat. They were always relatives and traditionally the youngest is the commander or Patrón **??**Gillin 1945: 32).

The division of the catch was as follows, nets belong to individuals not to the boat, and four nets (one for each member) were considered as a proper minimum. The catch from the net is divided into two parts: one part belongs to the owner of the net and the remaining half was divided share and share among the members of the crew and the boat. That means if there were four members, the second half of the catch was divided into five parts. Also, as each net is drawn up, the fish from it are marked with a knife cut which identifies them as having come from that net. When the boat returns to the shore, the fish were unloaded from the boat and once at the beach the fish were first sorted into separate piles belonging to their respective nets. Each pile is then sorted into separate piles by species of fish. Then they proceed to take their parts of each half of the other nets (ibid.).

There is no direct evidence that Prehispanic Peruvian fishermen used large boats to fish. Ancient iconography reproduced on plastic supports (ceramic, metal, wood, textiles) as well as on mural decoration show large reed boats known today as patachos by the fishermen from Huanchaco 1 . However, the context in which patachos are represented is always related with ritual activities (Donnan 1976). Even today, patachos are only used for ceremonial purposes in the context of a modern Catholic celebration. Every june 29 th , the official day of Saint Peter the Apostle, local fishermen put the 19 th century wooden image of Saint Peter on a large patacho (usually 15-20 meters long) and with the companion of a select group that includes the mayor of the town, the local priest and the president of the fishermen association, take a patacho ride around the Huanchaco bay. The main goal is to make offerings for the dead fishermen who died in the ocean and to bless the sea for a good year

(Prieto and Rodrich 2015). Despite the fact that this is a modern celebration (started in 1995) and that there is no connection between modern celebrations and the rituals depicted in Prehispanic art, it is interesting that modern fishermen decided to use the patacho to perform a religious ceremony. It is true that there are no wooden boats in Huanchaco today that can be used instead of patachos due to the shallow submarine surface and that touristic purposes could be involved behind the creation of the June 29 th celebration. However, as far as I know, huanchaqueros never used patachos to fish or to make cargo service during the period in which Huanchaco was a gateway to export sugar. If patachos were used for fishing in the past, it is something that will have to be determined by archaeological research. I will argue that if patachos were used for fishing and for ritual purposes in the past, then it could be possible that the division system recorded by Gillin was developed in Prehispanic times. Otherwise, that division system is an introduction made by the Europeans since the 16 th century 2

At the end of the 19 th century and during the first two decades of the 20 th century, Heinrich Brüning did an extensive study of fishing communities between the Moche and Lambayeque valleys, but he never presented his data systematically. Also, he took thousands of photographs portraying fishing communities daily life, their fishing gear, their religious parties, etc. Based on this archive and on notes written by Brüning, Richard Schaedel published a book in which he synthesized and organized Brüning's data. Some pages were devoted to the manufacturing technology of traditional watercraft, fishing gear and the production of reed mats. Perhaps one of the most important contributions made by Brüning was that he saw in the 1920s that in fishing villages like Santa Rosa, San José and Puerto Eten (Lambayeque region) local fishermen had begun to use wooden sailing boats **??**Schaedel 1989: 110-111). This observation is important because it can give us a departing point to evaluate the persistence of traditional watercraft technology. In fact, in a recent visit I did along the Peruvian north coast, I saw that at least in Santa Rosa and Puerto Eten fishermen are still using (although no more than a dozen of them) reed boats whereas in San José the last fisherman, who used one of this vessels, died five years ago according to a local informant. The other important contribution made by Brüning is the description of a mixed pattern for fish marketing. According to the synthesis made by Schaedel, Brüning observed that in Santa Rosa women were prohibited by taboo to walk into the beach when the fishermen arrived with their , when they were involved in fishing activities on the coast of Peru (Castañeda 2004). catch. Recently, men sold their maritime products at the beach in Santa Rosa. On the other hand, in Puerto Eten women were in charge of cleaning the fish at the beach and then they had to sell their catch at the markets (ibid.). Despite the fact that a deep study on the impact of European influence in the patterns of fish marketing and distribution on the Peruvian Coast is necessary, it is interesting that at the beginning of the 20 th century there were two complete different models of fish distribution.

Between 1957 and 1958 E. A. Hammel and Ynez D. Haase covered the Peruvian coast from Ica to the Equadorean border, visiting over 37 fishing villages in 10 days **??**Hammel and Haase 1962: 211). These researchers realized the lack of studies in these fishing communities and the importance to gather ethnographic information in order to understand their role in the local economy as well as their importance on the emergence of social complexity in this part of the world. According to these authors, in the late fifties, most of the fishing villages had a population between 200 to 500 people and generally the houses were made of wattle and daub or just cane **??**Hammel and Haase 1962: 212). This is not longer the case and in a recent visit of the same places, I found that fishing communities have seen an 80% increase in its population since the 1950s. This situation is not exclusive for the Andean coast; Indonesian coastal villages have also witnessed a rapid increase of population since the mid-20 th century (Kramer 2002: 367).

Hammel and Haase (1962) devoted most of their work to the study of fishing gear, concluding that most of the net names as well as the biological species have Spanish denominations, therefore the influence of Iberian culture on these arenas had a great impact **??**Hammel and Haase 1962: 214). However, recent evidence recovered from archaeological sites, demonstrated that most of the current fishing gear used by traditional fishermen has an early Prehispanic origin (Marcus 1987). I will argue that what were adopted by coastal communities are the names of the European nets and angling devices but the technology knowledge to use it is indigenous. Available data from Brüning (Schaedel 1989) Rodriguez Suy-Suy (1997), Anhuamán (2008) and myself (Prieto 2015), demonstrate that there is a large list of traditional fishing gear as well as marine species (fish, birds, algae and molluscs) that conserve their names from extinct native languages.

Perhaps the most valuable description of Hammel and Haase was about fishing vessels used by these communities. They listed all the watercraft used during the late 1950s along Peruvian coast. They saw the presence of reed boats where today they are out of use and in fact made a detailed list of the vessels used by each town **??**Hammel and Haasel 1962: 226-7). It is beyond this manuscript to give more detail about watercraft technology of South America and detailed research on this issue was first published by Samuel Lothrop in 1932, then by Philip A. **??**eans (1942) and later by Clinton Edwards (1965). However, due to cultural alienation, it is impossible to have a better understanding of the symbolic meaning and other issues related to these vessels like in the case of Oceania where due to the preservation of traditional fishing practices and ideology, communities still conserve some traditions and the symbolic meaning of their watercraft (Feinberg 1995).

Another important contribution of Hammel and Haase is that fraternal organizations seem to be relatively unimportant in social organization although they supported a local saint. This is important because traditional Iberian fishermen tend to organize their communities under a fraternal organization system. Thus, it could be possible that Peruvian fishermen kept their Prehispanic traditional system of social organization until the mid

20 th century. In fact, these authors emphasized that the prevalent kinship system among these communities is compadrazgoor ritual kinship, and usually people of neighbouring fishing villages are socially tied together (Hammel and Haase 1962). This situation is similar to the traditional patterns of social organization in the highlands (Mayer 1977). Another interesting issue pointed out by these authors is that "the combination of farming and fishing reflects an aboriginal dual economy (Hammel and Haase 1962). The idea of fishing-farming activities performed by fishermen is something that I also saw in my survey among the north coast villages, especially in the towns of Huamán, Las Delicias (or Playa deMoche), Huanchaco (Moche valley) and Magdalena de Cao (Chicama valley).

The fishing-farming pattern seems to be worldwide when the environmental conditions allow it. Additional information that might be relevant for our purposes here, is that in the northern north coast of Peru (Piura and Lambayeque) the authors saw that coastal fishing communities and beaches are seasonally visited by highland people who came down to fish and gather molluscs. This information corresponds to the pattern observed by Shozo Masuda in the southern south coast of Peru in the eighties. His research focused on the exploitation of algae in the littoral coast of Arequipa (South of Peru) **??**Masuda 1981 **??**Masuda , 1986)). One of the most interesting aspects is the one algae known locally as "Cochayuyo" (Porphyra columbina) which is collected until the present not for coastal populations but for herders (and some peasants) who come with their herds of animals (llamas, goats, sheep) to take advantage of the seasonal grazing on the hills near the coast. Some families set themselves up in specific areas of the beach to remove the algae, which are then dried and compacted into rectangular plates (previously they used some form of bread mold), for transport and trade. This process occurs from July to November. What is interesting is that the "Cochayuyo" is a highly valued product in the mountains, so these groups of farmers and herders probably did not use it for their own consumption, but used it in exchange for other products during the journey back to their towns. Thus, "Cochayuyo" is a medium of exchange, a valued resource that enables them to obtain salt, vegetables, corn, peppers, fruit, fish, etc. **??**Masuda 1981). The seasonal exploitation of the "Cochayuyo" is also associated with the exploitation of shrimp, mussels and figs **??**Masuda 1986). From these products, only the figs are a late European introduction, so it is very likely that the mechanism of coming down from the highlands and exploiting coastal resources operated during Prehispanic times in the south region of Peru (Burger 1992).

There is no detail about the fishing and gathering activities done by highland people in the region of Sechura and Lambayeque and it is something that merits a more detailed study in the near future in order to compare it with the pattern described by Masuda for the south coast. As in the previous cases described, **??**ammel and Haase, despite the valuable information provided about some crucial points, they did not accomplish a substantial anthropological study of coastal communities.

James Sabella offers perhaps one of the most complete studies about a fishing community of the Central Andean coastline. He based his investigations in the fishing village of San Pablo, located in the Piura region (north coast of Peru). The main goal of Sabella's thesis was to investigate the interrelationship between technology and the social and economic organization of artisanal fishermen in caleta San Pablo. In the process of the research, Sabella found that fishermen used to be part-time agriculturalists; in fact, they used to divide their time among planting, fishing, and harvesting activities, showing a relative degree of self-sufficiency **??**Sabella 1974: 52, 283). One of Sabella's most important insights was the description of an annual cycle or a seasonal calendar that is crucial in determining the productivity of the ocean. This fact is more interesting when it was explained by the same fishermen. According to these descriptions, summer is usually the period of highest productivity and also corresponds to a time of intense social interaction with two major fiestas being celebrated in November and December **??**Sabella 1974: 53). During summer time there is a holiday atmosphere in which daily excursions of large groups of women and children go out to gather molluscs and crustaceans from the beach (ibid.). The existence of a seasonal division in the northern north coast of Peru seems to be part of a larger system shared in every single fishing village at least from Puerto Huacho, north of Lima to the northern sector of the Piura region. In my own survey, I found that fishermen refer to the summer season as the temporada (the season) which is expected every year because this is when there is an abundance of first-class (valued) fish (drums, black ruff, white-fish, sea bass, rock bass, etc.) due to the presence of huge schools of anchovies that reach shallow waters at this time of the year, following the currents that concentrated phytoplankton and zooplankton. In Huanchaco the fishermen refers to the summer as tiempo de abundancia (abundance time)

due to the same phenomenon 3 . It seems that scholars have not paid enough attention to Sabella's claim regarding the importance and implications of seasonal effects on sea productivity and on the economy and social relations of fishing villages.

Another important insight of this work is the determination that at least in caleta San Pablo the base for social organization is the nuclear family which was governed by a bilateral kinship system **??**Sabella 1974: 55). According to Sabella, the nuclear family in this community is composed of the circle of kinsmen, the kindred and the ritual kinsmen **??**Sabella 1974: 56). This conclusion is interesting because it reaffirmed earlier observation made by Hammel and Haase in 1962. In fact, for Sabella ritual kinship, compadrazgo and coparenthood was the principal mechanism for social cooperation and unity. The system is often extended to include sponsorship of objects or ceremonies, which creates similar ties among the participating parties **??**Sabella 1974: 65). The compadrazgo system in San Pablo serves as an integrating function within the local community by establishing ritual ties among various members of the major families and their kindred **??**Sabella 1974: 72). Sabella ends

delineating the economy of caleta San Pablo in which middle men have control over fishermen production. However in the past, it was fishermen's wives who were in charge of fish marketing (Sabella 1974). where was the fish sold and how transported?

More recently, a number of ethnographic descriptions about fishing technology, religious practices, oral traditions and gastronomy were being compiled and published by the descendents of traditional fishermen families (Rodriguez Suy Suy 1997; Pedro Anhuamán 2008). These monographs, entitled "Los Pueblos Muchik en el Mundo Andino de Ayer y Siempre" (Rodriguez Suy -Suy 1997) and "Cultura Viva Muchik-Chimor de la Costa Norte del Perú" (Anhuamán 2008) provide excellent endogenous perspectives about the traditions of fishing and farming communities of the Moche valley in the north coast of Peru. In the case of the description of the "muchik" fishing communities, I will point out that these books are a source of first-hand raw data that has to be contextualized into a broader perspective, considering issues of political economy, kinship, ideology and cultural resistance through time.

To sum up, it could be argued that there is a corpus of raw data that must now be systematized in order to determine patterns of behaviour in traditional fishing communities of the central Andes region. There is plenty of information about technical descriptions of watercraft technologies and uses, as well as traditional fishing gear. However, there is still a lack on the social implications of this technology and its repercussion on the economy of these communities. There is a long list of myths, legends and traditions that are a rich source of information to identify social patterns, kinship relations, ruling procedures, etc. At the same time it is not clear the gender roles behind tasks within a fishing community although it is acceptable to propose that women were in charge of marine product marketing and that males spent their lives fishing in their vessels or along the shoreline and fixing their nets and other fishing devices. Women gather mariscos, but men also dive for them. It is also clear that as was proposed long ago for the highlands, a compadrazgo system is the most effective social institution within Andean maritime fishing towns. The role of this important institution was (and is) to tie, to generate mutual dependence and to provide a general sense of ethnicity and identity among these groups.

# 11 VIII.

# 12 Conclusion

In sum, fishing settlements or maritime communities are complex and dynamic entities where gender plays a major role and where the sense of economic exploitation depends on the ecology of the area and the knowledge developed by those who exploit those resources. Fishing settlements are not only specialists devoted to marine activities but they are also engaged in other subsistence activities related to the resources available in their area. The constant movements along the coast make fishermen and their families dynamic individuals who are always changing and are open to new patterns, which make them anything but monotonous agents.

The importance of having more detailed studies about modern fishing communities in the Andean coast is crucial. Research that includes a confrontation between modern ethnographic data and archaeological evidence will be pivotal in order to propose which behaviour or practices are traditional or at least indigenous in the Peruvian coast. Parallel to this, it will be necessary to study European fishing practices in order to measure the impact of them on the Andes. From a broader perspective I try to expand the concept of "Specialized fishermen" by "fishing community" which imply a more inclusive definition due to the particular characteristics of each case. It also implies that fishermen were more than that and they were involved in different economic activities that included gathering, herding, farming, crafting, etc.

The idea of specialized fishermen is a modern concept applicable only for the people working in the industrial fisheries. Archaeologically, it can be measured based on the study of the cultural remains and with a special focus on the productive activities performed by the given fishing community. At the same time, the location of fishing communities in the Andes has to be more carefully studied because it can provide a number of social, economic, environmental and ideological angles that can be used to understand these settlements. The analysis of each category, will allow having a better understanding of the settlement that is under study. Perhaps the study of household in Andean fishing communities is most difficult due to the fact that based on ethnographic data, ritual kinship is the most effective way to organize and link these societies. Thus, compadrazgo is very difficult, even impossible to dig in an archaeological site, so this is a significant challenge that will need further study and it will very hard to determine through archaeological research. [1] [2]

[1] 

[2] I did not have the chance yet to study and review the sharing practices of the traditional Spanish fishermen in the Mediterranean Sea. This comparison will be crucial in order to define the precedence of Gillin catch division system. good point

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