What the Europeans Saw first in Cebu Island, and Why They Decided to Establish the First Colony at Cebu?
— An Attempt to Reconstruct the Landscape of Cebu Island at the Time of the first European Contact —
An Anthropological-Archaeological Approach

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I. Introduction

The present paper is based on the research which was designed to investigate a causal relationship between long distance trade and the development of complex societies in Southeast Asia. The research focused on the Cebu Central Settlement which was located on the present-day downtown Cebu City, the Philippines dated around the late prehistoric (ca. 10th c A.D.) to the late Spanish (ca. 20th c A.D.) periods (Nishimura 1992).

In recent I began to review the research results from perspectives of cultural landscape. As I have discussed in other contexts (e.g., Nishimura 2004, 2005), the cultural landscape approach has become a main focus in the field of anthropology for past decade. Although there are several reasons for this, it can be an important conceptual tool to elucidate cultural phenomenon. Originally the painter’s term, landscape, is now used for describing cultural phenomenon at a given time and space. It is an inclusive term, so that for anthropology the nature of which is holistic it is a very useful concept. Unlike other terms, one of the characteristics of cultural landscape approach is that this concept includes anthropologists themselves. Namely, like painter, the anthropologist can subjectively describe cultural phenomenon from his/her own viewpoint. Therefore, the description of the socio-cultural events can be regarded as the products through interactions between the people who are described and the person who describes.

Another important characteristics of cultural landscape approach is that it includes not only visible aspects but invisible aspects. Namely again like painters, anthropologists would like to represent what they believe to see, whether it is really visible or not. Therefore, it is of great importance to represent it from local people’s view. And often this local people’s view is quite different from us, the outsiders. What makes difference between local people’s and the outsider’s view is the memory. Therefore, it is also of great importance to find out local people’s shared memory, the so-called “collective memory”, and to analyze the way to share it. In doing so, we could un-
understand local logic shared among the people in situ.

The present research is organized from this viewpoint. Therefore it pursues two main objectives: first, it intends to reconstruct the landscape at the time when Spanish people first arrived at Cebu in 1521; and second, it also intends to investigate some plausible reason why they decided to establish the first colony at Cebu. I think that the cultural landscape approach will be useful to provide some explanations.

In order to clarify the picture, I think that ecological studies are useful. Since ecological studies provide a clear idea on changing aspects of Cebu landscape from the late prehistoric to the Spanish periods. As seen in my previous research (Nishimura 1992), it was obvious that Spanish colonization gave an significant impact on the landscape (Nishimura 1992, 1994, 1999). Based on ecological information, then I attempt to interpret specific aspects, and finally come back to speculate the answer for the questions which I raised for this research in particular.

**II. Historico-Geographical Settings of Cebu Island**

The study of concerning the ecological change of the Cebu central settlement was performed as a part off the anthropological-archaeological project, entitled “Long Distance Trade and the Development of Complex Societies in the Prehistory of the Central Philippines (Nishimura 1992, 1999). The main purpose of this anthropological-archaeological project was to investigate some causal relationships between long distance trade and the development of complex societies during late prehistoric and early historic (Spanish colonial) times (ca. 15th – 17th centuries A.D.) (Figs. 1 and 2) (Abella 1886; Beyer 1921, 1948; Borres 1971; Chirino 1968; Echevarria 1973; Fenner 1984; Loarcas 1582; McCoy and de Jesus 1983; Mojares 1984; Nishimura 1988, 1992; Phelan 1959; Pigafetta 1968; Tenazas 1965).  

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1. Prior to this research, the geological-geographical study of the Cebu central settlement was performed. This research pursued three specific aims: 1) definition of the chronological sequence of the Cebu settlement through detailed observation of stratigraphies; 2) identification of settlement size through all periods; and 3) identification of the natural environment within and around the settlement.

2. Largely six chronological units were established: the Incipient Late Prehistoric (ca. 10th – 14th centuries A.D.), Early Late Prehistoric (ca. mid-14th – 16th centuries A.D.), Late Late Prehistoric (ca. 16th – 17th centuries A.D.), Early Spanish (ca. 17th – 18th centuries A.D.), Late Spanish (ca. 18th – 20th centuries A.D.), and Modern periods. The Cebu settlement grew rapidly from the Incipient (when it was about 2 ha) through the Early Late Prehistoric (when it was about 20 ha) to the Late Late Prehistoric (when it was about 30 ha). Finally, when it was colonized by the Spanish, the settlement quickly grew into more than 100 ha.
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Fig. 1: Cebu Island with Major Urban Settlements (Source: Nishimura 1992)

Fig. 2: Intensive Research Area and Site Location (Source: Nishimura 1992)
The research project intended to present an alternative model for long distance trade interactions between foreign socio-political systems and a native Philippine system taken place during late prehistoric and early historic times, from the mid-10th to the mid-17th centuries A.D., and to show the results of the test of a set of propositions derived from the model (Nishimura 1986, 1988, 1992). The propositions were examined through extensive geological/archaeological survey and excavations conducted in downtown Cebu City, Philippines (Fig. 3) (Nishimura 1992, 1993). The research specifically focused on the mechanisms by which a prehistoric community in the central Philippines increased in socio-economic variability within the community by analyzing spatio-temporal patterns in the quantity, quality, and variety of trade goods (Nishimura 1992).

Within this framework, the present study specifically focuses on the change of the Cebu landscape and associated ecological problems which were heavily influenced by the Spanish colonization of Cebu Island taken place from the late 16th to 20th century A.D. (Fig. 4 and 5) (Blair and Robertson 1903 – 1909; Echevarria 1973; Fenner 1984; McCoy and de Jesus 1983; Nishimura 1992). The change was supported to have occurred due to the intensive farming activities designed by those Spanish colonialists as well as the drastic change of the way of life of native
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Fig. 4: Spanish Map of Cebu (Source: Borres 1971)

Fig. 5: Spanish Map of Cebu in 1699 (Source: Mojares 1983)
Philippine people (Visayans) themselves. The ecological impact taken place by the Spanish colonialists has been studied in the field of Mesoamerican as well as South American archaeology (e.g., Adams and Jones 1981). However, only a few studies under such a topic have been done in the field of Southeast Asian anthropology and archaeology (Nishimura 1992, 1993, 1994).

In order to examine the change of Cebu landscape, zooarchaeological and botanical, especially palynological, data were used for examination of specific assumptions concerning the ecological change due to the Spanish colonization of Cebu central settlement. In this regard, the present research pursued two specific aims: 1) identification of the Spanish colonization in terms of ecological aspects; and more importantly 2) definition of the results caused by the Spanish colonization, namely the manifestation of the impact made on the traditional Cebu socio-cultural system through the Spanish colonization from ecological perspectives.

III. Analysis of Animal Bones

1. Introduction

A total of 10,538 animal bones were recovered from the excavations in Cebu City throughout the field season from 1985 to 1986 (Nishimura 1986). After being washed, all bones were stored by locality, square no., layer, and level. Then, each bone was assigned an accession number.

Once this process was completed, all bones were sent to the zooarchaeological laboratory of the Museum of Anthropology, the University of Michigan, to Ms. Karen Mudar, a Southeast Asian and Near Eastern zooarchaeologist (Mudar 1989).

Mudar analyzed the Cebu faunal samples, together with samples from Negros, for her own comparative research. Therefore, analysis of the Cebu faunal remains was performed within the framework of her research (Mudar 1989). I will summarized the process and results of the research conducted by Mudar in the following sections. Further detailed analyses as well as description are included in her research paper, entitled “A Comparative Study of Faunal Remains Recovered at Three Sites in the Central Philippines” (Mudar 1989).

2. Methodology

A total of 7,868 bones from the excavations in Cebu City were examined. Eight hundred sixty-six bones, 12% of the total, were identified to genus or species. Identifications were made by using comparative collections housed in the University of Michigan Museum of Anthropology and Museum of Zoology (Mudar 1989:6).

Faunal samples were first sorted into unidentifiable and identifiable categories of mammals,
birds, reptiles, and fish. Characteristics of each bone identified to taxon were recorded individually (Mudar 1989:5).

The analysis was intended primarily to provide basic data such as number, weight, and minimum number of individuals of the taxa, and to compare samples from locality to locality in a socio-economic context. To achieve this, Mudar quantified and analyzed unidentified as well as identified materials.

3. Results

a) Marine Resources

Marine resources, especially fish, show the greatest density in the faunal assemblage. According to Mudar (1989:6), there are three sources of bias in the identification of fish bones.

First, among the faunal remains, teeth and pre-maxilla bones of fish were the most commonly found. This suggests that fishes with stout mouth parts such as parrotfish (Scaridae) are more likely to be identified than others with more delicate bones.

Second, the size of the comparative collection with which Mudar worked for identification of marine samples was limited. Therefore, she could only identify species which occurred in the actual comparative collection, or in published references.

Third, in general, fish is “difficult to identify osteologically to species or even genus level, and present a difficult problem to the zooarchaeologist working in tropical areas, where families may contain many tens of species” (Mudar 1989:6). Therefore, the degree of ease of identification is another kind of bias.

Because of the above problems, Mudar identified fish bones to the family level only. Two important general characteristics of the fish remains were noted:

First, the majority of identified fish were species which inhabit shallow water reefs, including parrotfish (Scaridae), wrasses (Labridae), triggerfish (Balistidae), triggerfish (Acanthurus), snappers (Lutjanidae), and croakers (Scianidae) (Mudar 1989:6-7). Mudar suggests that these fish may be caught by hook-and-line, netting, or spearing, although parrotfish are rarely taken by hook-and-line, and must be caught by another method (Mudar 1989:7).

Second, fish species which are today commonly caught off-shore were not found in the assemblage (Mudar 1989:7). Today, around the Cebu area it is common to see people catching fish, such as yellow fin tuna (Notothussus macroleus), ocean bonito (Katsuwonus pelamis), mackerel (Auxis thazard), the runner (Elagatis bipinnulatus), and carangoid (Carans sp.) (Domaytay 1940:82 in Mudar 1989:7).
Based on these two characteristics of the fish assemblage, Mudar discusses possible fishing methods practiced around the Cebu settlement in the Late Prehistoric and the Early Spanish periods. Citing Domaytay’s discussion (Domaytay 1940:83), Mudar suggests that even off-shore fishing was performed by relatively simple techniques and “primitive fishing gear” (Domaytay 1940:83), such as paddled or sailed dugouts, spears, and hooks-and-lines, or fish corrals constructed in water at least four meters deep (Mudar 1989:7). Due to a lack of the types of fish caught by the above fishing devices, and because archaeological evidence of these devices was not observed in the assemblage from the Cebu settlement, fishing methods were probably simpler, performed on an individual basis with a minimum of equipment (Mudar 1989:7). Mudar further argues that marine fish do not appear to be an item involved in status display (Mudar 1989:7).

Chiton remains also were recovered in the faunal assemblages from Plaza Independencia and Sto. Niño Church, Inside Courtyard, in layers belonging to the Early Late Prehistoric through the Late Late Prehistoric to the Early Spanish periods, although the quantity in each layer was small.

b) Birds

A fairly large number of bones of Gallus, domestic chicken, were recovered from the Plaza Independencia, and the Sto. Niño Church, Inside Courtyard, they came from layers of the Late Spanish period. Although chicken remains are missing from layers of other periods, ethnographic studies of contemporary Visayan households demonstrate that chickens are commonly raised by people who even live near the city. Therefore, it is likely that chickens were raised by the Cebuano people from the Early Late Prehistoric to the Late Spanish periods.

c) Mammals

<Pigs>

A large quantity of pig bones were found at Plaza Independencia, Sto. Niño Church, Inside Courtyard, and Sto. Niño Church, Outside Garden Strip All the pig remains found in the Cebu settlement were those of domestic pig (Sus scrofa).

Pig remains were found from the Early Late Prehistoric to the Late Spanish periods at both Plaza Independencia and Sto. Niño Church, Inside Courtyard. Besides chickens, pigs were the only non-marine protein resources used during the Late Prehistoric periods. They were apparently accessible food resources for all Cebuanos, as pig remains appear to be fairly evenly distributed throughout the Cebu settlement. As the population of the Cebu settlement increased from the
Early Late Prehistoric to the Late Spanish periods, the density of pig remains also increased.

<Deer>

Although the quantity of very small, deer remains, primarily teeth and antler fragments, were found at Plaza Independencia and Sto. Niño Church, Inside Courtyard. At Plaza Independencia, one deer fragment was recovered from Late Late Prehistoric period layers, and one from the Late Spanish period.

At Sto. Niño Church, Inside Courtyard, deer remains were found in the Early Spanish and the Late Spanish layers. Each layer yielded one fragment. No deer remains were recovered from the Late Prehistoric layers at this locality.

<Large Bovids>

According to Mudar (1989), the category of large bovids in the context of Philippine mammals consists of cattle, *Bos Taurus* or *Bos indicus*, and water buffalo, *Bubalus bubalus*. They were all introduced species.

Both cattle and water buffalo bones were recovered from the Cebu settlement. It is of great interest to see that the remains of both appear in layers belonging to the Late Late Prehistoric to the Transitional periods at Plaza Independencia. This implies that those animals were trade items, and introduced from somewhere outside of Cebu Island.

Cattle and water buffalo remains found at So. Niño Church, Inside Courtyard came from layers belonging to the Late Spanish period. It seems that it was not common for the people living near this locality to eat large bovids during the Late Prehistoric and the Early Spanish periods.

<Dog>

A small quantity of dog remains were found at the Cebu settlement in layers belonging to the Late Late Prehistoric and the Early Spanish periods of Plaza Independencia.

On the other hand, three dog bone fragments were found in layers of the late Spanish period, but no dog bones were recovered in the Late Prehistoric and the Early Spanish periods.

<Horse>

One piece of horse bone was recovered from Plaza Independencia in a layer dated to the Early Spanish period. No horse bones were found in layers of the preceding periods. Horses were very likely introduced to the Cebu settlement by the Spaniards.

4. Interpretation of the Results of Faunal Analysis

Mudar’s comparative research on animal bone assemblages from the Sohoton I site in Samar,
the Tanjay site in Negros Oriental (Hutterer and Macdonald 1983), and the Cebu site (Mudar
1989) shows that each site has its own distinctive characteristics. In general, the analysis of the
Cebu assemblages shows that the patterns of animal utilization by the Cebuano people in the
Late Prehistoric and the Early Spanish periods follows that patterns commonly seen among other
late prehistoric lowland sites in the Philippines (e.g. Spoehr 1973). However, the Cebu faunal
assemblage has its own characteristics.

First, the Cebu sample is characterized by a high preponderance of fish species. This is
particularly true in the Late Prehistoric period. The majority of protein resources were obtained
from the ocean during this period. This trend changed drastically with the beginning of the
Spanish period. Incoming Spanish people appear to have brought land resources to native people’s
attention. Therefore, beginning around the Spanish period, fish no longer make up the majority
of bones found.

Second, most of the species of fish recovered from the Cebu settlement are “shallow-water-
reef-dwellers” (Mudar 1989:14). They were probably caught by single individuals through such
fishing techniques as hook-and-line, or spearing. It seems to me that this pattern was consistent
from the Early Late Prehistoric to the Late Spanish periods. Although large quantities of fish
were obtained for dietary purposes, the procurement of these fish was not performed in
organized cooperative groups. However, the range of species of fish recovered from the Cebu
settlement remain unchanged from the Late Prehistoric to the Spanish periods. This means that
the people who were engaged in fishing activities had detailed knowledge of the ecological niches
of their prey. Fishing may have been conducted by specialized fishermen.

Third, except for a small number of bone and antler fragments of deer, very few wild
terrestrial animals were recovered. No monkey or land reptile, which were relatively common in
faunal assemblages from the Sohoton I and the Tanjay sites in Mudar’s comparative study, were
recovered at Cebu. Models which claim that contact between highland (hinterland) and lowland
people occurred via the exchange of goods which included wild products such as wild animals
from the highlands, and “lowland goods”, such as porcelain or metal products from the lowlands
(e.g., Bronson 1977; Hutterer 1977; Kennedy 1977) appear not to be applicable to the Cebu case. It
can also be said that if wild products were among the items which Philippine people offered to
foreign traders, those products were not supplied by the people of the Cebu hinterland. They
must instead have come from other area outside the catchment of the Cebu settlement through
regional trade. Therefore, I would like to conclude that interaction between hinterlanders and
lowlanders via such regional trade was not a primary agent for the development of complexity in
Fourth, in general, the density of animal bone increased through time. This evidence appears to support the proposition that the human population density in the Cebu settlement increased relatively rapidly from the Early Late Prehistoric to the Late Spanish periods. In addition, we observed that the density of animal bone was not evenly distributed across the Cebu settlement spatially. Thus, it is probable that the density of human population was also not evenly distributed, but concentrated at several nodes within the settlement.

Fifth, there is variability in the composition of the faunal assemblages at the several localities in the Cebu settlement. Mudar suggests that this variability is due to depositional history rather than to social factors (Mudar 1989:14). It is true that each locality has its own characteristics of soil deposition. However, it must also be noted that our geological studies revealed that those characteristics were correlated to socio-economic factors which were generated by the Cebu settlement as a whole. Therefore, I propose that variability in the composition of faunal assemblages at each locality should be interpreted in terms of the functioning of Cebu socio-cultural systems. Therefore, the differences in the density of animal bone at each locality will be interpreted as follows:

a) The density of faunal remains decreased in the Late Spanish period at the Plaza Independencia locality. Mudar suggests that this change occurred due to a shift in land use from private housing to public lands (a public park). It seems to me that, rather, this trend follows the general decrease in the density of the entire artifact assemblage recovered from the Plaza Independencia locality.

b) Compared to the Sto. Niño Church, Inside Courtyard, however, the density of animal bone from Plaza Independencia was higher for all classes of fauna throughout all periods. This indicates that these localities possessed rather large human populations throughout all periods, especially the periods from the Late Late Prehistoric to the Late Spanish periods.

c) Plaza Independencia, especially the Early Spanish layers, yielded bone fragments of horse, water buffalo, and dog, all of which were absent from the faunal assemblages from Sto. Niño Church, Inside Courtyard and Outside Garden Strip. On the other hand, the faunal assemblage of Sto. Niño Church, Inside Courtyard can be characterized as follows:

First, unlike Plaza Independencia, the total density of faunal remains tends to increase from the Late Prehistoric through the Early Spanish to the Late Spanish periods. This means that although the density of human population was low initially (certainly lower than at Plaza Independencia), it gradually increased through time. This trend is particularly clear in the
assemblage from the Early to the Late Spanish periods.

Second, a large proportion of the total faunal assemblage was made up of fish, and only a small amount was made up of land animal resources such as pig. This great difference between marine and land resources makes a sharp contrast between this locality and Plaza Independencia. Mudar suggests that this may indicate that Sto. Niño Church inhabitants may have been restricted in their access to terrestrial meat sources (Mudar 1989:14).

Third, based on the faunal assemblage at this locality, the proportion of inhabitants at this locality who probably would have been of a lower socio-economic stratum, and probably also in a less powerful socio-political group, is higher than at the Plaza Independencia locality. Compared with those at Plaza Independencia, the inhabitants of Sto. Niño Church, Inside Courtyard had less access to protein resources during the Late Prehistoric and the Early Spanish periods. Their access to land resources especially was severely limited, while the people of Plaza Independencia had access to a greater variety of faunal resources, especially of land resources.

Fourth and finally, the characteristics of the faunal assemblage from Sto. Niño Church, Outside Garden Strip is summarized as follows:

a) The trend in the density of animal bone through time is similar to that at Sto. Niño Church, Inside Courtyard. That is, the density of animal bone continuously increased from the Early Late to the Late Late Spanish periods.

b) Again, as at Sto. Niño Church, Inside Courtyard, the majority of the faunal assemblage was made up of fish bones. Only a few samples of land mammals (pigs) were found at this locality.

Regarding the fish remains, less variety in types of fish was found here than at Sto. Niño Church, Inside Courtyard, and Plaza Independencia. In this regard, the inhabitants of this locality would be in the lower strata in the socio-political as well as socio-economic sense.

c) Although the general pattern of the composition of classes of animal bones is similar to that of Sto. Niño Church, Inside Courtyard, it seems that fish resources were more commonly used by the people at this locality during the Early Spanish period. In other periods, the human population density, as estimated by the density of faunal remains, was relatively low. Therefore, our proposition about the population density within the Cebu settlement mentioned earlier in this paper was confirmed by the analysis of animal bones.

In general, the population density at this locality was low throughout all periods studied.

5. Summary and Conclusions

Although difficulties were encountered in the analysis of animal bones, especially due to the
lack of comparative samples and references, several significant characteristics of the animal bone assemblage from the Cebu settlement were identified.

First, there was a general increase in the density of animal bone throughout the settlement from the Early Late Prehistoric to the Late Spanish periods. Since all animal bones found here were probably food remains, it is supposed that the density of the human population within the Cebu settlement had a corresponding trend, increasing from the Early Late Prehistoric to the Late Spanish periods. This evidence supports the proposition mentioned earlier in this paper that the human population of the Cebu settlement rapidly expanded from the Early Late Prehistoric through the Late Late Prehistoric to the Early Spanish periods (Borres 1971; Chirino 1968; Fenner 1984; McCoy and de Jesus 1983; Phelan 1959; Scott 1990).

Second, within this general trend, however, we also observed that the density of animal bone was not evenly distributed throughout the settlement in each period, and area of high density shifted from one locality to the other through time. There were points of concentration in the spatial distribution of animal bones, and these points did not stay in one place. There were also corresponding concentrations in the spatial distribution of human density, and the human population center moved from one locality to another through time. Again, this evidence supports our proposition that the human population centers within the settlement moved around from the Early Late Prehistoric to the Late Spanish periods (Fenner 1984; McCoy and de Jesus 1983; Nishimura 1992).

Third, the Cebu faunal assemblages consist of an overwhelmingly large quantity of fish bones. Fish recovered from the Cebu settlement included fish which inhabited the shallow-water-reef, and were caught by relatively simple fishing techniques.

By contrast, the relative quantities of land animal bone are notably small in the Cebu assemblages. In fact, at both the Sto. Niño Church, Inside Courtyard and Sto Niño Church, Outside Garden Strip localities, only a few bones of land animals, most of which consisted of pig bones, were recovered for all periods. Within this general framework, however, we observed an interesting pattern: a major change of dietary pattern occurred after the Spanish period began (Scott 1990). It seems to me that the Spanish people brought more land animals into the Cebu settlement, probably for multi-purpose utilization (Beyer 1948; Blair and Robertson 1903-1909; Echevarria 1973; Fenner 1984; Loarcas 1582; McCoy and de Jesus 1983; Mudar 1989; Scott 1990). Meanwhile, due to influence by Spanish dietary habits, the overall dietary pattern of the people of Cebu settlement gradually, but not drastically, shifted from nearly exclusive reliance on marine resources to reliance on marine resources with supplementation by land resources (Mudar 1989;
Nishimura 1992, 1994; Scott 1990). This shift is clearest in the assemblage of animal bones from Plaza Independencia. It is evident, therefore, as in the case of the palynological analysis, that the faunal analysis reveals one of the effects of Spanish colonization on some biological aspects of Cebu settlement systems. It is clear that the pattern of the procurement of food resources gradually changed due to the influence of the Spanish colonizers (Scott 1990).

Fourth, the heavy reliance on marine resources by the people of the Cebu settlement from the Early Late Prehistoric period may indicate that the biomass of land animals was insufficient to support the population of the Cebu settlement. This implies two significant things about the Cebu settlement and subsistence systems:

a) In the beginning phase of settlement growth, in the Early Late Prehistoric period, the people of the settlement relied almost exclusively on marine resources for food. Therefore, deforestation, preceding agricultural exploitation in the hinterland, although clearly detected through our geological studies from the Early Late Prehistoric to the Late Spanish periods, were much less clear than in other archaeological cases such as that of the Sohoton I site (Hutterer 1974, 1979, 1982a).

b) A general model of exchange between mountain people, who brought game or other kinds of wild products from the hinterland area to the lowland area, and the lowland inhabitants who provided “lowland products” such as craft goods or porcelain, is therefore not applicable to the Cebu case. Rather, I suggest that the constant scarcity of land protein resources from the Early Late Prehistoric period probably forced the people of the hinterland of the Cebu settlement to rely heavily on marine resources, along with the few domestic animals raised in each household. Protein resources (largely marine) would consequently be strategic items which administrative units of the Cebu settlement could use to control people in settlements of the hinterland area. In this way, Cebu administrators could monitor local trade activities, and manipulate people in the hinterland to operative within an integrated Cebu-centered settlement system (Loarcas 1582; Pigafetta 1968).

Fifth and finally, as Mudar has pointed out, the spatial patterning of animal bone over the Cebu settlement indicates that no locality had any advantage over any other in terms of the quality or variety of animal resources. That is, everybody of the Cebu settlement had access to the same animal resources. Therefore, it may be safe to say that the faunal assemblages do not permit us to differentiate a range of socio-economic, or socio-political statuses among the Cebu community members.
IV. Palynological Analysis

The palynological research was conducted at three localities in the Cebu central settlement site. These three localities are Sto. Niño Church, Inside Courtyard, Pari-an Plaza, and Plaza Independencia (Fig. 3). Among them, a boring core taken at Sto. Niño Church, Inside Courtyard yielded an almost complete pollen profile in terms of the chronological order from the Early Late Prehistoric to Modern periods. Therefore, I will first discuss the results of the palynological analysis of the samples from Sto. Niño Church, Inside Courtyard, and later those from Pari-an Plaza and Plaza Independencia.

1. Sto. Niño Church, Inside Courtyard

The boring operation for palynological studies at this locality was performed at a level 30 cm below the present-day ground surface. It was necessary to avoid a hard, rocky soil which covered the ground surface where our target point of boring was located. We also suspected that the soil between 30 cm below and the surface is much disturbed, and therefore is not significant for sensitive palynological studies. For this reason, we first removed the soil to 30 cm below the surface and inserted the pollen probe (Fig. 6).

![Pollen Profile](Source: Nishimura 1992)

Fig. 6: Pollen Profile of Sto. Niño Church, Inside Courtyard (Source: Nishimura 1992)
The results of palynological studies of the samples of Sto. Niño Church, Inside Courtyard provide several interesting points, summarized as follows: first, it seems that weeds in the Amaranthaceae Amaranthus or Kaolitis family (Asis, et al. 1971) have been dominant types around this locality and probably surrounding areas. Although there are two levels (60-70 cm, and 120-130 cm) in which pollen grains of the Amaranthaceae and absent, plants of this family have always been dominant from the early late prehistory to modern periods (Fig. 6).

Taking into account the two levels where Amaranthaceae plants are absent, we may classify the Amaranthaceae family into three groups: Amaranthaceae plants found in the levels from 30 to 60 cm; those from 70 to 120 cm; and those from 130 to 180 cm.

Plants of this family found in the level between 130 and 180 cm are particularly interesting. They are associated with cultivated fields, since within this level domesticated plants belonging to the Gramineae family exist. Both domesticated Gramineae and Amaranthaceae grew together (Fig. 3). In our botanical survey, we confirmed that a number of species of the Amaranthaceae family grew in cultivated lands. Interestingly, the level between 130 and 180 cm belongs to the Early to Late Late Prehistoric period. Thus, it may be reasonable to say that at the end of the Late Late Prehistoric period, toward the period of Spanish contact, the plants of the Amaranthaceae family would have to be replaced with other plants of the same family, as the other vegetation landscapes changed.

There is a group of the Euphorbiacea from the level between 50 and 120 cm. The lowest level, 120-130 cm, corresponds with Layer III, which belongs to the Early Spanish period. Since then, plants of the Euphorbiacea family have continued to exist throughout the Spanish period. As seen in the list off plants collected from the research area (Table 1), many of the species of the Euphorbiacea family are introduced from the New World or Europe (e.g., Asis, et al. 1971; Burkholder 1935; Merrill 1968). Partially because of this reason, and partially because it is the Early Spanish period that Euphorbiacea pollen grains first appear, I suspect that most plants of the Euphorbiacea family presented in this diagram were introduced by the Spaniards, and began to grow in the research area.

However, we still have to consider the possibility that native plants of this family grew quickly during the period in question for some reason. Those plants were also positively associated with plants of the Amaranthaceae family.

A wide variety of species are included in the Compositae family. Although a few of those species, such as dandelion (Taraxacum officinale Weber), were introduced to the Philippines during the historical period, and now are very common elsewhere in the Philippines, many other
species appear to be native in Philippine islands. Among such species are Nguad (Bidens pilosas L.), Sambong (Blumea camphor) (Blumea balsamifera (L.) DC), or Kalapini (Pluchea indica (L.) Less) (e.g., Asis, et al. 1971). As seen in the list of plants collected around the research area (Table 1), it is clear that since plants of the Compositae family tend to grow in nutrient-rich lands such as open lands with garbage piles in the city or swamp edges, the emergence and continuous growth of plants of this family suggest that the intensification of the concentration of human population might be associated with plants of this family.

Table 1: Plants Collected around Cebu City (Source: Nishimura 1992)
Given the purpose of this research, plants of the Gramineae family are divided into two major sub-categories – wild plants and domesticated plants. Dr. Bulalacao, palynologist, used two criteria for the classification: size and type of pollen grain, although she did not provide the precise figures used for this classification (Nishimura 1992). It seems that measuring the size of pollen grain is of particular importance. It is known among the palynologists that the size of pollen of domesticated varieties is often larger. For example, in maize the pollen grain of domesticated varieties is much larger than that of wild varieties (Fritz 1990, Pers. Comm.).

Regarding the Gramineae family, three points should be mentioned (Fig. 6). First, although ecological zones such as open lands in cities, or the edge of forests vary, generally plants of this family grow in cultivated lands (Asis, et al. 1971; Conklin 1967; Seidenschwartz 1988). For instance, Dawa-dawa (Barnyard grass) (Echinochloa crus-galli Beauv.), Bulang (Echinochloa colonum (L.) Link) are frequently found in paddy fields throughout the Philippines (e.g., Asis, et al. 1971), and Kogon (Imperata cylindrical (L.) Beauv.), or Talahib (Saccharum spontaneum L.) are also common in cultivated fields as well as dry grass lands (e.g., Asis, et al. 1971; Conklin 1967). Among the plants collected around the research area, plants of the Gramineae family were all found along the edge of cultivated lands in Talambang, the suburban area of Cebu city (Table 1).

Second, as noted above, pollen grains from domesticated plants of the Gramineae family are found in lower levels from 140 to 180 cm. Since these levels belong to the Early to the Late Late Prehistoric periods, people living in this locality had possibly cultivated the land around their households, at least until the Spanish landed and colonized the area (Seidenschwartz 1988). Since the quantity of pollen grains in samples is quite small, I suspect that the scale of agriculture performed in this locality was very limited.

Although it was not possible to pin down specific scientific names of those plants, Bulalacao suggested that they are likely plants commonly seen in agricultural fields such as Palay (rice) (Oryza sativa Linn.) (Nishimura 1992). Since we could not specify crop grains at this time, this question remains to be solved by future research.

Finally, the category of “Others” includes both unidentified pollen grains and probably fern spores. Since many pollen grains are often misidentified as fern spores (Dimbleby 1985), without further double examination of those “probable” fern spores we tentatively put them into the category of “Others”. More precise identification of these grains and spores should be attempted in future research.

In summary, the palynological study suggests that the area around Sto. Niño Church, Inside Courtyard has been open land since the Early Late Prehistoric period until the present. Although
there is some evidence of agricultural practice in the Early and Late Late Prehistoric periods, it was not performed on a large scale at all. It probably took the form of cultivation of the small land plots around the peasants’ households. The agricultural practice ended as Spanish people inhabited the research area, and especially after they built a church at this locality.

While dominant plants have always been those in the Amaranthaceae family since the Late Prehistoric period, varieties of plants in this family appeared to change as the land was converted into a churchyard rather than ground for peasants’ use (Borres 1971; Fenner 1984; Phelan 1959; Tenazas 1965). Besides the cultivation at this locality, the existence of the Amaranthaceae family also indicates that cultivated land had always been near the locality. Thus, it is easily imagined that the hinterland areas around the Cebu settlement were extensively explored for cultivation since the early Late Prehistoric period.

Another evidence of European contact is seen in the emergence and thereafter continuous presence of plants of the Euphorbiaceae family. Together with disappearance of domesticated plants of the Gramineae family, the Spanish colonization of Cebu caused a major ecological change around the area.

In short and most importantly, plants of all families found through palynological analysis of samples from Sto. Niño Church, Inside Courtyard are grown in open lands which can provide plants with much sunlight. Those plants are also known to grow near human communities. As a result, I suspect that the area around this locality in particular was open land, probably with few shrubs and trees during late prehistoric and early historic times.

2. Plaza Independencia

We obtained only an incomplete pollen profile of Plaza Independencia. According to Bulalacao (Pers. Comm. 1989), the reason behind the incompleteness of the pollen profile lies in the fact the land was burned at some time in the history of the area around Plaza Independencia. In fact, she pointed out that she found a number of carbonized pollen particles as well as charred plant tissues. Since this “burning” is not clearly seen in our archaeological excavations as well as geological surveys, I am still not sure of the actual reason for the complete disappearance of pollen grains in the lower portion of the palynological core, even trash grains are presented from the Late Spanish to Modern layers (Fig. 7).

During the Late Spanish period, dominant plants are those of the Amaranthaceae family (Fig. 7). This evidence follows a general pattern seen in the case of Sto. Niño Church, Inside Courtyard (see Fig. 6). However, after this period, the history of vegetation around Plaza Independencia was
different from that of Sto. Niño Church, Inside Courtyard. More families inhabited the area around Plaza Independencia from the end of the Late Spanish to the Modern periods, although plants in those families, except the Palmae family, were all suitable for sunny open fields (Fig. 7). It might be suggested that the area around Plaza Independencia had a more dense concentration of population and heavier traffic due to the conversion of the land into the part.

In short, palynological studies suggest that the land around Plaza Independencia and its adjacent area were always open.

3. Pari-an Plaza

Like the case of Plaza Independencia, we could not obtain a complete pollen profile from this locality (Fig. 8). According to Bulalacao, the reason behind the incompleteness is the same as that discussed above in the case of Plaza Independencia.

Since our archaeological excavations were not conducted at this locality, we do not have means of better chronological control of the palynological samples from Pari-an Plaza. Both our stratigraphic and map analysis indicate that the area around Pari-an Plaza was covered by an extended swamp until the Late Spanish period, and therefore was not extensively used for human habitation until at least the latter half of the Spanish period (Fig. 8). Since the levels in which the existence of pollen grains is only from 0-70 cm, we suspect that they belong to the Modern to the Spanish periods (Fig. 8).
Like the above two cases, a dominant family around this locality appears to have been the *Amaranthaceae* (Fig. 8). Other than plants of the dominant *Amaranthaceae* family, there exists a relatively large quantity of pollen grain of the *Palmae* family, and others. The category, "Others", again includes both probable fern spores and unidentified pollens. The existence of pollen grains of plants of the *Palmae* family in a relatively large quantity indicates that trees such as coconuts grew around the locality.

**Pollen Profile**  
**Pari-an Plaza**

![Pollen Profile of Pari-an Plaza](source: Nishimura 1992)

There were also plants of the *Cyperaceae* family. It is known that many of the plants of the *Cyperaceae* family grow in wet or swampy lands in the Philippines (e.g., Asis, et al. 1971; Burkholder 1935). Thus, the existence of pollen of plants of this family well supports our proposition that the area around Pari-an Plaza was covered by a large swamp at least until the Late Spanish period.

In short, the results of the palynological study of samples from Pari-an Plaza indicate that the area was an open but wet land in which common weeds as well as trees such as coconuts grew in the historic period (the Spanish period).

4. Synthesis

Although we have only one complete pollen profile, that profile provides us with several interesting facts concerning micro-environments in the late prehistoric period.

a) There is evidence that the cultivation of cereal crops on a small scale occurred in places
such as the locality around Sto. Niño Church, Inside Courtyard, in and near the Cebu central settlement. Due to the small number of grains, one can suggest that this agricultural practice took the form of cultivation of small patches of land around households. This kind of agricultural practice was performed in both the Early and the Late Late Prehistoric periods.

b) This agricultural practice, however, was reduced toward the beginning of the Spanish period. It appears that this is particularly clear at places where the Spanish began to build their houses or facilities, such as the area around Sto. Niño Church, Inside Courtyard.

c) During the Late Prehistoric period, a dominant plant family was *Amaranthaceae*. It is known that plants of the *Amaranthaceae* family often grow together with cereal crop plants in cultivated fields. Existence of pollen grains of the *Amaranthaceae* family in the late prehistoric period also support that argument discussed above in a).

Furthermore, an increasing quantity of pollen grains of plants of the *Amaranthaceae* family from the Early to the Late Late Prehistoric periods suggests that the agricultural production must have been intensified as more people concentrated within the settlement.

d) When the Spanish established the area of habitation on the Cebu settlement, vegetation types were more diversified. Although plants of the *Amaranthaceae* family were still dominant during the Spanish period, it seems that plants of the *Euphorbiaceae* family would have been introduced to the settlement, as well as weeds of the *Compositae* family which commonly grow in the center of heavily populated areas, such as the downtown area of cities, and they began to inhabit the land of the Cebu settlement. It is of great significance to note that plants of these three dominant families: the *Amaranthaceae*, *Compositae*, and Euphorbaceae are all those which need much sunlight, while plants whose habitat is a swampy, wet environment belong to families such as *Cyperaceae*.

e) It seems that the vegetation type in the research area has not greatly changed from the Early Spanish to the Modern periods. As a result, one finds all the families identified through palynological analysis in the list of contemporary plants collected around the research area.

f) In general, the results of our palynological studies provide us with information that the Cebu settlement in the Late Prehistoric and the Early Spanish periods were established on a very open land. It seems to me that, therefore, the results of palynological analysis support the propositions presented in previous sections.

Furthermore, the absolute absence of pollen grains of the thick-forest type of trees indicates that even the immediate hinterland areas were not covered with forests. Thus, it is clear that by the Late Prehistoric period, a heavy human intervention to the natural environment (such as the
clearance of forests by shifting agriculturists) had already taken place. Although the basic landscape of vegetation remained almost the same, the nature of intervention changed some of the plant ecology around the settlement during the Late Prehistoric and the Spanish periods. In this regard, it should be noted that during the Spanish period more types of plants began to inhabit the settlement area, probably because the newcomers, the Spanish, introduced more plants to this land.

Consequently, one of the most important implications of the palynological studies is that the change of natural environments around the Cebu settlement from the prehistoric to the early historic periods was not in fact caused by human agents. As a result, if we observe an evidence of environmental changes such as the change of geographical landscape, or change of soil structure around the settlement, the reason for such changes should be sought in terms of human activities.

V. Reconstruction of the Cebu Landscape from the late prehistoric to the early historic periods

Through our research, it is obvious that the land of Cebu had already extensively and intensively used for agricultural purposes. In order to support this result, Scott presented the historical data which was written by Spanish missionaries when they arrived in Cebu (Scott 1990). According to Scott, when the Spanish arrived in Cebu, they saw all kinds of crops such as rice, millet, taro, yams, and bananas were cultivated by the Visayans. Interestingly, those were grown in swidden, kaingin in Cebuano (Scott 1990). Among these crops, the most common crops are root crops which could supply food all year around.

Although they produced those crops, it seems to me that Visayans could not produce foods enough to supply for themselves for a whole year (Fenner 1985). However, interestingly, the Spanish were not aware of the productivity in agriculture when they came to Cebu. Therefore, Scott said, "they (the Spanish) apparently were unaware that low-intensity farmers wishes to distribute the risks of bad weather, locusts or other pests to several different crops – or that they might not have formed such annual variation in diet a particular hardship in the first place" (Scott 1990:291). As a result, the Spanish advent caused a serious food shortage in Cebu, and even famines to the extent that some families had to sell children for situation, the Spanish even pushed harder to let those Visayans intensify their cultivation activities. Consequently, the land has been even more deteriorated, and the quality of soil became worse.

As the result, the research will manifest that the landscape of Cebu Island, especially that around Cebu city, was significantly changed through intensive colonial activities, followed by
massive change of ecological factors during the time period in question. In the conclusion, the research will also touch on the alternative concept concerning the development of socio-cultural complexity in general.

VI. Summery and Conclusion

The faunal and palynological study of the Cebu central settlement was performed to investigate the interaction between human activities and the natural environment around the Cebu central settlement during the time span from the Late Prehistoric to Spanish times (ca. 14th – 17th centuries A.D.).

The results can be summarized in the following points:

1. Prior to this study, paleo-topographic reconstruction shows that the settlement was established on a growing sand spit, with a large swamp behind it, and a sand beach along the ocean. Eroded soil eventually silted in the swamp and was deposited as well on the coastal side (Fig. 4). The dimension of land available for the settlement increased through time. Once the swamp was silted in, and became “dry land”, it too was inhabited.

2. A thick deposit of sediments, sometimes more than 1 m in layers from the Early Late Prehistoric to the Early Spanish periods, spanning about 300 years, came from deposition of soil eroded from the hinterland areas (Fig. 9). This erosion was caused by intensive exploitation of the inland forest and grass lands (Fig. 5).

3. Since the settlement was established on the beach, the base sediment throughout and around the settlement consists of relatively fine beach sand, the water holding capacity of which is extremely low, especially during the Early Late Prehistoric and Late Late Prehistoric periods. Due to the low water holding capacity, the results of soil chemical analysis indicate that the soil of the Cebu settlement was absolutely not appropriate for any type of agricultural production without large scale human efforts. And, there is no evidence for such production, or efforts in the Cebu archaeological assemblage.

Nevertheless, the settlement size increased rapidly, and the human population of the settlement expanded constantly from the Early Late Prehistoric to the Early Spanish periods.

4. The estimation of low potential for agricultural productivity within the Cebu settlement was supported by palynological studies as well. Palynological studies show that there was no evidence of agricultural activities, except for tiny cultivated plots around households, in the Cebu settlement throughout its history.

5. Since the advent of the Spaniards, the exploitation of land around Cebu central settlement
was intensified. As the intensification of deforestation progressed, the soil erosion also progressed. This caused the filling of inland swamp and inlets. In the hinterland, the forests were quickly disappeared. Together with the change of food habit among the inhabitants of the Cebu settlement, more relying on land resources, the landscape off the Cebu Island was significantly changed.

Finally, I would like to come back to my question which I rose in the beginning of this paper: what kind of landscape the first Europeans saw on Cebu Island, and why they decided to
establish the first colony on the Cebu settlement.

As mentioned in the previous section, by the time when those Europeans arrived, the Cebu settlement appeared to have a relatively large population. The population size had already somehow exceeded to the extent that the people of the settlement could eat enough food. At that time, therefore, the hinterland of the Cebu Central Settlement was maximally exploited, and therefore had heavily been deforested. The people of the hinterland inhabited in scattered hamlets, and their subsistence were slash-and-burn type agriculture. By doing so, the hinterland was therefore exposed the surface of ground or at least covered with grass such as cogon grass. The exposed ground surface was eroded by strong sunshine during the dry season and heavy rain during the rainy season.

In turn, the surface soil from the hinterland ran down to the lowland. The eroded soil arrived at the land with the lower elevation, and deposited on it, or filled in streams and inlets. Since the Cebu was hilly island, and therefore the hill slope immediately came to the lowland and at the end the sea, it is easily assumed that this process of changing landscape relatively quickly happened.

In this way the landscape around the Cebu Central Settlement was created. The landscape at the European contact was the deforested hinterland with some patchy forests and swampy streams and inlets in lowland. This deforested hilly land appeared to be similar to the land which those Spanish departed. Besides its practical and strategic reason, the landscape in their memory possibly played a role for making decision that Cebu would be appropriate for establishing their first colony.

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What the Europeans Saw first in Cebu Island, and Why They Decided to Establish the First Colony at Cebu?


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